CALIFORNIA
Manufacturing Cost Annual
2008 Data
This publication was prepared in the Division of Marketing Services, Dairy Marketing Branch, by:

Manufacturing Cost Unit Staff:
Venetta Reed, Supervisor
Raymond Greth
Jackie Juarez
Stephanie Qian
Joseph Reno

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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California Department of Food and Agriculture
A.G. Kawamura, Secretary
Dairy Marketing Branch
1220 N Street, Sacramento, CA 95814-5621
(916) 341-5988 / www.cdfa.ca.gov/dairy
Email Address: dairy@cdfa.ca.gov
Introduction ..........................................................................................................................................................5
  Overview of the Manufacturing Cost Studies ........................................................................................................5
  Highlights of the Manufacturing Costs ..................................................................................................................6
Butter Study ...........................................................................................................................................................7
  Highlights of the Butter Manufacturing Costs ........................................................................................................7
  Characteristics of Butter Plants ..................................................................................................................................10
Nonfat Dry Milk Study ............................................................................................................................................15
  Highlights of the Nonfat Dry Milk Manufacturing Costs .......................................................................................17
  Characteristics of Nonfat Dry Milk Plants ................................................................................................................18
Cheese Study ..........................................................................................................................................................23
  Highlights of the Cheddar Cheese Manufacturing Costs ......................................................................................25
  Characteristics of Cheddar Cheese Plants ..............................................................................................................26
Condensed Skim and Cream Study ..........................................................................................................................31
  Condensed Skim Overview ......................................................................................................................................31
  Cream Overview .....................................................................................................................................................32

List of Tables

Table 1. Processing Costs for Eight California Butter Plants ..................................................................................8
Table 2. Processing Costs for Nine California Nonfat Dry Milk Plants .................................................................16
Table 3. Cheddar Cheese Production Parameters from Cost Studies ........................................................................23
Table 4. Processing Costs for Six California Cheddar Cheese Plants ..........................................................................24

List of Figures

Figure 1. Comparison of Costs by Category for California Manufacturing Plants ................................................6

For Butter Cost Study:
Figure 2. Breakdown of Butter Packaging Sizes and Types ....................................................................................7
Figure 3. Breakdown of Butter Processing Costs .........................................................................................................9
Figure 4. Annual California Butter Production ..........................................................................................................11
Figure 5. Manufacturing Cost ......................................................................................................................................11
Figure 6. Percent Share of California Butter Production, by Ownership Type ..........................................................11
Figure 7. Processing Labor Cost ...................................................................................................................................12
Figure 8. Butter Labor Breakdown by Category ..........................................................................................................12
Figure 9. Processing Non-Labor Cost ........................................................................................................................12
Figure 10. Utility Cost ..................................................................................................................................................13
Figure 11. Natural Gas, Electricity, and Water and Sewage Cost .................................................................................13
Figure 12. Repairs & Maintenance, and Supplies Cost ...............................................................................................13
Figure 13. Comparison of Payroll Breakdown for Plant Employees & Salaried Employees ..................................14
Figure 14. Butter Processing Cost Comparison, 2006-2008 .......................................................................................14
Table of Contents

For Nonfat Dry Milk Cost Study:
Figure 15. Breakdown of Nonfat Dry Milk Packaging Sizes ..................................................15
Figure 16. Breakdown of Nonfat Dry Milk Processing Costs ..................................................17
Figure 17. Annual California Nonfat Dry Milk Production ......................................................19
Figure 18. Manufacturing Cost ..............................................................................................19
Figure 19. Percent Share of California Nonfat Dry Milk Production, by Ownership Type ......19
Figure 20. Processing Labor Cost ..........................................................................................20
Figure 21. Nonfat Dry Milk Labor Breakdown by Category ..................................................20
Figure 22. Processing Non-Labor Cost ..................................................................................20
Figure 23. Utility Cost ...........................................................................................................21
Figure 24. Natural Gas, Electricity, and Water and Sewage Cost .............................................21
Figure 25. Repairs & Maintenance, and Supplies Cost ...........................................................21
Figure 26. Comparison of Payroll Breakdown for Plant Employees & Salaried Employees ..22
Figure 27. Nonfat Dry Milk Processing Cost Comparison, 2006-2008 ..................................22

For Cheddar Cheese Cost Study:
Figure 28. Breakdown of Cheddar Cheese Packaging Sizes ...............................................23
Figure 29. Breakdown of Cheddar Cheese Processing Costs ...............................................25
Figure 30. Annual California Cheddar and Jack Cheese Production ......................................27
Figure 31. Manufacturing Cost ...............................................................................................27
Figure 32. Percent Share of California Cheddar and Jack Cheese Production, by Ownership Type...27
Figure 33. Processing Labor Cost ..........................................................................................28
Figure 34. Cheddar Cheese Labor Breakdown by Category ..................................................28
Figure 35. Processing Non-Labor Cost ..................................................................................28
Figure 36. Utility Cost .............................................................................................................29
Figure 37. Natural Gas, Electricity, and Water and Sewage Cost .............................................29
Figure 38. Repairs & Maintenance, and Supplies Cost ...........................................................29
Figure 39. Comparison of Payroll Breakdown for Plant Employees & Salaried Employees ..30
Figure 40. Cheese Processing Cost Comparison, 2006-2008 ...............................................30

For Condensed Skim and Cream Studies:
Figure 41. Annual Condensed Skim Production ....................................................................31
Figure 42. Breakdown of Condensed Skim Processing Costs ..................................................31
Figure 43. Condensed Skim Processing Labor Costs ...............................................................32
Figure 44. Condensed Skim Processing Non-Labor Costs .......................................................32
Figure 45. Breakdown of Cream Processing Costs ..................................................................32
Figure 46. Annual Cream Production .....................................................................................33
Figure 47. Cream Processing Labor Costs ................................................................................33
Figure 48. Cream Processing Non-Labor Costs .....................................................................33
Figure 49. Cheese Plant with By-Product Processing Flow Chart ............................................34
Figure 50. Butter and Nonfat Dry Milk Plant Processing Flow Chart ......................................35
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). 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. While CDFA has the legal authority to collect cost information from the various types of milk processing plants, the majority of plants have found the information contained in the studies valuable and cooperated voluntarily.

