# A COST ANALYSIS OF CENTRALIZED FOOD PREPARATION AND DISTRIBUTION SYSTEMS FOR MONTEREY PENINSULA UNIFIED SCHOOL DISTRICT

Timothy James Allega

Library
Naval Postgraduate School
Monterey, California 93940

# NAVAL POSTGRADUATE SCHOOL
## Monterey, California


# THESIS

A Cost Analysis of Centralized Food Preparation and Distribution Systems for Monterey Peninsula Unified School District

by

Timothy James Allega

Thesis Advisor: F. R. Richards

March 1973

*Approved for public release; distribution unlimited.*

T153363

# A Cost Analysis of Centralized Food Preparation and Distribution Systems for Monterey Peninsula Unified School District

by

Timothy James Allega
Lieutenant, United States Navy
B.S., Indiana State University, 1965

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN OPERATIONS RESEARCH

from the

NAVAL POSTGRADUATE SCHOOL
March 1973

Thesis
A8715
c.

Library
Naval Postgraduate School
Monterey, California 93940

ABSTRACT

This report contains a cost analysis of two alternative methods of centralizing the preparation of school lunches in the Monterey Peninsula Unified School District. The first alternative proposed that the school lunch be centrally prepared and packaged prior to delivery to satellite schools. The second alternative called for centralized preparation of only the portion of the meal normally served cold (i.e., bread, salad, and dessert).

Cost streams for building and equipment investment and cost streams for various operating expenses and savings were estimated. Discounting techniques were applied to these cost streams to determine the present worth of the alternative ventures as a function of the planning horizon.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ILLUSTRATIONS

## I. BACKGROUND FOR THESIS RESEARCH

In April 1972, the Superintendent of the Monterey Peninsula Unified School District informally requested that a student in the Operations Research curriculum spend his six week experience tour evaluating the food service program. As a result of this request, the author was given the opportunity to work on a variety of projects for the MPUSD food service division.

The Monterey Peninsula Unified School District serves the communities of Monterey, Seaside, Fort Ord, Marina, Del Rey Oaks, and Sand City, California. It includes 22 elementary schools, five junior high schools, two senior high schools, a continuation high school, and a number of child care centers. The total enrollment is approximately 19,000 students and the annual operating budget is about 19 million dollars.

United States Department of Agriculture, Type A hot lunches are available at all of the schools. An average of 6,200 meals per day are served in the district. About 83 percent of the school lunches are prepared and served at schools with unit kitchens. The remaining 17 percent of the meals are transported in insulated containers from four of the unit kitchen schools to the eight schools lacking unit kitchens. In addition to lunch service, six schools currently operate breakfast programs serving a combined total of about 400 breakfasts per day. The food services of Monterey High School and Seaside High School include a snack bar with à la carte lunch items.

The 22 cafeteria managers report directly to the district food service director who is responsible to the MPUSD business manager. The food service division includes an additional 77 food service employees and relies on other divisions for transportation, warehouse, and clerical services.

During the 1971-1972 school year the food service program had a total income of $756,000. Revenue from sales was $550,000 and the governmental cash subsidies were $206,000. Food purchases required 48 percent of this total income and employee salaries amounted to 46 percent of income.

While the author has training in Navy food service and experience as a ship food service officer, the nature of the work done for MPUSD required a knowledge specific to school food service. In many cases the qualitative nature of the opinions, recommendations, and assumptions was far more important than the quantitative methods of the analysis. Consequently, one of the main objectives of the six week experience tour (May and June 1972) was to become thoroughly familiar with the food service operations of the MPUSD.

During that period, every school cafeteria was visited at least once at lunch time. Food service program, problems and prospects were discussed in interviews with all cafeteria managers, a principal or vice-principal at every elementary and junior high school, and a number of other food service employees and teachers. Student opinion was also solicited during the lunchtime visits and on one occasion in a classroom discussion with a Monte Vista fifth grade class. The food service

director and district bookkeeper provided valuable insight into the system operation during the frequent and oftentimes lengthy consultations.

To broaden this learning base, time was devoted to a survey of school food service literature and visits to other school districts. The school districts visited were Rowland Heights School District, Bonita Unified School District (both near Los Angeles), and the Richmond School District. All three of these districts operate successful central preparation/satellite service food service systems.

At the conclusion of the experience tour a report [Ref. 1] was written. This was submitted to the MPUSD and a presentation was given to the superintendent of schools, the business manager, and the assistant business manager. The report included the following items:

1. A summary of the opinions of the staff, student, and food service employees concerning the food service program.
2. A discussion of the status of school food service legislation in the U.S. Congress.
3. An analysis of the MPUSD food service financial reports and in particular a discussion of the effects of the January 1972 school lunch price increase.
4. A recommendation for a new system of internal and external reporting procedures aimed at increasing inventory and labor hour control.
5. A collection of general management recommendations such as: hiring of an assistant director, reorganizing cash collection procedures, and using standardized recipes.

Since July 1972 two additional studies have been conducted. This thesis is the report of a central food preparation alternatives cost analysis. The second study, Frozen Storage Requirements [Ref. 2], was presented to the MPUSD in September 1972 and is summarized in the material which follows.

An almost essential subsidy in the economic operation of the local school lunch program is the USDA surplus commodity issue. Commodity items are apportioned to California schools approximately four times a school year. Meat items, butter and a few other items are shipped frozen. Since shipments are in rather large quantities, they must be stored frozen until used. At present, MPUSD does not have sufficient freezer storage capacity and must rent space from a local company. Because the rental cost was $3,740 for the 1971-1972 school year, the purchase of a walk-in freezer was under consideration. Rough estimates of the size freezer required had been used to obtain planning bids from two refrigeration equipment dealers. Unfortunately, the retained inventory records did not provide sufficient information for a better estimate of the size freezer required or the utilization that could be expected.

A computer model was constructed treating the proposed freezer as a queue with USDA commodity receipts representing the input and commodity consumption the output. Operations were simulated using several assumptions about commodity consumption. Various queue statistics, including estimates of the maximum and average freezer requirements, were obtained. In addition, the inventory of frozen commodities over a two year period was displayed graphically.

The major conclusions of this study were:

1. A freezer smaller than the one proposed would be adequate.
2. Based on a comparison of the bid estimates and rental costs, a walk-in freezer should be purchased by MPUSD.
3. A cycle menu policy is not the best menu policy to reduce inventory holding costs of commodity items.
4. The commodity butter inventory should be substantially reduced.

Both the Experience Tour Report and the Frozen Storage Requirements report were well received by school district officials. A recent letter from the MPUSD Superintendent of Schools to the Superintendent, Naval Postgraduate School [Ref. 3] complimented the work done thus far by saying in part: "It will be a service to many districts and will result in the savings of many dollars to the tax payers who support the cafeteria program."

## II. BACKGROUND FOR CENTRALIZED FOOD PREPARATION COST ANALYSIS

During the first session of the 92nd Congress, the United States Senate Select Committee on Nutrition and Human Needs conducted extensive hearings related to the national school lunch program. References 4-8 published the record of these hearings and the documents placed in the record by members of the committee. In January 1972 this committee, chaired by Senator George McGovern, prepared a report [Ref. 9] which included a governmental/legislative history of the national school lunch program and a list of select committee recommendations. The recommendations of the committee are divided into two categories: (1) The Immediate Plan and (2) Pilot Programs.

The Immediate Plan consists of 19 recommendations for changes to the national school lunch program as it now exists. Most of the 19 recommendations call for expansion of the program in one form or another. Two of the recommendations which are of particular interest to the MPUSD study are: (1) the elimination of the 25 percent local contribution required for a federal, non-food (i.e., equipment) assistance application, (2) the availability of non-food assistance funds to all schools whether or not they are presently operating food programs.

The pilot programs section of the committee recommendations identified possible solutions to problems of the school lunch program which deserve further study. The pilot programs recommended are as follows: (1) a universal school lunch program which provides a no-cost meal to every student regardless of financial need, (2) innovative food delivery systems, (3) implementation of menus which reflect individual and ethnic

tastes, (4) use of micronutrients, vitamin supplements and other engineered foods, (5) pilot programs to evaluate the latest technological advances in facilities design and food preparation, (6) methods of employing lunchroom volunteers.

The hearings, staff study and recommendations of this Senate Committee are very strong indicators that the national school lunch program will receive increased governmental support in expanding to meet the needs of the nation's school children. In addition, it appears that this expansion will encourage the examination of new food preparation/distribution systems and new concepts such as micronutrients and lunchroom volunteers.

While the Senate Committee was concerned with the school lunch program on the national level, many of the problems which motivated their recommendations can be found in the MPUSD. Of particular importance is financing the program at the local level. A primary objective of the school district's food service program has been to make a quality hot lunch available to every student. Close behind this objective is the goal of operating the program on a self-supporting basis. Receipts from sales and cash subsidies should approximately cover the operating cost of the program. Over the past several years it has become increasingly difficult to meet these somewhat opposing objectives. Rising food and labor expenses have made it necessary to raise prices. This in turn decreased availability to those who find it difficult to afford the meals. State and federal lunch assistance to children from low-income families have minimized the effect for this group. However, for many of those children not qualifying for aid, meal prices have risen

above what parents are able, or willing, to pay for school lunches. This observation is supported by the analysis in Ref. 1 (p. 23) which indicates a decrease of over 10 percent in lunch sales after the last price increase. This decrease in sales further aggravated the problem of breaking even on the school lunch program.

Since increased revenue through higher prices does not appear to be the solution, management continues to look for ways to reduce the expense side of the balance sheet. The figures reported in Ref. 1 (pp. 6-10) indicate there has been a significant increase in both food and labor expense over the past several years. While a good portion of this increase can hopefully be explained by an expansion of the program, it is interesting to note that food expense as a percentage of income has decreased and the labor expense as a percentage of income has increased. In 1961-1962 salaries were 37 percent and food was 57 percent of the total California school food service expenditures [Ref. 10], whereas 1971-1972 salaries accounted for 46 percent and food only 48 percent of the total MPUSD school food service expenditures. These figures have prompted managers to investigate methods of reducing the labor expense of the program.

In testimony before the Select Committee on Nutrition and Human Needs, Dean Rhoads, president of Lincoln Manufacturing Company, discussed applications of food service technology to increase worker productivity [Ref. 7]. Mr. Rhoads argues that the national average of eight school lunches prepared per worker hour can be increased to 30 using various centralized food preparation methods. The food preparation at a number of schools is consolidated. This allows the use of the best cooks and

labor saving devices to produce high quality meals for distribution to satellite schools. The problem, however, is that these systems require a large initial capital expenditure. Mr. Rhoads points out though, that if these expenditures had been made when the technology became available in 1956, the national school lunch program could have produced 300 percent more meals for the same labor dollars.

In early 1972 the Food Service Systems Division of Lincoln Manufacturing Company conducted a survey of the MPUSD food service program. Subsequent to this survey, Lincoln Food Service submitted a proposal for a MPUSD central kitchen/satellite delivery system. This proposal was, admittedly, based on a rough analysis, but the claim of $103,000 annual savings was indeed impressive.

These general trends in school food service and the specific proposal of the Lincoln Company resulted in a management request for help in investigating the application of centralized preparation techniques to the Monterey School District.

While MPUSD uses some central preparation techniques by transporting lunches to schools without kitchens, the existing system consists primarily of unit kitchens at the individual schools. The Lincoln proposal for one central kitchen appeared to be at the opposite end of the operating methods spectrum. Because the Lincoln proposal called for such a drastic change at a substantial initial investment expense, management was interested in examining alternatives in the mid-range.

It is beyond the scope of this report to discuss the wide range of school food service systems. References 10-13 discuss in considerable detail the advantages and disadvantages of the various methods of

operation. The remainder of this report is an evaluation of two central food preparation alternatives for the MPUSD food service program. In addition to the proposal made by the Lincoln Company for a district central kitchen, the mid-range bakery/cold pack central kitchen alternative developed by the author will be discussed.

The evaluation is essentially a cost analysis, which assumes equal effectiveness among the alternatives. In one sense this assumption implies that both central preparation alternatives will produce school lunches of equal or better quality than the existing unit kitchen method of operation. This is by no means a small assumption. Almost everyone connected with school food service interviewed during this study was of the opinion that food prepared in one location and served in another is inferior to lunches prepared in the school kitchen and served in an adjoining lunchroon. There is a genuine concern among food service personnel that food kept hot for long periods or food cooled then reheated tends to lose both flavor and nutritional value. Standardized portions are also considered a major drawback of a pre-packaged lunch; sixth graders eat in the same lunchroom with first graders yet obviously have different food requirements. Food service personnel are also quick to point out problems in administering a distribution system.

In a broader sense though, the effectiveness of the food service system must be related to the objective of making quality meals available to all students. A slight reduction in quality does not necessarily mean a reduction in effectiveness if availability is increased by offering the lunch at a lower price.

In any case the effectiveness of the various alternatives is not addressed in this study. The judgement decision concerning this effectiveness assumption could override the cost considerations of this analysis. The decision maker should keep in mind though, that availability must be considered along with quality. In addition, the success of centralized food preparation techniques in other school districts indicates that the problems with lunch quality can be solved and that convenience foods can be quite acceptable.

## III. CONCEPT OF OPERATIONS

This cost analysis will evaluate two central food preparation alternatives: Lincoln Central Kitchen and Bakery/Cold Pack Kitchen. Before examining the investment and operating expenses of the alternatives, a brief description of the concept of operations will be presented.

### A. LINCOLN CENTRAL KITCHEN

Lincoln's pre-pack, satellite food serving system calls for the construction of a food center building to include administrative, food preparation, meal packaging and storage space. Lincoln drawing PD-018 [Ref. 14] is a floor plan blueprint of the proposed food center. All food service warehousing and food preparation for the MPUSD program would be accomplished at this center. School lunches would be prepared one or more days prior to expected serving. After preparation the food would be portioned and packaged. The cold portion of the meal would be in a disposable, compartmented, clear plastic serving dish along with disposable utensils. The cold portion normally consists of the bread, salad, and dessert items. The hot portion of the meal, entree and vegetable, would be packaged in a disposable, compartmented, aluminum foil pack. After packaging the meals would be chilled in a central kitchen walk-in cooler. On the serving day or the day before serving the pre-packaged meals would be transported to the satellite schools in one of the refrigerated vans. The meals would be stored in satellite school refrigerators until approximately one half hour before serving time. At this time a food service employee would place the hot portions

in food conditioner ovens to return the portion to the proper serving temperature. At serving time, the student would be given a hot and cold portion along with a carton of milk.

B. BAKERY/COLD PACK KITCHEN

The bakery/cold pack concept has been proposed by the author as the alternative which is between the current method of operation and the complete centralization of food preparation. This alternative calls for expanding one existing school kitchen to accomodate a central bakery and a facility for preparing and packaging the cold portion of a school lunch. Highland Elementary School was chosen to illustrate such an expansion. This kitchen was chosen because of its central location, relative newness and the potential for expanding the building containing the kitchen. It should be emphasized, however, that the expansion itself and not the choice of site is the item of major interest to this analysis.

Figure 1 shows the existing Highland School kitchen floor plan. Th expansion, Figure 2, would be accomplished by converting the present food storage area into a passageway and adding 1775 square feet of building area. Major items of new equipment on the floor plan on Figure 2 are identified by numbers which refer to the equipment list discussed later in this report.