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. Study participants accounted for over 90 percent of the products manufactured in California. 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 study. As a result, data on condensed skim and cream is based on a much lower percentage of annual production in California.

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 plants.

**Overview of the Manufacturing Cost Studies**

Each plant in the study gave access to cost data for a 12-month period, January 2008 to December 2008. The 2008 California Manufacturing Cost Annual includes data obtained from eight butter plants, nine NFDM plants, six Cheddar cheese plants, eight condensed skim plants, and eight cream plants. The 2008 annual report accounted for 99.1 percent of the butter, 94.5 percent of the NFDM, and 93.4 percent of the total Cheddar and Monterey Jack cheese produced in California. Since about half the plants processed and sold bulk cream and/or condensed skim, data was also accumulated for these products.
**Highlights of the Manufacturing Costs**

*Processing Non-Labor* costs included utilities, repairs & maintenance and supplies, depreciation & property taxes, and other costs as well (Figure 1). On weighted average, non labor costs accounted for 43 percent of butter processing costs, 60 percent of NFDM processing costs, and 39 percent of Cheddar cheese processing costs.

*Processing Labor* is the second largest cost overall and the single largest contribution to manufacturing costs. Labor was on weighted average 31 percent of butter processing costs, 18 percent of NFDM processing costs, and 26 percent of Cheddar cheese processing costs.

This publication is divided into sections: Butter, Nonfat Dry Milk, Cheese, and Condensed Skim and Cream.

- Summary tables describe categorized manufacturing costs.
- Column charts identify the distribution of costs and indicate the variation among the plants.
- Pie charts provide the contribution of major cost categories to the overall cost structure.

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**Figure 1. Comparison of Costs by Category for California Manufacturing Plants**
Cost studies were completed on eight butter plants for 2008. The eight plants processed 550.7 million pounds of butter during the 12-month period, January 2008 through December 2008, representing 99.1 percent of the butter processed in California. Butter summary statistics provide the weighted average cost per pound for each of the manufacturing costs (Table 1).

The majority of plants packaged butter in various sizes; however, only costs for bulk butter (25-kg and 68-lb. blocks) were analyzed (Figure 2).

To avoid revealing plant specific information, each plant was assigned to either a Low Cost Group or High Cost Group based on their total manufacturing costs. In 2008, the Low Cost Group included four plants with the lowest manufacturing costs, and the High Cost Group included four plants with the highest manufacturing costs.

**Highlights of the Butter Manufacturing Costs**

*Processing Labor Costs* were up slightly from last year and the weighted average labor cost was 4.9¢ per pound accounting for 31 percent of the total manufacturing cost (Figure 3).

---

**Figure 2. Breakdown of Butter Packaging Sizes and Types**

- **Sweet (1/4 cut)**: 6%, 33 Mil. Lbs.
- **Sweet (1 lb)**: 6%, 34 Mil. Lbs.
- **Sweet Bulk**: 18%, 97 Mil. Lbs.
- **Salted Bulk**: 38%, 208 Mil. Lbs.
- **Salted (1 lb)**: 4%, 23 Mil. Lbs.
- **Salted (1/4 cut)**: 25%, 138 Mil. Lbs.
- **Other**: 3%, 18 Mil. Lbs.
Table 1. Processing Costs for Eight California Butter Plants

BUTTER MANUFACTURING COSTS
CURRENT Study Period: January through December 2008
With Comparison to the same time period PRIOR YEAR (2007)

- Manufacturing cost data were collected and summarized from eight California butter plants. The eight plants processed 550.7 million pounds of butter during the 12-month study period, January through December 2008, representing 99.1% 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 the cost study.
- For this study period, approximately 54% of the butter was processed at a cost less than the current manufacturing cost allowance for butter of $0.1560 per pound.

### Breakdown of Butter Manufacturing Costs - January through December 2008

<table>
<thead>
<tr>
<th>Categories</th>
<th>Low Cost Group</th>
<th>High Cost Group</th>
<th>Range of Costs</th>
<th>Current</th>
<th>Prior Year</th>
<th>Actual Difference Current Less Prior Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Plants</td>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Processing Labor</td>
<td>$0.0445</td>
<td>$0.0541</td>
<td>$0.0321</td>
<td>$0.0905</td>
<td>$0.0485</td>
<td>$0.0467</td>
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<tr>
<td>Processing Non-Labor</td>
<td>$0.0573</td>
<td>$0.0773</td>
<td>$0.0454</td>
<td>$0.1432</td>
<td>$0.0656</td>
<td>$0.0515</td>
</tr>
<tr>
<td>Packaging</td>
<td>$0.0134</td>
<td>$0.0139</td>
<td>$0.0120</td>
<td>$0.0171</td>
<td>$0.0136</td>
<td>$0.0127</td>
</tr>
<tr>
<td>Other Ingredients</td>
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<td>$0.0023</td>
<td>$0.0019</td>
<td>$0.0029</td>
<td>$0.0023</td>
<td>$0.0022</td>
</tr>
<tr>
<td>General &amp; Administrative</td>
<td>$0.0151</td>
<td>$0.0191</td>
<td>$0.0054</td>
<td>$0.0628</td>
<td>$0.0167</td>
<td>$0.0125</td>
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<td>Return on Investment</td>
<td>$0.0064</td>
<td>$0.0117</td>
<td>$0.0035</td>
<td>$0.0741</td>
<td>$0.0086</td>
<td>$0.0060</td>
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<tr>
<td>Average Total Cost</td>
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<td>$0.1784</td>
<td></td>
<td></td>
<td>$0.1553</td>
<td>$0.1316</td>
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<tr>
<td>Volume in Group (Lbs.)</td>
<td>321,883,180</td>
<td>228,814,212</td>
<td></td>
<td></td>
<td>550,697,392</td>
<td>492,471,306</td>
</tr>
<tr>
<td>% Volume by Group</td>
<td>58.5%</td>
<td>41.6%</td>
<td></td>
<td></td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

**Processing Labor**: Labor costs associated with processing of product, including wages, payroll taxes and fringe benefits.

**Processing Non-Labor**: Includes costs such as utilities, repairs and maintenance, laundry, supplies, depreciation, plant insurance, and rent.

**Packaging**: Includes all non-reusable items used in the packaging of the product, such as boxes, bags, cartons, liners, tape, glue and stretch wrap.

**Other Ingredients**: Includes salt, and color.

**General & Administrative**: Includes expenses in the management of the company, such as: office supplies, short-term interest, dues and subscriptions, accounting fees, headquarter charges, office clerical wages and executive salaries.

**Return on Investment**: Calculated by subtracting accumulated depreciation from the original cost of assets, with the remaining book value multiplied by Moody’s “BAA” corporate bond index.
Processing Non-Labor Costs were a grouping of costs that included utilities, repairs & maintenance, supplies, depreciation, property taxes, and other various costs. The weighted average cost of the Low Cost Group was 5.7¢ per pound, and the High Cost Group was 7.7¢ per pound. Processing non-labor costs of 6.6¢ per pound accounted for 43 percent of the total manufacturing cost.

General and Administrative (G & A) Costs were on weighted average 1.7¢ per pound and included all expenses incurred in the direction, control, and management of the company. Examples of G & A costs were administrative payroll, office supplies, dues and subscriptions, and headquarters fees. G & A costs accounted for 11 percent of the total manufacturing cost.

Return on Investment (ROI) allowance is an opportunity cost and represents how much interest the company could have earned if its capital was not tied up in land, buildings

**Figure 3. Breakdown of Butter Processing Costs**

- Processing Labor 31%, $0.0485/Lb.
- Packaging Expense 9%, $0.0136/Lb.
- Gen & Admin Expenses 11%, $0.0167/Lb.
- Misc. Ingredient Costs 1%, $0.0023/Lb.
- Return On Investment 5%, $0.0086/Lb.
- Repairs & Maintenance and Supplies 12%, $0.0179/Lb.
- Depreciation & Property Taxes 6%, $0.0097/Lb.
- Other 14%, $0.0216/Lb.
- Utilities 11%, $0.0164/Lb.
- Processing Non-Labor 43%, $0.0656/Lb.
and equipment. In other words, it is viewed as an alternative source of income had the company invested the capital elsewhere. ROI is the remaining book value multiplied by the Moody’s “BAA” corporate bond index. A higher ROI suggests that either a plant is relatively new with little accumulated depreciation of its assets (high book value) or it is an established plant with low production volume. ROI costs on weighted average were 0.9¢ per pound and accounted for 5 percent of the total manufacturing cost.

Packaging Costs were on weighted average 1.4¢ per pound and accounted for 9 percent of the total manufacturing cost. All non-reusable items such as boxes, bags, cartons, liners, tape, glue, and stretch-wrap were included in the packaging costs category.

Misc. Ingredient Costs for salt increased slightly from 2007. The weighted average was 0.2¢ per pound and accounted for 1 percent of the total manufacturing cost.

Characteristics of Butter Plants

The cost studies summaries provide insights into butter production operations in California. The following statistics, charts, and graphs present facts in visual form and indicate the variation that exists among the butter plants and the relative impact of individual cost categories.

To obtain a weighted average, an individual cost was weighted by the plant production volume respective to the total volume of butter processed. The median is the middle point of a set of numbers.
Figure 4. Annual California Butter Production

- **Million Pounds of Butter**
  - Average = 69 million pounds
  - Median = 63 million pounds
  - Average Low Cost Group = 80 million pounds
  - Average High Cost Group = 57 million pounds
  - The Low Cost Group produced 58.5 percent of the total butter production.

Figure 5. Manufacturing Cost

- **Cents per Pound of Butter**
  - Average = 18.2¢ per pound
  - Wt’d Average = 15.5¢ per pound
  - Median = 16.2¢ per pound
  - Wt’d. Aver. Low Cost Group = 13.9¢ per pound
  - Wt’d. Aver. High Cost Group = 17.8¢ per pound
  - Three plants kept their manufacturing costs under the weighted average cost of 15.5¢ per pound.

Figure 6. Percent Share of California Butter Plants, by Ownership Type, Workforce Type, and by Pounds of Total Production

- **Proprietary Plants**
  - Non-Union Workforce: 6%, 34 Mil. Lbs.
- **Cooperative Plants**
  - Union Workforce: 69%, 380 Mil. Lbs.
  - Non-Union Workforce: 25%, 137 Mil. Lbs.

- There were no Proprietary Plants with a Union Workforce participating in the cost studies.
Figure 7. Processing Labor Cost

Cents per Pound of Butter

- Average = 5.4¢ per pound
- Wt’d Average = 4.9¢ per pound
- Median = 5.4¢ per pound
- Wt’d. Aver. Low Cost Group = 4.5¢ per pound
- Wt’d. Aver. High Cost Group = 5.4¢ per pound

- Labor costs ranged from 3.2¢ to 9.1¢ per pound.
- Two plants kept their labor costs under the weighted average cost of 4.9¢ per pound.

Figure 8. Butter Labor Breakdown by Category

Based on detailed data:

The weighted average labor cost was 4.9¢ per pound or $2.67 per 25-kg unit.

Note: “Other Labor” includes plant manager/superintendent, general plant, and plant clerical labor.

Figure 9. Processing Non-Labor Cost

Cents per Pound of Butter

- Average = 7.5¢ per pound
- Wt’d Average = 6.6¢ per pound
- Median = 7.2¢ per pound
- Wt’d. Aver. Low Cost Group = 5.7¢ per pound
- Wt’d. Aver. High Cost Group = 7.7¢ per pound

- Non-labor costs ranged from 4.5¢ to 14.3¢ per pound.
- Three plants kept their non-labor costs below the weighted average, 6.6¢ per pound.
Figure 10. Utility Cost

Cents per Pound of Butter

- Average = 1.9¢ per pound
- Wt’d Average = 1.7¢ per pound
- Median = 1.8¢ per pound
- Wt’d. Aver. Low Cost Group = 1.7¢ per pound
- Wt’d. Aver. High Cost Group = 1.6¢ per pound

- Three plants kept their utility costs below the weighted average cost of 1.7¢ per pound.
- Electricity costs accounted for 62 percent of the total utility cost.
- Utilities include electricity, gas, and water and sewage costs.