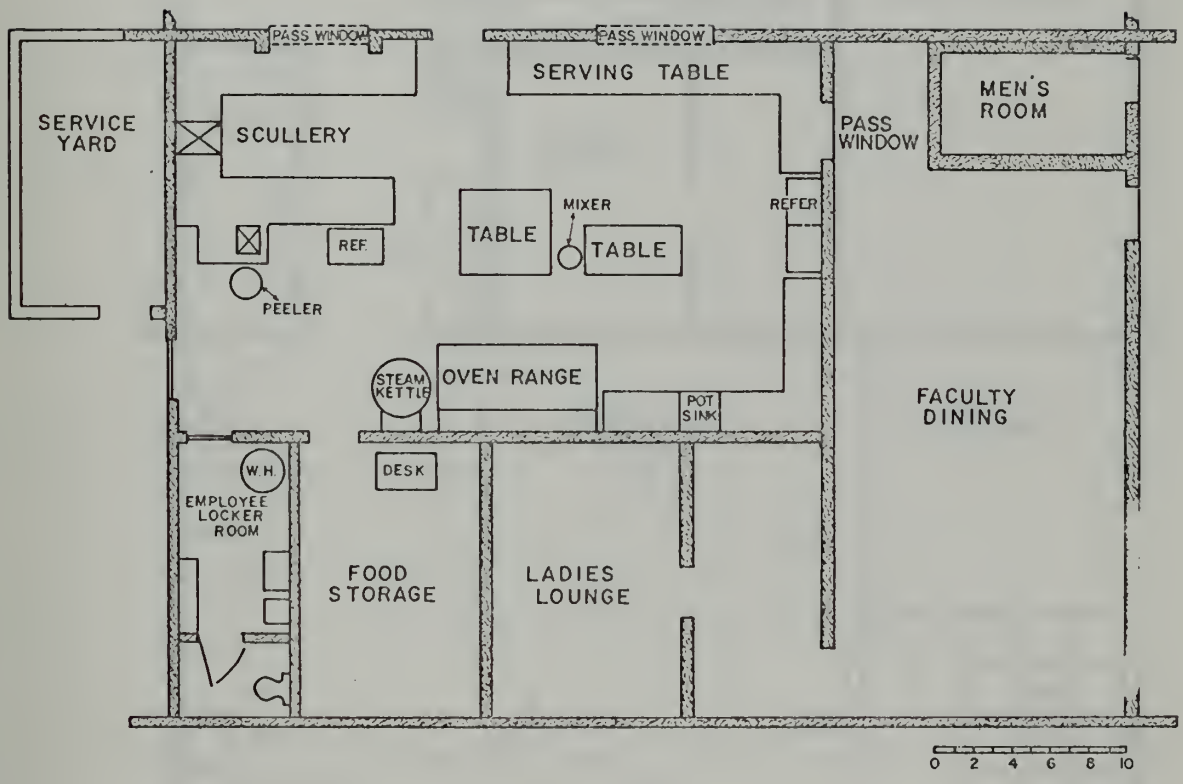



FIGURE 1. HIGHLAND ELEMENTARY SCHOOL KITCHEN

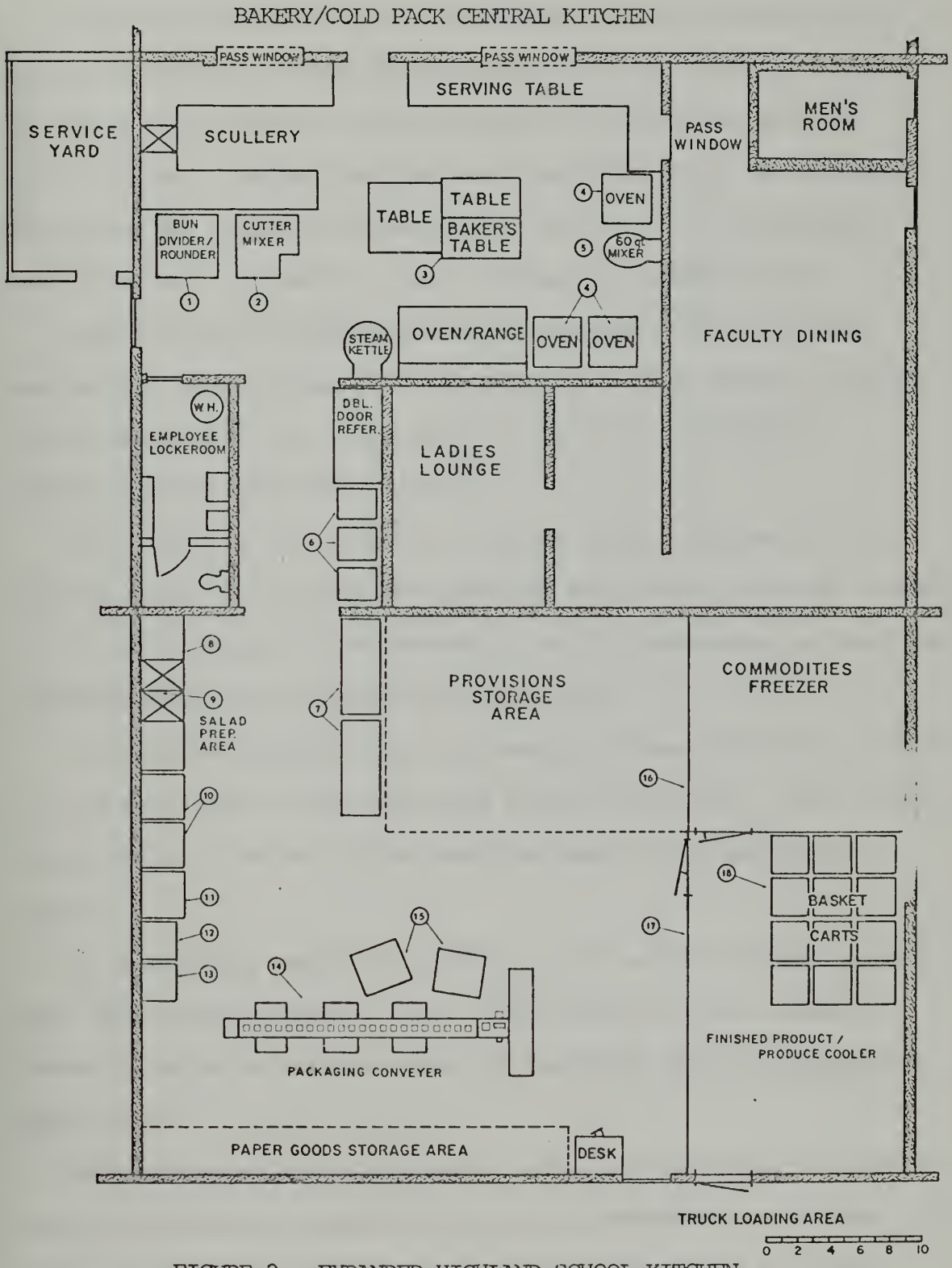



FIGURE 2. EXPANDED HIGHLAND SCHOOL KITCHEN

This bakery/cold pack kitchen would prepare and package the cold portion of the school lunch the day before serving. After packaging, the cold portion would be stored overnight in the central kitchen walk-in cooler. The cold portions would be delivered on the morning of the serving day in one of three delivery trucks. The cold portions would be stored in satellite school refrigerators until served.

The hot portion of the meal would be prepared at the satellite schools with unit kitchens. In most cases this would require one food service employee for the preparation, assisted by one additional employee to serve the school lunches.

The hot portion of the meal for schools without kitchens would be prepared in the same kitchen now preparing that schools pack-out lunches. The hot portion would be transported at serving temperature in insulated containers as close to serving time as possible.

It is also anticipated that this central kitchen would prepare items for à la carte sale in the junior and senior high schools. Baked goods such as rolls, cakes and cookies would be prepared and packaged for resale.

The bakery/cold pack central kitchen also includes freezer space to store UDSA frozen commodity items. The inclusion of this commodity freezer is supported by the results of the Frozen Storage Requirements Study [Ref. 2].

While not specifically addressed in this cost analysis, the bakery/cold pack kitchen has potential for use as a manufacturing kitchen. This involves using labor saving devices to partially prepare food items

before delivery to satellite schools. For example, hamburger could be made into patties using a patty machine prior to distribution.

C. DUAL USE BAKERY/COLD PACK KITCHEN

At the request of MPUSD management an alternative location for the bakery/cold pack kitchen will be evaluated. This request was motivated by the possibility of expanding the Canyon Del Rey Education Center (vehicle maintenance and warehouse facilities) to include a new district administration building. A cost estimate of the investment expense of a kitchen facility to serve district employees would be relevant to the management choice between employee food service operated by MPUSD or catered vending machine employee food service.

This hypothetical, education center kitchen would have a dual use as the bakery/cold pack kitchen. The primary reason for including this dual-use kitchen in the analysis is to recognize that one building program vice two might be advisable, provided MPUSD decides to include an employee food service kitchen in a new administration building.

Only investment cost estimates have been made for this latter alternative. The space and equipment requirements of the employee portion of this new facility were assumed to be similar to an existing elementary school kitchen. Consequently, the employee kitchen was converted to its dual use in the same manner as the proposed Highland kitchen expansion for the bakery/cold pack.

## IV. INVESTMENT EXPENSE

The California School Building Aid Law of 1952 authorizes a loan-grant form of aid for school district construction projects. One of the qualifications for state aid is a cost estimate certified by a licensed architect or engineer. The format specified in Ref. 15 for this cost estimate divides the total project cost into the following categories: site, plans, construction, tests, inspection, furniture/equipment, and contingencies. The cost analysis of this report considered only the construction and equipment categories. It was assumed that MPUSD owns a building site suitable for each of the alternatives considered. The remaining expense categories were assumed to be small in comparison to the categories considered.

### A. CONSTRUCTION

The State School Building Aid Law requires that facilities constructed by districts using this aid may not exceed the quality typical of districts not receiving aid. The Applicant Handbook [Ref. 15] contain cost standards for school construction set by the State Allocation Board to insure compliance with this requirement. These cost standards for various types of floor space are in cost per square foot format. There is an adjustment for the higher cost of small buildings and an adjustment for geographical location. A periodically updated construction price index is also provided. These standards were used to estimate the construction cost of the alternatives of this analysis. The estimates could be somewhat high in the sense that the standards are the maximum allowable

construction costs for state aid. Nevertheless, the estimates were considered realistic due to the fact that a number of relatively minor construction costs such as utility services and site development were not considered.