Figure 11. Natural Gas, Electricity, and Water and Sewage Costs in Butter Plants

- Natural Gas: 16% of costs, $0.0027 per pound
- Electricity: 62% of costs, $0.0102 per pound
- Water and Sewage: 22% of costs, $0.0035 per pound

Figure 12. Repairs & Maintenance, and Supplies Cost

Cents per Pound of Butter

- Average = 1.9¢ per pound
- Wt’d Average = 1.8¢ per pound
- Median = 1.7¢ per pound
- Wt’d. Aver. Low Cost Group = 1.4¢ per pound
- Wt’d. Aver. High Cost Group = 2.4¢ per pound

- Repairs & maintenance cost was 0.7¢ per pound.
- Supplies cost was 1.1¢ per pound.
- In total, repairs & maintenance and supplies costs ranged from 1.1¢ to 3.3¢ per pound.
Total payroll costs of the eight plants amounted to $80 million. Wages include vacation, sick, and holiday pay. Taxes include FICA, FUTA, SUTA, and Workers Compensation.

Total processing costs increased 18% from 2007. Ingredients, packaging, and labor costs went up less than 10% individually. Non-labor, G&A, and ROI costs increased 27%, 34%, and 43%, respectively.
Cost studies were completed on nine nonfat dry milk plants for 2008. The total NFDM production was 774.4 million pounds during the 12-month period, January 2008 through December 2008, representing 94.5 percent of the NFDM processed in California. NFDM summary statistics indicate the weighted average costs per pound for each of the manufacturing costs (Table 2).

Only costs for bagged (25-kg and 50-lb) NFDM were analyzed although high volume totes accounted for 22 percent of the total production (Figure 15).

To avoid revealing plant specific information, the nine plants were assigned to either a Low Cost Group, Medium Cost Group, or High Cost Group based on their total processing costs. In 2008, the Low Cost Group included three plants with the lowest manufacturing costs, the Medium Cost Group included three plants with the medium manufacturing costs, and the High Cost Group included three plants with the highest manufacturing costs.

![Figure 15. Breakdown of Nonfat Dry Milk Packaging Sizes](image-url)

- Multi-Wall Bags, 78% (25 kg, 50 lbs.), 600 Mil. Lbs.
- Totes, 22% (1,100-2,500 lbs.), 174 Mil. Lbs.
<table>
<thead>
<tr>
<th>Categories</th>
<th>Low Cost Group</th>
<th>Medium Cost Group</th>
<th>High Cost Group</th>
<th>Range of Costs</th>
<th>CURRENT Weighted Average Cost All Plants Jan-Dec 2008</th>
<th>PRIOR YEAR Weighted Average Cost All Plants Jan-Dec 2007</th>
<th>Actual Difference Current Less Prior Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Plants</td>
<td>3</td>
<td>3</td>
<td>9</td>
<td>9</td>
<td>$0.0340</td>
<td>$0.0333</td>
<td>$0.0007</td>
</tr>
<tr>
<td>Processing Labor</td>
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<td>$0.0417</td>
<td>$0.0272 - $0.0933</td>
<td>$0.1175</td>
<td>$0.0922</td>
<td>$0.0253</td>
</tr>
<tr>
<td>Processing Non-Labor</td>
<td>$0.1001</td>
<td>$0.1238</td>
<td>$0.1647</td>
<td>$0.0924 - $0.2364</td>
<td>$0.0147</td>
<td>$0.0148</td>
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<td>Packaging</td>
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<td>$0.0128</td>
<td>$0.0087</td>
<td>$0.0041</td>
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<tr>
<td>General &amp; Administrative</td>
<td>$0.0090</td>
<td>$0.0113</td>
<td>$0.0277</td>
<td>$0.0080 - $0.0313</td>
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<tr>
<td>Return on Investment</td>
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<td>$0.0032 - $0.0527</td>
<td>$0.1931</td>
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<td>$0.0363</td>
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<tr>
<td>Average Total Cost</td>
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<td>$0.2904</td>
<td>-</td>
<td>$0.1931</td>
<td>$0.1568</td>
<td>$0.0363</td>
</tr>
<tr>
<td>Volume in Group (Lbs.)</td>
<td>436,801,407</td>
<td>204,203,488</td>
<td>133,453,647</td>
<td>-</td>
<td>774,458,542</td>
<td>701,322,354</td>
<td>73,136,188</td>
</tr>
<tr>
<td>% Volume by Group</td>
<td>56.4%</td>
<td>26.4%</td>
<td>17.2%</td>
<td>-</td>
<td>100.0%</td>
<td>100.0%</td>
<td>-</td>
</tr>
</tbody>
</table>

**Processing Labor:** Labor costs associated with processing of product, including wages, payroll taxes and fringe benefits.

**Processing Non-Labor:** Includes costs such as utilities, repairs and maintenance, laundry, supplies, depreciation, plant insurance, and rent.

**Packaging:** Includes all non-reusable items used in the packaging of the product, such as boxes, bags, cartons, liners, tape, glue and stretch wrap.

**General & Administrative:** Includes expenses in the management of the company, such as: office supplies, short-term interest, dues and subscriptions, accounting fees, headquarter charges, office clerical wages and executive salaries.

**Return on Investment:** Calculated by subtracting accumulated depreciation from the original cost of assets, with the remaining book value multiplied by Moody’s “BAA” corporate bond index.
Highlights of the Nonfat Dry Milk Manufacturing Costs

Processing Labor Costs were significant ranging from 2.7¢ per pound to 9.3¢ per pound. Processing Labor costs accounted for 18 percent of the total manufacturing cost (Figure 16).