TABLE I

CONSTRUCTION COST ESTIMATES

BASE COST

| TYPE SPACE | SQUARE FEET | COST FACTOR (A1605)[1] | BASE COST |
|---|---|---|---|
| LINCOLN | | | |
| Administrative | 666 | 24.70 | 16,450.20 |
| Kitchen | 4,192 | 38.80 | 162,649.60 |
| Storage | 1,030 | 18.60 | 19,158.00 |
| SUB TOTAL | 5,888 | | $198,257.80 |
| BAKERY/COLD PACK | | | |
| Kitchen | 1,775 | 38.80 | $68,870.00 |
| DUAL USE KITCHEN[2] | | | |
| Kitchen (Employee) | 692 | 38.80 | 26,849.60 |
| Storage (Employee) | 243 | 18.60 | 4,519.80 |
| Kitchen (Expansion) | 1,775 | 38.80 | 68,870.00 |
| SUB TOTAL | 2,710 | | $100,239.40 |

ADJUSTMENTS

| BASE COST | GEOGRAPHIC (A1609) | SMALL BUILDING (A1607) | PRICE INDEX (A1608) | TOTAL CONSTRUCTION COST |
|---|---|---|---|---|
| LINCOLN | | | | |
| $198,257.80 | 1.05 | 1.08 | 1.14 | $256,300 |
| BAKERY/COLD PACK | | | | |
| $68,870.00 | 1.05 | 1.13 | 1.14 | $ 93,154 |
| DUAL USE KITCHEN | | | | |
| $100,239.40 | 1.05 | not applicable | 1.14 | $119,987 |

[1]This is the Ref. 15 paragraph which contains the factor.

[2]The Highland Elementary School kitchen was used to estimate the required floor space for the employee portion of the dual use bakery/cold pack kitchen.

B. EQUIPMENT

The other major category of investment expense for the central kitchen alternatives considered in this analysis was food preparation, service and delivery equipment.

1. Lincoln Central Kitchen

Appendix A is a summary of the equipment requirements listed in Ref. 14. It represents what the research department of an equipment manufacturing firm considers necessary to implement Lincoln's Pre-Pack Satellite Food Serving System. This requirements list is considerably more than the actual minimum requirement to implement a pre-package meal system. For example, it includes $70,918 (21 percent of total) for various serving table components which would not be essential to the system.

The cost prices shown in Appendix A are dealer list prices. MPUSD could expect to reduce these estimated prices through a bid or bargaining process. However, these price reductions would be absorbed to a great extent by shipping and installation charges.

The total dealer list cost of $340,622 has been used as the equipment investment expense estimate for the Lincoln Central Kitchen alternative.

2. Bakery/Cold Pack

Appendix B is a list of the equipment required to expand the Highland Elementary School Kitchen into the bakery/cold pack central kitchen proposed by the author. The equipment costs quoted were obtained from the Lincoln proposal [Ref. 14], or from other food service equipment

dealers. The total dealer list cost of $86,380 has been used as the equipment investment expense estimate for the bakery/cold pack alternative.

3. Dual Use Bakery/Cold Pack Kitchen

Appendix C lists the equipment requirements for this alternative in three classifications. The first classification, basic kitchen items, is a summary of the items purchased for the Crumpton Elementary School kitchen. This kitchen, built in 1967, was the last new kitchen outfitted by MPUSD. The second classification lists additional items required to support the employee food service function. The costs of an education center lunchroom and lunchroom furniture were not included. The third classification is the bakery/cold pack requirement which is identical to Appendix B.

The household furnishings and operation, consumer price index for July 1972 was used to update the 1967 prices for the first classification of equipment. While this index does not apply exactly to the category of item being considered, the total equipment cost estimate for this alternative is insensitive to errors resulting from its application. Dealer list prices were used for the other classifications.

The equipment investment expense used for this alternative was:

| | |
|---|---|
| Crumpton Cost X Consumer Price Index = | |
| $13,943 X 1.211 = | $16,885 |
| Additional Items for Employee Food Service = | 2,637 |
| Bakery Cold Pack Addition | 86,380 |
| | $105,902 |

## V. OPERATING EXPENSE

In addition to the one-time investment expense discussed above in Section IV, the recurring/operating expenses of the alternatives are pertinent to this analysis. In fact, the potential for a net savings in operating costs is the major justification for considering these central, food preparation alternatives.

### A. TRANSPORTATION

Transportation expense estimates were computed using the following formula:

$$\text{TOTAL ANNUAL EXPENSE} = 180 \times N \times R,$$

where 180 = the number of school days per year,

N = the number of miles required to transit the proposed route two times, once for delivery and once for basket pick-up, and

R = the operating expense rate. This rate was derived from the 1971-1972 MPUSD Transportation Department School Bus Expense Report. It takes into consideration maintenance employee expenses, gas, oil, parts, vehicle insurance and a $.05 per mile amortization allowance. The driver associated employee expense is not included in this rate. Data for the 12 passenger Econoline busses was used to derive the rate for a small delivery truck and the data for the larger school busses was used to derive a rate for the Lincoln alternative, refrigerated van.

The locations of the various schools and their approximate meals per day requirement were used to determine the proposed route for the two plans. Transit times and mileage were estimated by driving over the proposed routes. The truck utilization times listed below represent the

driving time for two transits plus ten minutes per delivery stop and five minutes per pick-up stop.

In order to estimate the added transportation expense associated with the central food preparation alternatives, the transportation expense of the existing food service program was estimated. The pack-out meal routes shown are typical of those currently used to deliver meals to schools without unit kitchens. In addition, food service supplies are delivered to the schools approximately once every five school days.

TABLE II

LINCOLN CENTRAL KITCHEN TRANSPORTATION

| Truck Number | Proposed Route | Utilization (Hours:Min) | Miles/Day |
|---|---|---|---|
| 1 | Foothill, La Mesa, Monterey High, Colton, Monte Vista, Larkin, Monterey Child Care, Bay View, Hilltop, Del Monte, Covell, King, Manzanita, Highland, Noche Buena, Del Rey Woods, Fremont | 7:25 | 58.6 |
| 2 | Cabrillo, Ord Terrace, Seaside High, Hayes, Fitch, Marshall, Stilwell, Patton, Los Arboles, Marina Vista, Crumpton, Olson, Marina Del Mar | 6:11 | 58.8 |
| | | | 117.4 |

TOTAL ANNUAL OPERATING EXPENSE = 180 X N X R

= 180 days/year X 117.4 miles/day X .435 $/mile

= $9,192.42/year

TABLE III

BAKERY/COLD PACK TRANSPORTATION

| Truck Number | Proposed Route | Utilization (Hours:Min) | Miles/Day |
|---|---|---|---|
| 1 | La Mesa, Monterey High, Colton, Monte Vista, Covell, Del Rey Woods, Foothill, Hilltop, Bay View, Monterey Child Care, Larkin, Del Monte | 6:34 | 75.2 |
| 2 | King, Manzanita, Noche Buena, Fremont, Cabrillo, Ord Terrace, Seaside High, Hayes | 3:18 | 21.4 |
| 3 | Fitch, Marshall, Stilwell, Patton, Crumpton, Marina Vista, Los Arboles, Olson, Marina Del Mar | 4:21 | 46.8 |
| | | | 143.4 |

TOTAL ANNUAL OPERATING EXPENSE = 180 X N X R

= 180 days/year X 143.4 miles/day X .366 $/mile

= $9,447.19/year

TABLE IV

CURRENT MPUSD FOOD SERVICE PROGRAM TRANSPORTATION

| Truck Number | Route (Pack-Out Meals) | Utilization (Hours:Min) | Miles/Day |
|---|---|---|---|
| 1 | King, Manzanita, Cabrillo | 1:27 | 15.0 |
| 2 | Covell, Del Rey Woods, Foothill, Hilltop, Bay View, Larkin, Del Monte | 3:51 | 50.8 |
| 3 | Crumpton, Los Arboles | :34 | 1.8 |
| | | | 67.6 |

ANNUAL OPERATING EXPENSE (PACK-OUT) = 180 X N X R

= 180 days/year X 67.6 miles/day X .366 $/mile

= $4,453.49

ANNUAL OPERATING EXPENSE (SUPPLIES DELIVERY)

$= \frac{180}{5}$ deliveries/year X 55.2 miles/delivery X .366 $/mile

= $727.32

TOTAL ANNUAL OPERATING EXPENSE = $5,180.81

B. UTILITIES

The estimated increase in the MPUSD natural gas and electric bill associated with the central food preparation alternatives was based on the following assumptions:

1. The gas and electric expense at the satellite schools would not significantly decrease.

2. The convection ovens and the refrigeration plant account for the major portion of the central kitchen gas and electric expense.