Processing Non-Labor Costs as a group included several different plant expenses, such as utilities, depreciation, property taxes, repairs & maintenance, supplies, and other costs as well. Non-Labor costs ranged from 9.2¢ per pound to 23.6¢ per pound. The weighted average non-labor cost was 11.8¢ per pound accounting for 60 percent of the total manufacturing cost.

Figure 16: Breakdown of Nonfat Dry Milk Processing Costs
Characteristics of Nonfat Dry Milk Plants

The cost studies summaries provide insights into NFDM production operations in California. The following statistics, charts, and graphs present the variation that exists among the NFDM plants and the relative impact of individual cost categories upon production.

To obtain the weighted average, individual plant costs were weighted by their processing volume in relation to the total volume of NFDM processed by all the plants included in the cost study. The median is the middle point of a set of numbers.

General and Administrative (G & A) Costs were on weighted average 1.3¢ per pound and included all expenses incurred in the direction, control, and management of the company. G & A costs represented 7 percent of the total manufacturing cost. Examples of G & A costs are administrative payroll, office supplies, dues and subscriptions, and headquarters fees.

Return on investment (ROI) allowance is the remaining book value multiplied by the Moody’s “BAA” corporate bond index. The weighted average ROI cost for the nine NFDM plants was 1.4¢ per pound representing 7 percent of the total manufacturing cost.

Packaging Costs included non-reusable items, such as boxes, bags, liners, tape, glue, and stretch-wrap. The weighted average cost of packaging was 1.5¢ per pound representing 8 percent of the total manufacturing cost.
Figure 17. Annual California Nonfat Dry Milk Production

- The Low Cost Group produced 56.4 percent of the total NFDM production, the Medium Cost Group produced 26.4 percent, and the High Cost Group made up the remaining production.

Figure 18. Manufacturing Cost

- Five plants kept their manufacturing costs under the weighted average, 19.3¢ per pound.

Figure 19. Percent Share of California Nonfat Dry Milk Plants, by Ownership Type, Workforce Type, and by Pounds of Total Production

- There were no Proprietary Plants with a Union Workforce participating in the cost studies.
**Figure 20. Processing Labor Cost**

Cents per Pound of NFDM

- Average = 4.8¢ per pound
- Wt’d Average = 3.4¢ per pound
- Median = 3.2¢ per pound
- Wt’d. Aver. Low Cost Group = 3.0¢ per pound
- Wt’d. Aver. Medium Cost Group = 3.9¢ per pound
- Wt’d. Aver. High Cost Group = 4.2¢ per pound

- Five plants kept their labor costs below the weighted average cost of 3.4¢ per pound.

**Figure 21. Nonfat Dry Milk Labor Breakdown by Category**

Based on detailed data:

- The weighted average labor cost was 3.4¢ per pound or $1.87 per 25-kg unit.

**Note:** Other labor includes plant manager/superintendent, general plant, and plant clerical labor.

**Figure 22. Processing Non-Labor Cost**

Cents per Pound of NFDM

- Average = 13.5¢ per pound
- Wt’d Average = 11.8¢ per pound
- Median = 12.3¢ per pound
- Wt’d. Aver. Low Cost Group = 10.0¢ per pound
- Wt’d. Aver. Medium Cost Group = 12.4¢ per pound
- Wt’d. Aver. High Cost Group = 16.5¢ per pound

- Four plants kept their non-labor costs under the weighted average cost of 11.8¢ per pound.
Figure 23. Utility Cost

Cents per Pound of NFDM
- Average = 7.5¢ per pound
- Wt’d Average = 6.0¢ per pound
- Median = 7.1¢ per pound
- Wt’d. Aver. Low Cost Group = 4.9¢ per pound
- Wt’d. Aver. Medium Cost Group = 7.2¢ per pound
- Wt’d. Aver. High Cost Group = 8.2¢ per pound

- Gas costs represented 63 percent of the total utility cost.
- Three plants operated under the weighted average utility cost of 6.0¢ per pound.

Figure 24. Natural Gas, Electricity, and Water and Sewage Costs in Nonfat Dry Milk Plants

- Natural Gas: 63% of total cost, $0.0383 per pound
- Electricity: 29% of total cost, $0.0177 per pound
- Water and Sewage: 8% of total cost, $0.0044 per pound

Figure 25. Repairs & Maintenance, and Supplies Cost

Cents per Pound of NFDM
- Average = 2.1¢ per pound
- Wt’d Average = 2.0¢ per pound
- Median = 2.0¢ per pound
- Wt’d. Aver. Low Cost Group = 1.9¢ per pound
- Wt’d. Aver. Medium Cost Group = 1.8¢ per pound
- Wt’d. Aver. High Cost Group = 2.7¢ per pound

- Repairs & maintenance cost was 0.8¢ per pound.
- Supplies cost was 1.2¢ per pound.
- In total, repairs & maintenance and supplies costs ranged from 1.3¢ to 3.3¢ per pound.
Total payroll costs of the nine plants amounted to $88 million. Wages include vacation, sick, and holiday pay. Taxes include FICA, FUTA, SUTA, and Workers Compensation.

Total processing costs increased 23% from 2007. Packaging costs decreased 1% and labor costs went up 2%. Non-labor, G&A, and ROI costs increased 27%, 47%, and 81%, respectively.
Cost studies were completed on six cheese plants for 2008. The six plants processed 603.3 million pounds of cheese during the 12-month period, January 2008 through December 2008, representing 93.39 percent of the Cheddar and Monterey Jack cheese processed in California. Cheese summary statistics indicated the weighted average per pound costs for each of the manufacturing categories (Table 4).

Manufacturing costs were only derived from 40-lb. block Cheddar cheese although other packaging sizes were produced (Figure 28). In addition, cheese plants manufactured other various cheeses and by-products.

Cheddar cheese finished moisture percentages and cheese vat information are listed in the Cheddar Cheese Production Parameters table (Table 3).

To avoid revealing plant specific information, each plant was assigned to either a Low Cost Group or High Cost Group based on total processing costs. In 2008, the Low Cost Group included three plants with the lowest manufacturing costs, and the High Cost Group included three plants with the highest manufacturing costs.

### Table 3. Cheddar Cheese Production Parameters from Cost Studies

<table>
<thead>
<tr>
<th>Cost Group</th>
<th>Finished Moisture %</th>
<th>Vat Fat Test %</th>
<th>Vat SNF Test %</th>
<th>Vat Yield (Lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>38.11%</td>
<td>4.26%</td>
<td>10.48%</td>
<td>14.26%</td>
</tr>
<tr>
<td>High</td>
<td>36.95%</td>
<td>4.05%</td>
<td>9.33%</td>
<td>11.11%</td>
</tr>
<tr>
<td>Wt'd Avg.</td>
<td>37.86%</td>
<td>4.21%</td>
<td>10.23%</td>
<td>13.58%</td>
</tr>
</tbody>
</table>

¹ Moisture, vat tests and yields reflect levels achieved for Cheddar cheese only.
Table 4. Processing Costs for Six California Cheddar Cheese Plants

CHEESE MANUFACTURING COSTS
CURRENT Study Period: January through December 2008
With Comparison to the same time period PRIOR YEAR (2007)

- Manufacturing cost data were collected and summarized from six California cheese plants. The six plants processed 603.3 million pounds of cheese during the 12-month study period, January through December 2008, representing 93.39% 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 13.58 lbs. of cheese per hundredweight of milk. The weighted average moisture was 37.86% and weighted average vat tests were 4.21% fat and 10.23% SNF.
  - For 40-lb. blocks: the weighted average yield was 13.64 lbs. of cheese per hundredweight of milk. The weighted average moisture was 38.09% and weighted average vat tests were 4.13% fat and 10.22% SNF.
- For this study period, approximately 4.6% 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 2008

<table>
<thead>
<tr>
<th>Categories</th>
<th>Low Cost Group</th>
<th>High Cost Group</th>
<th>Range of Costs</th>
<th>CURRENT Weighted Average Cost All Plants Jan-Dec 2008</th>
<th>PRIOR YEAR Weighted Average Cost All Plants Jan-Dec 2007</th>
<th>Actual Difference Current Less Prior Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Plants</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Processing Labor</td>
<td>$0.0518</td>
<td>$0.0665</td>
<td>$0.0506</td>
<td>$0.0739</td>
<td>$0.0550</td>
<td>$0.0467</td>
</tr>
<tr>
<td>Processing Non-Labor</td>
<td>$0.0823</td>
<td>$0.0812</td>
<td>$0.0699</td>
<td>$0.0874</td>
<td>$0.0821</td>
<td>$0.0891</td>
</tr>
<tr>
<td>Packaging</td>
<td>$0.0267</td>
<td>$0.0236</td>
<td>$0.0154</td>
<td>$0.0268</td>
<td>$0.0260</td>
<td>$0.0232</td>
</tr>
<tr>
<td>Other Ingredients</td>
<td>$0.0120</td>
<td>$0.0214</td>
<td>$0.0096</td>
<td>$0.0247</td>
<td>$0.0140</td>
<td>$0.0116</td>
</tr>
<tr>
<td>General &amp; Administrative</td>
<td>$0.0268</td>
<td>$0.0273</td>
<td>$0.0235</td>
<td>$0.0302</td>
<td>$0.0269</td>
<td>$0.0230</td>
</tr>
<tr>
<td>Return on Investment</td>
<td>$0.0060</td>
<td>$0.0054</td>
<td>$0.0039</td>
<td>$0.0062</td>
<td>$0.0059</td>
<td>$0.0067</td>
</tr>
<tr>
<td>Average Total Cost</td>
<td>$0.2056</td>
<td>$0.2254</td>
<td>--</td>
<td>--</td>
<td>$2.099</td>
<td>$2.003</td>
</tr>
<tr>
<td>Volume in Group (Lbs.)</td>
<td>472,245,512</td>
<td>131,032,908</td>
<td>--</td>
<td>--</td>
<td>603,278,420</td>
<td>645,199,735</td>
</tr>
<tr>
<td>% Volume by Group</td>
<td>78.3%</td>
<td>21.7%</td>
<td>--</td>
<td>--</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Processing Labor: Labor costs associated with processing of product, including wages, payroll taxes and fringe benefits.
Processing Non-Labor: Includes costs such as utilities, repairs and maintenance, laundry, supplies, depreciation, plant insurance, and rent.
Packaging: Includes all non-reusable items used in the packaging of the product, such as boxes, bags, cartons, liners, tape, glue and stretch wrap.
Other Ingredients: Includes salt, color, and rennet.
General & Administrative: Includes expenses in the management of the company, such as: office supplies, short-term interest, dues and subscriptions, accounting fees, headquarter charges, office clerical wages and executive salaries.
Return on Investment: Calculated by subtracting accumulated depreciation from the original cost of assets, with the remaining book value multiplied by Moody’s “BAA” corporate bond index.
**Highlights of the Cheddar Cheese Manufacturing Costs**

*Processing Labor Costs* increased to 5.5¢ per pound and accounted for 26 percent of the total manufacturing costs (Figure 29). On weighted average, the Low Cost Group had labor costs of 5.2¢ per pound, and the High Cost Group was 6.7¢ per pound.

*Processing Non-Labor Costs* included utilities, depreciation, property taxes, repairs & maintenance, supplies, and other costs as well. Non-labor costs accounted for 39 percent of the total manufacturing cost and ranged from 7.0¢ to 8.7¢ per pound.

*Packaging Costs* included all non-reusable items, such as boxes, liners, tape, glue, and stretch-wrap. Weighted average packaging costs were 2.6¢ per pound and accounted for 12 percent of the total manufacturing costs.

*Misc. Ingredient Costs* included salt, color, rennet, etc. In 2008, the weighted average ingredient cost was 1.4¢ per pound and accounted for 7 percent of the total manufacturing cost. Ingredient costs ranged from 1.0¢ to 2.5¢ per pound.