3. The Highland Elementary School gas rates of 6.8¢/therm for natural gas and 1.5¢/kilowatt hour would apply.

4. The convection ovens would be in use six hours per day, 180 school days per year.

5. The Lincoln central kitchen refrigeration plant would require a compressor unit with a ten horsepower per hour rated input and the bakery/cold pack kitchen refrigeration plant would require a compressor unit with a five horsepower per hour rated input.[1]

6. The refrigeration compressors would operate 18 hours per day 300 days per school year.

TABLE V

ESTIMATED ANNUAL UTILITIES EXPENSE INCREASE

| | Lincoln Central Kitchen | Bakery/Cold Pack Kitchen |
|---|---|---|
| Natural Gas | $629.00 | $629.00 |
| Electricity | 810.00 | 405.00 |
| | $1,439.00 | $1,034.00 |

C. PACKAGING

The cost of packaging materials is an added expense of both central food preparation alternatives. The following are the MPUSD contract prices for school lunch packaging materials:

[1]Mr. Allan Seefeldt, a Pacific Gas and Electric Company utilities engineer, provided these rough estimates based on the cubic feet of the refrigeration space.

| | |
|---|---|
| Aluminum Foil Tray | $.021 |
| Foil Top | .005 |
| Plastic Tray | .014 |
| Plastic Top | .001 |
| SPORK Pack | .011 |
| Portion Cup | .001 |

During the 1971-1972 school year 1,121,412 school lunches were served. Of this number, 188,244 were served at schools now receiving pack-out lunches. Consequently, the estimated increase in packaging materials associated with the central food preparation alternatives would be the difference of 933,168 packages per year.

The Lincoln central kitchen alternative would require one each of the packaging materials per meal. The increase in the annual packaging expense would be $49,457.90, (933,168 meals X .053 $/meal = $49,457.90). The Lincoln proposal [Ref. 14] estimated a $ .005/meal savings in packaging material expense due to volume purchasing. This would reduce the estimated increase in packaging expense by $5,607.06, (1,121,412 meals X .005 $/meal) to $43,850.84. In addition, the Lincoln proposal estimated a .01 $/meal savings resulting from the use of disposable service because of a reduction in the cleaning supplies requirement and the dinnerware loss/breakage expense. This savings would reduce the estimated cost increase of converting to disposable service by $9,331.68, (933,168 meals X .01), to $34,519.16.

The Bakery/Cold Pack alternative would require a plastic tray, top and portion cup for each meal at a cost of .016 $/meal. The increased packaging materials expense used in this analysis was $14,930.69, (933,168 meals X .016 $/meal).

D. COMMODITIES STORAGE

Both central food preparation alternatives include storage facilities for USDA frozen commodities. The Frozen Storage Requirements study [Ref. 2] identified both the financial benefits and associated benefits, such as convenience and additional uses, of a MPUSD walk-in freezer. The rent currently paid for frozen food locker storage could be saved if MPUSD had the proper storage facilities. The 1971-1972 rent total of $3,740 was used to estimate the annual frozen commodity storage savings.

E. FOOD

The Lincoln proposal [Ref. 14] stated that 1.4¢ per meal could be saved on food costs due to centralized volume preparation. Volume price discounts, better inventory control, less overpreparation and better employee supervision would contribute to this suggested savings. Based on the Lincoln Food Service factor of 1.4¢ per meal and the total meals served in 1971-1972 (1,121,412), the estimated annual food cost savings was $15,700.

The savings factor of 1.4¢ per meal was not applied to the bakery/cold pack alternative. The food cost savings for this proposal result from centralizing and expanding the bakery operations of the MPUSD food service program. While the non-financial benefits of a district bakery, operated by baking specialists using up-to-date equipment, are certainly of interest to the decision maker, they were not considered in this cost analysis. What was considered is a cost analysis of the choice between buying commercially prepared bread items, and preparing these items by district food service personnel.

Flour, shortening and non-fat dry milk, three of the main bread ingredients, are available to the food service program at a nominal cost from the USDA surplus commodity issue. Appendix D is a tabulation of an estimate of the cost of ingredients needed to prepare the bread items purchased in the 1971-1972 school year from local bakeries. The $17,507 worth of purchased bread items could have been prepared with $1,599 worth of ingredients at USDA commodity prices or $5,714 worth of ingredients at non-commodity prices.

The food cost savings for the bakery/cold pack alternative was estimated to be $7,954 per year. This estimate is one half the difference between the 1971-1972 purchase cost and the commodity ingredient cost. The assumption was made that sufficient commodity issues and employee labor hours would be available to prepare 50 percent of the anticipated bread item purchases.

F. EMPLOYEES

Employee related expenses account for a major portion of school food service operating expenses. This major category of operating expense is, of course, the target area for central food preparation cost reductions. The approach used to estimate these cost reductions was to estimate the total employee related expense associated with the current method of operation for comparison with similar estimates for the two central food preparation alternatives. A comparison with an estimate approach was used instead of a comparison with previously incurred and reported employee related expense figures for the following reasons.

The MPUSD expense for food service employee health benefits, social security, public employee retirement, unemployment compensation, and workman's compensation are not charged to the food service program or included in the food service program or included in the food service financial report. The total MPUSD payments for these expense categories are reported as aggregates in the school district's annual budget/ financial report. Estimating the food service program share of these aggregates was not considered practical.

The use of the current method cost estimate as a base case to define relevant employee related expenses was the second reason for this approach. The assumptions concerning the number of required employees and employee hours per day for the central food preparation alternatives can easily be compared to this base case.

1. Employees Considered

Only the MPUSD personnel directly connected with the food service program were considered in the employee related expense estimates. The district food service director, district bookkeeper, and the cafeteria managers, cooks and student help at the 22 kitchens constitute the major portion of this direct labor. The portion of MPUSD school clerk, warehouse and delivery personnel wages charged to the food service program was also considered a direct labor expense. While these direct employee expenses constitute the major portion of the food service employee related costs, the estimates of this analysis do not reflect the entire program, employee cost. The employee costs associated with the following classes of indirect support were not considered:

a. Administrative. In addition to the general direction provided by district administrators such as the Superintendent of Schools and the Business Manager, the school principals devote a portion of their time to the food service program administration. In particular, school principals must be concerned with such things as applications for free or reduced price meals and general lunchroom supervision.

b. Teachers and Teacher Aides. Part of the burden of ticket distribution and lunch counts and all of the burden of the lunchroom supervision falls on this class of personnel.

c. Maintenance. The services provided by the school maintenance man and the district maintenance staff are expenses associated with the food service program.

d. Data Processing. Food service program financial reports and inventory records require data processing assistance.

e. Personnel Administration and Payroll. Food service employees contribute to the total of this MPUSD overhead expense.

f. Purchasing. Food vendor contracts and all purchase orders for food and supplies are prepared by the MPUSD purchasing department.

g. Accounting. The services of the accounting department are required for the preparation of financial reports and the payment of dealer bills.

The implementation of the California Department of Education Planning, Programming and Budgeting System may eventually require a recognition of the food service program share of these MPUSD expenses.

However, the changes proposed by the central food preparation alternatives would have little effect on these indirect expenses. Consequently, they are not considered relevant to this cost analysis.

2. Current Unit Kitchen System

Appendix E contains a breakdown of the various MPUSD expenses which can be associated with individual employees. Appendix F is a wage and hour schedule of direct food service personnel. The information contained in Appendices E and F was used to compute the employee related cost estimates shown in Appendix I for the current method of operation. The following assumptions were made in these computations:

a. The 1971-1972 food service employee hour and wage schedule was the source of the kitchen employee hours and rates shown in Appendix E. It was assumed that the employees would work the exact number of hours per day shown in Appendix F for a ten month, 180 school day year.

b. Since an hour and wage schedule was not available for the school clerks, hostesses at schools receiving pack-out lunches, warehousemen, delivery men, summer school employees, and student snack bar employees, the aggregate figures reported for the 1971-1972 school year were used as estimates for these categories. Social security, workman's compensation and unemployment compensation were computed for these aggregates.

c. The cost of the meals given to students during the 1971-1972 school year in payment for noon hour work was used in the total employee related expense calculation.

d. The food service director and district bookkeeper work through the summer. The MPUSD Budget [Ref. 17] was the source for the annual salary.

e. The equivalent of one day's pay per month per employee would be held in reserve to cover substitute wages for employees absent because of sickness.

3. Lincoln Central Kitchen System

For the most part, the assumptions and estimating procedures discussed in paragraph 2, above, apply to the estimates for the Lincoln Central Kitchen alternative. As shown in Appendix I, three sets of estimates were made for this alternative. The first is an amplification of the labor cost analysis presented by the Lincoln Food Service Company [Ref. 14] and the other two are modifications which examine the sensitivity of cost estimates to the major assumptions.

a. Basic Plan

The first set of hour and wage estimates shown in Appendix G are identical to those used in the Lincoln proposal for the central kitchen and satellite school employees.

The Lincoln proposal did not consider the school clerk expenses or the hostesses currently employed at the schools without unit kitchens. To compensate for this deletion the assumption was made that the satellite hostesses would perform part of the clerical duties and an additional district bookkeeper would be required for counting and depositing daily cash collections. This assumption is related to the plan for daily reports and cash collection recommended in the Experience

Tour Report [Ref. 1]. The wage rate for this 12 month employee, Cafeteria Clerk II, was obtained from the 1972-1973 MPUSD Budget [Ref. 17] wage scales, range 16C.