---

**Figure 29. Breakdown of Cheddar Cheese Processing Costs**

- **Processing Labor 26%, $0.0550/Lb.**
- **Packaging Expense 12%, $0.0260/Lb.**
- **Gen & Admin Expenses 13%, $0.0269/Lb.**
- **Misc. Ingredient Costs 7%, $0.0140/Lb.**
- **Return On Investment 3%, $0.0059/Lb.**
- **Processing Non-Labor 39%, $0.0821/Lb.**
- **Utilities 13%, $0.0267/Lb.**
- **Depreciation & Property Taxes 6%, $0.0119/Lb.**
- **Repairs & Maintenance and Supplies, 11%, $0.0239/Lb.**
- **Other 9%, $0.0196/Lb.**
**General and Administrative (G & A) Costs**

included all expenses incurred in the direction, control, and management of the company. Examples of G & A costs were administrative payroll, office supplies, dues and subscriptions, and headquarters fees. On weighted average, G & A costs were 2.7¢ per pound and accounted for 13 percent of the total manufacturing cost.

**Return on Investment (ROI)**

allowance is an opportunity cost and represents how much interest the company 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 company invested the capital elsewhere. ROI is the remaining book value multiplied by the Moody’s “BAA” corporate bond index. A higher ROI suggests that either a plant is relatively new with little accumulated depreciation of its assets (high book value) or that it is an established plant with low production volume. ROI costs on weighted average were 0.6¢ per pound and accounted for 3 percent of the total manufacturing cost.

**Characteristics of Cheddar Cheese Plants**

The cost studies summaries provide insights into Cheddar cheese production operations in California. In the following section, summary statistics provide a comparison of costs. The following statistics, charts, and graphs present facts in visual form and gives an indication of how much variation exists among Cheddar cheese plants.

To obtain the weighted average, individual plant costs were weighted by cheese plant production volume respective to the total volume of cheese processed by all the plants included in the cost study. The median is the point at which half of the plants are above and half of the plants are below the given figure.
Figure 30. Annual California Cheddar and Jack Cheese Production

- The Low Cost Group produced 78.3 percent of the total cheese represented.

Figure 31. Manufacturing Cost

- Three plants operated under the weighted average manufacturing cost of 21.0¢ per pound.

Figure 32. Percent Share of California Cheddar and Jack Cheese Plants, by Ownership Type, Workforce Type, and by Pounds of Total Production

- There were no Proprietary Plants with a Union Workforce participating in the cost studies.
**Figure 33. Processing Labor Cost**

<table>
<thead>
<tr>
<th>Cents per Pound of Cheese</th>
<th>Average</th>
<th>$0.06 per pound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wt'd Average</td>
<td>$0.055 per pound</td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>$0.057 per pound</td>
<td></td>
</tr>
<tr>
<td>Wt'd. Aver. Low Cost Group</td>
<td>$0.052 per pound</td>
<td></td>
</tr>
<tr>
<td>Wt'd. Aver. High Cost Group</td>
<td>$0.067 per pound</td>
<td></td>
</tr>
</tbody>
</table>

- Three plants managed to keep their labor costs below the weighted average cost of $0.055 per pound.

**Figure 34. Cheddar Cheese Labor Breakdown by Category**

- Packaging: 26%, $0.0145/Lb.
- Processing: 14%, $0.0078/Lb.
- Receiving, Pasteurizing, Separating: 7%, $0.0037/Lb.
- Other: 17%, $0.0091/Lb.
- Laboratory: 6%, $0.0035/Lb.
- Engineers & Maintenance: 18%, $0.0100/Lb.
- Coldroom & Loadout: 12%, $0.0064/Lb.

Based on detailed data:
- The weighted average labor cost was $0.055 per pound.
- The weighted average labor cost was $2.20 per 40 lb. block.

Note: “Other Labor” includes plant management/superintendent, general plant, plant clerical, and whey disposal labor.

**Figure 35. Processing Non-Labor Cost**

<table>
<thead>
<tr>
<th>Cents per Pound of Cheese</th>
<th>Average</th>
<th>$0.08 per pound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wt'd Average</td>
<td>$0.082 per pound</td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>$0.083 per pound</td>
<td></td>
</tr>
<tr>
<td>Wt'd. Aver. Low Cost Group</td>
<td>$0.082 per pound</td>
<td></td>
</tr>
<tr>
<td>Wt'd. Aver. High Cost Group</td>
<td>$0.081 per pound</td>
<td></td>
</tr>
</tbody>
</table>

- Three plants kept their non-labor costs below the weighted average cost of $0.082 per pound.
Figure 36. Utility Cost

Cents per Pound of Cheese
- Average = 2.8¢ per pound
- Wt'd Average = 2.7¢ per pound
- Median = 2.8¢ per pound
- Wt'd. Aver. Low Cost Group = 2.5¢ per pound
- Wt'd. Aver. High Cost Group = 3.2¢ per pound

- Utility costs ranged from 2.5¢ to 3.3¢ per pound.
- Natural gas charges represented 41 percent of the total utility cost.
- Utility costs include electricity, gas, and water and sewage costs.

Figure 37. Natural Gas, Electricity, and Water and Sewage Costs in Cheese Plants

- Natural Gas: 41% of total utility cost, $0.0110 per pound
- Electricity: 25%, $0.0068 per pound
- Water and Sewage: 34%, $0.0089 per pound

Figure 38. Repairs & Maintenance, and Supplies Cost

Cents per Pound of Cheese
- Average = 2.4¢ per pound
- Wt'd Average = 2.4¢ per pound
- Median = 2.2¢ per pound
- Wt'd. Aver. Low Cost Group = 2.6¢ per pound
- Wt'd. Aver. High Cost Group = 2.4¢ per pound

- Repairs & maintenance cost was 1.1¢ per pound.
- Supplies cost was 1.3¢ per pound.
- In total, repairs & maintenance and supplies costs ranged from 1.5¢ to 4.3¢ per pound.
The payroll costs of the six cheese plants amounted to $68 million.
Wages include vacation, sick, and holiday pay.
Taxes include FICA, FUTA, SUTA, and Workers Compensation.

Total processing costs increased 5% from 2007.
Ingredients, packaging, labor, and G&A costs went up 21%, 12%, 18%, and 17%, respectively.
Non-labor and ROI costs decreased 8% and 12%, respectively.
Most of the costs allocated to condensed skim, cream, and other bulk dairy products come from indirect labor and indirect non-labor plant costs. There are very little, if any, direct plant costs allocated to bulk fluid products, thus the derived costs per pound of condensed skim and cream are not as precise compared to the derived costs of packaged products such as butter, NFDM, and Cheddar cheese whose plant costs are largely composed of direct costs.

To avoid revealing plant specific information, each plant was assigned to either a Low Cost Group or High Cost Group based on total processing costs.

Cost studies were completed on eight condensed skim plants for the year 2008. The Low Cost Group included four plants with the lowest manufacturing costs, and the High Cost Group included four plants with the highest manufacturing costs. The total production was 431.9 million pounds.

The eight plants processed on average over 54 million pounds of condensed skim each in 2008 (Figure 41). However, this is somewhat misleading because of the tremendous disparity in actual processing volume between the plants. Three out of the eight plants processed 72 percent of the total volume. The weighted average cost of manufacturing condensed skim was $4.35 per hundredweight (cwt.) (Figure 42).

### Condensed Skim Overview

Cost studies were completed on eight condensed skim plants for the year 2008. The Low Cost Group included four plants with the lowest manufacturing costs, and the High Cost Group included four plants with the highest manufacturing costs. The total production was 431.9 million pounds.

The eight plants processed on average over 54 million pounds of condensed skim each in 2008 (Figure 41). However, this is somewhat misleading because of the tremendous disparity in actual processing volume between the plants. Three out of the eight plants processed 72 percent of the total volume. The weighted average cost of manufacturing condensed skim was $4.35 per hundredweight (cwt.) (Figure 42).

### Figure 41. Annual Condensed Skim Production

- **Million Pounds of Condensed Skim**
  - Average = 54 million pounds
  - Median = 45 million pounds
  - Average Low Cost Group = 52 million pounds
  - Average High Cost Group = 56 million pounds

- The High Cost Group produced 52 percent of the total production.

### Figure 42. Breakdown of Condensed Skim Processing Costs

- **Processing Non-Labor 63%, $2.7264/cwt.**
- **Return On Investment 8%, $0.3761/cwt.**
- **Gen & Admin Expenses 7%, $0.2834/cwt.**
- **Processing Labor, 22%, $0.9663/cwt.**
Cream Overview

Cost studies were completed on eight cream plants for the year 2008. The Low Cost Group included four plants with the lowest manufacturing costs, and the High Cost Group included four plants with the highest manufacturing costs. The plants combined production totaled 219.8 million pounds.

The plants processed an average of 27 million pounds of cream in 2008 (Figure 46). The volume of cream production varied between the groups of plants with the lowest and highest overall manufacturing costs.

The weighted average cost of manufacturing cream was $4.85 per cwt. (Figure 45).

Dollars per Cwt. of Condensed Skim

- Labor costs ranged from $0.65 to $1.52 per cwt.

Dollars per Cwt. of Condensed Skim

- Non-labor costs ranged from $1.80 to $3.39 per cwt.
Figure 46. Annual Cream Production

Million Pounds of Cream
- Average = 27 million pounds
- Median = 20 million pounds
- Average Low Cost Group = 19 million pounds
- Average High Cost Group = 36 million pounds
- The High Cost Group produced 66 percent of the total production.

Figure 47. Cream Processing Labor

Dollars per Cwt. of Cream
- Average = $1.06 per cwt.
- Wt’d Average = $0.93 per cwt.
- Median = $1.11 per cwt.
- Wt’d Aver. Lost Cost Group = $0.82 per cwt.
- Wt’d Aver. High Cost Group = $0.99 per cwt.
- Labor costs ranged from $0.69 to $1.43 per cwt.

Figure 48. Cream Processing Non-Labor

Dollars per Cwt. of Cream
- Average = $2.37 per cwt.
- Wt’d Average = $2.68 per cwt.
- Median = $2.10 per cwt.
- Wt’d Aver. Lost Cost Group = $1.61 per cwt.
- Wt’d Aver. High Cost Group = $3.22 per cwt.
- Non-labor costs ranged from $1.22 to $3.79 per cwt.
Figure 49. Simplified Product Flow in a Cheese Plant with By-Product Processing

- Fortification Ingredients
- Starter & Rennet
- Press Curds
- 40 lb. Blocks
- 640 lb. Block
- 500 lb. Barrels
- Wholesale
- Cut & Wrap or Shred
- Wholesale
- Cut & Wrap or Shred
- Wholesale
- Reprocess
- Wholesale
- Cut & Wrap or Shred
- Wholesale
- Cut & Wrap or Shred
- Wholesale
- Cut & Wrap or Shred
- Whey Butter
- Whey Protein Concentrate
- Lactose
- Skim Whey Powder

- Cheese Vat
- Curds
- Separate Curds & Whey
- Whey
- Separate Whey
- Whey cream
- Churn
- Reverse Osmosis
- Condense & Dry Whey
- Water Recycled to Wash & Clean Plant
- Farm Milk
- Whey Skim
- Ultrafiltration
- Skim Whey Powder

- Water Recycled to Wash & Clean Plant
- Wholesale
- Cut & Wrap or Shred
- Wholesale
- Cut & Wrap or Shred
- Wholesale
- Cut & Wrap or Shred
- Wholesale
- Cut & Wrap or Shred
- Whey Butter
- Whey Protein Concentrate
- Lactose
- Skim Whey Powder

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

Venetta Reed, Supervising Auditor
Dairy Marketing Branch
California Department of Food and Agriculture
1220 N Street
Sacramento, CA 95814-5621

Phone: (916) 341-5991
Fax: (916) 341-6697
E-mail: vreed@cdfa.ca.gov