A district assistant food service director was also added to the employee requirements of the Lincoln Proposal. Again this is related to a recommendation made in the Experience Tour Report [Ref. 1] that an assistant director be hired. The assistant director wage rate was also obtained from the MPUSD wage scales, Food Service Director, range 44A. Three week vacations were assumed for the bookkeeper and assistant director.

b. Wage Rate Modification

The basic plan assumes that employees will be paid at the wage rate the job requires. This may not be the case, however, since a reduction in work force from the current method to the Lincoln alternative would result in the less longevity, lower paid employees being laid off first. The MPUSD employees with the most job seniority would probably be offered the Lincoln alternative jobs. To examine the consequences of this effect, the Lincoln alternative jobs were assigned to MPUSD cafeteria employees based on length of service. The basic plan estimates were then recomputed at these higher wage rates. As shown in Appendix I, this modification reduced the estimated annual savings by $26,583.

c. Number of Employees Modification

One of the critical assumptions of this cost analysis is that the proposed number of employees and employee hours will be sufficient to prepare and serve quality meals in MPUSD schools. Even though

the employee requirements estimates are based on the experience of a reputable food service equipment manufacturer, there is some uncertainty involved. This is particularly true at the high schools, where the most drastic employee labor hour cuts occur. In fact, it is doubtful that the high schools would ever completely convert to a satellite operation. This opinion is supported by the observation that: (1) the MPUSD high schools currently operate at a relatively good profit margin, (2) roughly half the meal sales are "snack bar," à la carte, and (3) pre-packaged meals are less acceptable among older students.

The third column of the Appendix G wage and hour schedule was used to estimate the employee related expense of the Lincoln Central Kitchen plan excluding the two high schools. As shown in Appendix I, this modification reduced the estimated annual savings by $47,476 or approximately 30 percent.

4. Bakery/Cold Pack System

Aside from the hour and wage schedules, the assumptions and estimating procedures discussed in paragraph 2 for the current method of operation, apply to the bakery/cold pack alternative. As shown in Appendix I, three sets of estimates were made for this alternative. The first is the labor cost analysis of the basic plan and the others are modifications which examine the sensitivity of the cost estimates to the major assumptions.

a. Basic Plan

The employee hour figures shown in the first column of Appendix H represent what the author considers sufficient to staff the MPUSD food service program using the previously discussed bakery/cold pack

concept of operations. The assumption has been made that an assistant food service director and an additional district bookkeeper would be required. The pack-out meal hostesses for schools without unit kitchens are included under the school preparing the hot packs. The assumption was made that all clerical duties would be assumed by school food service personnel or the district bookkeeper. This assumption is related to the Experience Tour Report [Ref. 1] recommendation for such a reorganization. The wage rates shown in the first column of Appendix H were determined as follows:

1. The director, district bookkeeper, cafeteria managers, and retained high school employees were costed at the wage rates they are currently paid.
2. The MPUSD Budget [Ref. 17] wage scales were used for: Assistant Director @ Food Service Director Range 44A, Assistant Bookkeeper @ Cafeteria Clerk II Range 16C, Drivers @ Deliveryman Range 23C.
3. The cafeteria worker II rate of $2.74 per hour is the average over all elementary and junior high kitchens of the highest paid worker under the manager.
4. The cafeteria worker I rate of $2.44 per hour is the average of all the remaining junior high and elementary school kitchen employees.
5. The bakery/cold pack kitchen leading baker, leading packer, and salad preparation cook rate of $3.24 per hour is the average of all cafeteria manager wage rates.

b. Wage Rate Modification

Disregarding the fact that the reduction in school clerk hours would eliminate some jobs, the bakery/cold pack plan does not involve a drastic food service personnel reduction. The current method of operation requires 98 employees at the school kitchens; the bakery/cold pack plan requires 84 employees at the central kitchen and school kitchens. For this reason one would not expect the same inflated wage rate effect observed in the Lincoln plan reduction in force. This expectation was verified by recomputing the bakery/cold pack employee cost estimates using the current wage rates of the long term employees vice the averages discussed above. The figures shown in Appendix I indicate a reduction in estimated annual savings of only $1,538 for this modification.

c. Number of Employees Modification

The employee cost savings of the bakery/cold pack plan are the result of a reduction in the number of labor hours required to prepare and serve school lunches to MPUSD schools. A reduction in labor hours is in effect the same as a reduction in the number of employees required and again there is some degree of uncertainty concerning the sufficiency of the proposed number of employees. The sensitivity of the cost estimates to the required number of employees was examined by recomputing the cost estimates with an additional two hour per day cafeteria worker I at all elementary and junior high kitchens. The modified hour and wage schedule, Appendix H column three, was used to estimate the employee related costs shown in Appendix I. This

modification results in a reduction of $21,344, about 28 percent, in the estimated annual savings.

Although the estimated annual savings of this alternative is significantly reduced by this modification, one of the benefits of this alternative is the potential for using student help and volunteer mothers in the food service program. While at least one employee per school would be required for cash collections, students and volunteers could be utilized to distribute cold packs and serve hot portions on the cafeteria serving line.

## VI. TIME-COST CONSIDERATIONS

The preceding two sections have dealt with estimates of the total investment expense and estimates of annual savings. While these estimates are certainly relevant, the decision maker must also consider the cost aspects of implementing the alternatives being discussed. This section will illustrate a method that could be used to examine the costs associated with implementing and operating the proposed systems over a period of time.

Appendices J and K are outlines of hypothetical implementation schemes for the Lincoln Central Kitchen plan and the Bakery/Cold Pack plan. May 1, 1973, is the decision point from which all future costs will be considered. Each school year has been divided into two six month semesters: August through January and February through July.

These implementation schemes were used to estimate the investment cost streams shown in Appendix L and the operating savings streams shown in Appendix M. The Appendix M cost figures, enclosed in parenthesis, represent expense increases (i.e., negative savings); the remaining figures in Appendix M are savings estimates. The fully implemented savings per year and the total investment figures are shown in these appendices to summarize estimates previously discussed. All other figures correspond to the semester shown at the left of the table. The costs for semesters after the eighth are identical to those shown for the eighth.

With the exception of the amortization allowance of five cents a mile for the vehicles, no provision has been made in this analysis for

depreciation. There is an implied assumption that building maintenance and equipment replacement expense will not exceed the expenses incurred in the current method of operation. This assumption along with all of the cost estimates is subject to increased uncertainty as the time horizon is extended.

Just how far in the future managers want to consider in developing a decision criteria is not an easy decision. In this analysis the problem will be avoided somewhat by considering a number of possible horizons out to 20 years.

A relatively standard criteria for evaluating a cost stream of investment or savings is to discount the cost stream. A treatment of discounting theory and its application to government projects is contained in Chapter 8 of Ref. 18 and Chapter 5 of Ref. 19. The theory is based on the concept that control over funds now is of more value than control over funds at some future time. The discount rate is a percentage measure of "how much more valuable." For example, if the discount rate is 10 percent per year, then 91 cents today is better than 91 cents a year from now since 91 cents invested at a 10 percent rate of return will be worth one dollar a year from now. Consequently, one dollar a year from now is discounted to a 91 cent value today.

The formula used to compute the present value of the cost streams was:

$$PV = \sum_{s=1}^{H} \frac{A_s}{(1+r)^{s/2}}$$

where PV is the present value of investment or savings at the May 1, 1973 decision point,

s is the index representing the semester,

$A_s$ is the amount of investment or savings for semester s (assumed to occur at the semester mid point),

r is the annual discount rate compounded once a year,

H is the horizon,

and $\sum$ indicates that the PV is the summation of all the discounted savings or investments up to the horizon, H.

The appropriate discount rate to use in the above formula depends primarily on "how much more valuable" the decision maker considers current funds over future funds. Reference 18, pages 227-228, cites six studies which represent the range of opinion in the literature concerning the discount rate to use in government planning. The rates quoted range from 3 to 15 percent. For purposes of illustration a 10 percent discount rate was used in this analysis.

Appendix N contains plots of the present value of investment (I) a i present value of the savings (S) as a function of the horizon (H). Th cumulative discounted investment (I) increases until building construc ion and equipment purchases are completed. It then remains constant. The cumulative discounted savings (S) is negative for the first few semesters. Once implementation commences, the S curve increases. After full implementation the S curve increases at a decreasing rate since the discount effect reduces the incremental savings as the horizon is extended. The present value of future savings (S) is greater than the present value of investment only if the horizon is greater than the intersection of the $PV_S$ and $PV_I$ curves.

A logical criteria for evaluating a venture involving an investment and savings stream is to compare the present value of investment with the present value of savings. If the present value of savings is sufficiently greater than the present value of investment at the appropriate discount rate then the venture has merit. Using this criteria, Present Worth = (Present Value of Savings Stream) - (Present Value of Investment Stream), is the decision variable. Figure 3 is a plot of the PW as a function of horizon for each of the two plans. Note that PW is negative up to the intersection point of the $PV_S$ and $PV_I$ curves shown in Appendix N.

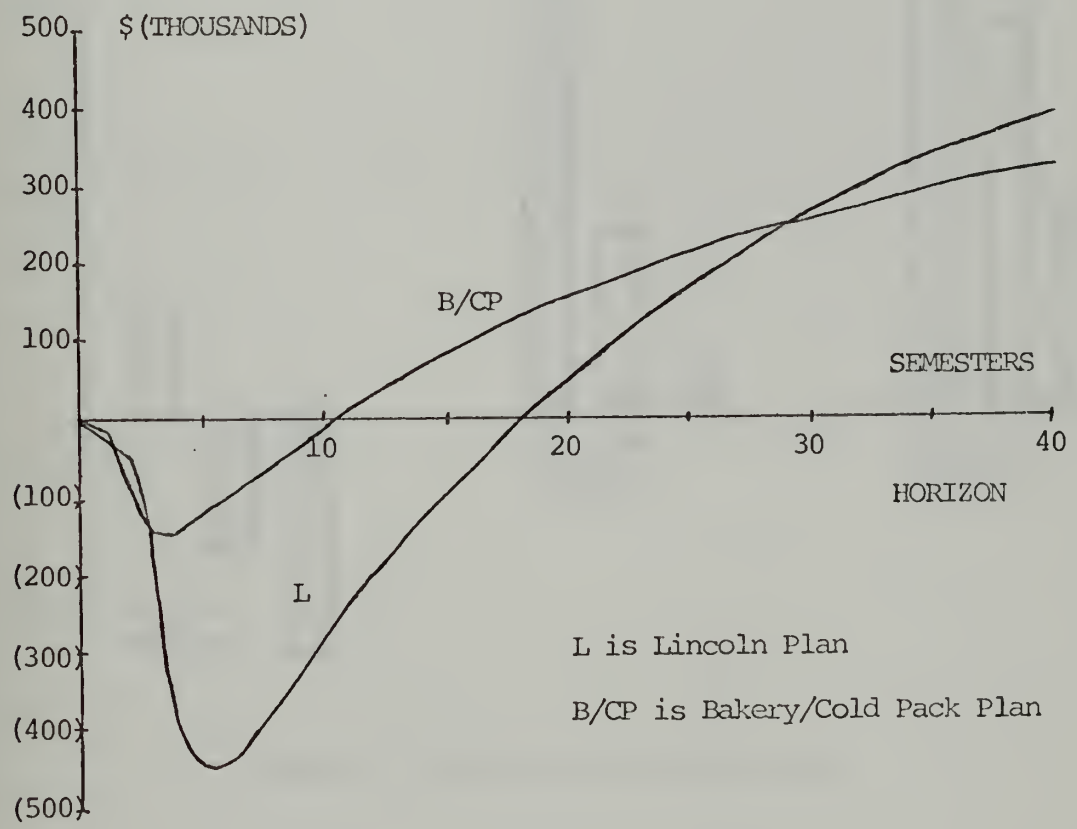



FIGURE 3. PRESENT WORTH PLOTS

Appendix O contains present value curves for the modified Lincoln plans. The first set (I) uses the employee cost estimates at the higher wage rates and the second set (II) uses the employee cost estimates which exclude the high schools. Figure 4 shows how the PW of these modified plans compare with the base (B) plan for the Lincoln alternative.

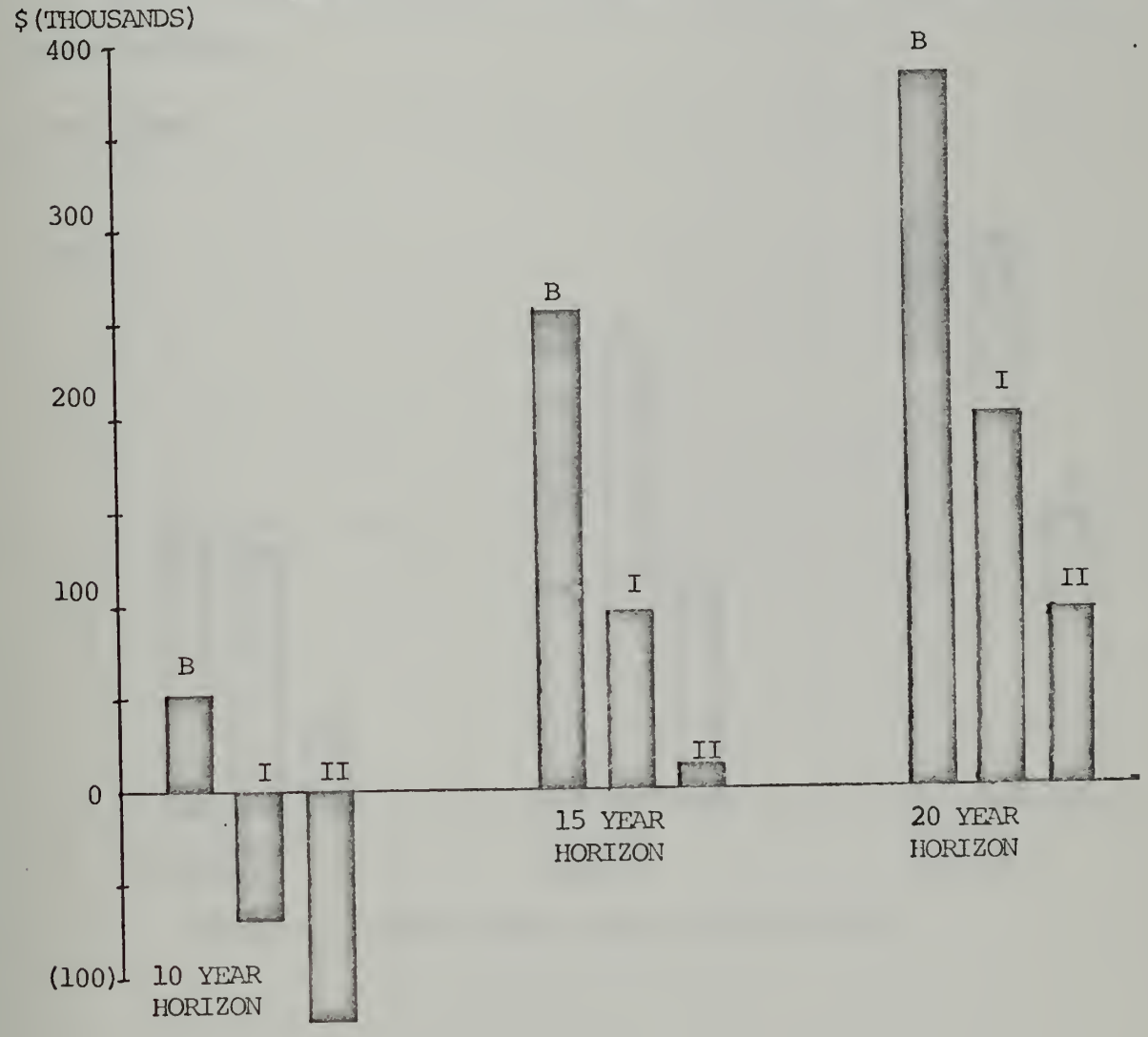



FIGURE 4. PRESENT WORTH LINCOLN PLAN

Appendix P contains present value curves for the modified bakery/cold pack plans. The first set (I) uses the employee cost estimates at the higher wage rates and the second set (II) uses the employee cost estimates with the additional employees. Figure 5 shows how the PW of these modified plans compare with the base (B) plan for the bakery/cold pack alternative.

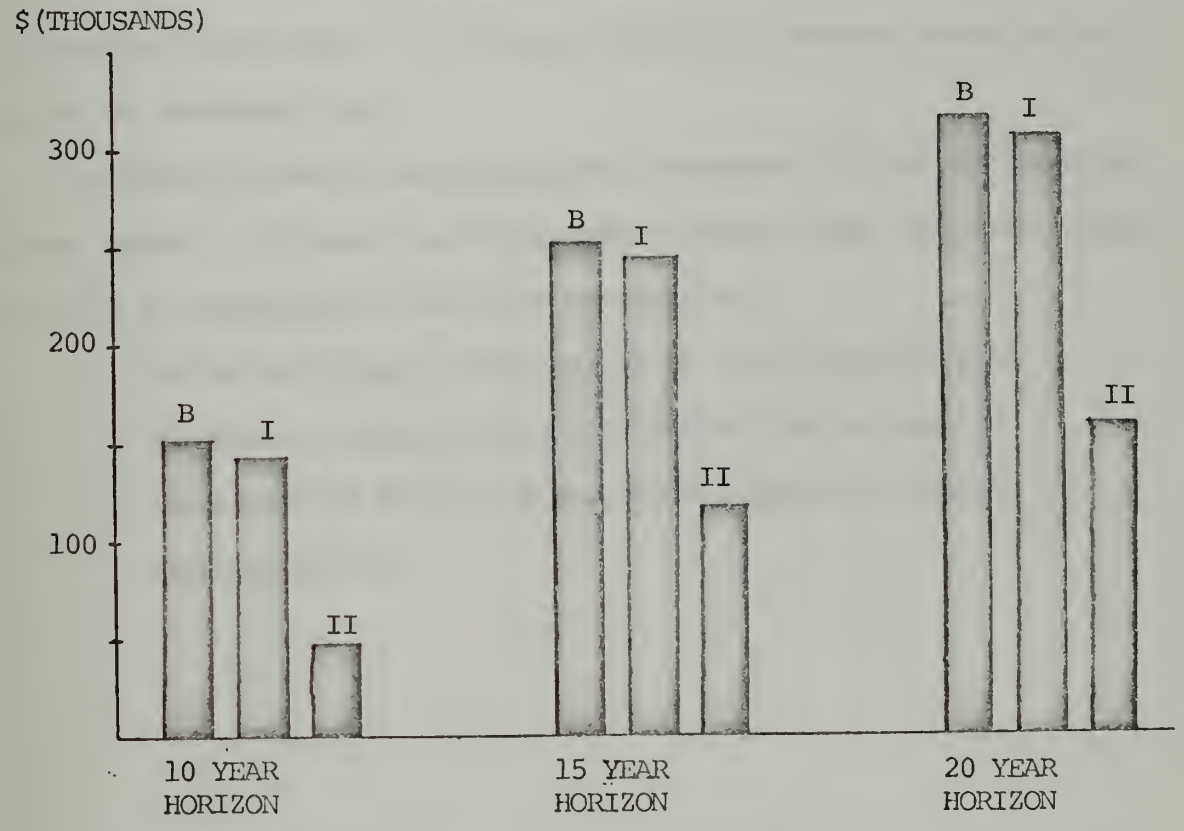



FIGURE 5. PRESENT WORTH BAKERY/COLD PACK PLAN

## VII. CONCLUSION

The purpose of this analysis was to consider the cost aspects and contribute information to a MPUSD decision concerning the implementation of two central food preparation/distribution system alternatives. No attempt has been made to come to a specific conclusion or recommendation. A general conclusion is that both alternatives have potential for a considerable cost savings. The Lincoln plan has a greater potential at the price of a greater risk.

Hopefully, some of the uncertainty connected with the decision has been reduced. It should be emphasized, however, that this cost analysis sits on a foundation of two major assumptions:

1. The effectiveness (availability of quality meals) will increase or remain the same if either plan is adopted.
2. The estimated employee hours are sufficient to support the first assumption.

APPENDIX A

LINCOLN CENTRAL KITCHEN EQUIPMENT LIST

| ITEM | DESCRIPTION | QUANTITY | COST |
|---|---|---|---|
| 1. | SCALES | 3 | $ 1,731 |
| 2. | SANITIZER | 1 | 722 |
| 3. | SINKS | 6 | 4,740 |
| 4. | DISPOSAL | 1 | 1,340 |
| 5. | 20 QT. MIXER | 1 | 785 |
| 6. | 60 QT. MIXER WITH STAND | 1 | 2,116 |
| 7. | COOK TOP RANGE | 1 | 387 |
| 8. | SLICER WITH STAND | 1 | 937 |
| 9. | AUTOMATIC COOKIE CUTTER | 1 | 2,250 |
| 10. | TWO 20 QT. TRUNION KETTLES ON TABLE | 1 | 1,900 |
| 11. | VERTICLE CUTTER/MIXER | 1 | 5,750 |
| 12. | PROOFING CABINET | 3 | 1,32( |
| 13. | CAN OPENER TABLE WITH OPENERS | 1 | 1,83: |
| 14. | PORTABLE SHELVING, DOLLIES, HAND TRUCKS, AND RACKS | | 7,095 |
| 15. | CAN CRUSHER | 1 | 900 |
| 16. | 60 GALLON KETTLE | 4 | 4,800 |
| 17. | GROEN GALLON MASTER | 2 | 990 |
| 18. | DOUBLE CONVECTION OVENS | 4 | 8,000 |
| 19. | WORK TABLES | 9 | 11,534 |
| 20. | BREAD BUTTERING MACHINE | 1 | 1,820 |
| 21. | AUTOMATIC FOIL HOODING MACHINE | 1 | 24,900 |
| 22. | AUTOMATIC PACKAGING CONVEYOR | 1 | 19,900 |

APPENDIX A (CONTINUED)

| ITEM | DESCRIPTION | QUANTITY | COST |
|---|---|---|---|
| 23. | REFRIGERATION EQUIPMENT | | 35,778 |
| 24. | PANS | | 2,922.88 |
| 25. | REFRIGERATED TRUCKS | 2 | 22,600 |
| 26. | BASKETS | | 19,995 |
| 27. | DOLLIES | | 18,858 |
| 28. | FOOD CONDITIONER | 28 | 49,000 |
| 29. | COLD PADS | 108 | 3,780 |
| 30. | INSULATED BLANKETS | 27 | 621 |
| 31. | SERVING TABLE COMPONENTS | 30 | 70,918 |
| | | SUB TOTAL | $330,221.88 |
| 32. | OVEN HOODING | | 10,400 |
| | | TOTAL | $340,621.88 |

APPENDIX B

BAKERY/COLD PACK CENTRAL KITCHEN EQUIPMENT LIST

| ITEM | DESCRIPTION | QUANTITY | COST |
|---|---|---|---|
| 1. | AUTOMATIC BUN DIVIDER | 1 | $ 2,000 |
| 2. | VERTICLE CUTTER/MIXER | 1 | 5,750 |
| 3. | BAKER'S TABLE | 1 | 400 |
| 4. | DOUBLE STACK CONVECTION OVENS | 3 | 6,000 |
| 5. | 60 QT. MIXER | 1 | 1,925 |
| 6. | PROOFING CABINET | 3 | 1,320 |
| 7. | PORTABLE BAKERY COOLING RACKS | 2 | 600 |
| 8. | TWO COMPARTMENT SINK | 1 | 640 |
| 9. | DISPOSAL 5 HP | 1 | 1,340 |
| 10. | VEGETABLE CUTTER AND VEGETABLE PEELER (RELOCATED FROM OTHER MPUSD SCHOOLS) | | |
| 11. | PORTABLE AUTOMATIC COOKIE CUTTER | 1 | 2,250 |
| 12. | PORTABLE BREAD SLICER | 1 | 900 |
| 13. | PORTABLE BUN SLICER | 1 | 275 |
| 14. | AUTOMATIC PACKAGING CONVEYOR | 1 | 19,900 |
| 15. | PORTABLE SHELVING | 2 | 378 |
| 16. | FROZEN COMMODITY FREEZER (160 SQ.FT.) | 1 | 8,231 |
| 17. | FINISHED PRODUCT/PRODUCE COOLER (240 SQ.FT.) | 1 | 11,382 |
| 18. | BASKET DOLLIES | 12 | 1,176 |
| 19. | BASKETS | 541 | 2,353 |
| 20. | INSULATED BLANKETS | 12 | 276 |
| 21. | BAKER'S SCALE | 1 | 278 |

APPENDIX B (CONTINUED)

| ITEM | DESCRIPTION | QUANTITY | COST |
|---|---|---|---|
| 22. | BAKING PANS | 192 | 843 |
| 23. | UTILITY PANS | 20 | 325 |
| 24. | BREAD PANS (FOUR LOAF) | 75 | 637.50 |
| 25. | OVEN HOODING | | 5,200 |
| 26. | DELIVERY TRUCKS | 3 | 12,000 |
| | | TOTAL | $86,379.50 |

APPENDIX C

DUAL USE BAKERY/COLD PACK CENTRAL KITCHEN EQUIPMENT LIST

| ITEM DESCRIPTION | COST |
|---|---|
| ELECTRIC RANGE | $ 494.60 |
| ELECTRIC OVENS | 748.00 |
| GAS OVEN | 678.45 |
| REACH-IN REFRIGERATOR | 1,775.00 |
| STEAM JACKETED KETTLE | 1,890.00 |
| MIXER | 1,195.00 |
| POTATO PEELER | 300.00 |
| CUTTER WITH STAND | 723.50 |
| MILK COOLER | 939.00 |
| COOK'S TABLE | 427.00 |
| SALAD TABLE | 265.00 |
| BAKER'S TABLE | 314.00 |
| DISHWASHER WITH RINSE INJECTOR | 1,994.11 |
| RACKS, CARTS, AND BINS | 434.84 |
| PANS | 420.39 |
| MIXING BOWLS | 26.66 |
| DINNERWARE, FLATWARE, AND TRAYS | 1,005.21 |
| MISCELLANEOUS KITCHEN UTENSILS | 312.53 |
| SUB TOTAL FOR BASIC KITCHEN ITEMS | $13,943.29 |

APPENDIX C (CONTINUED)

| ITEM DESCRIPTION | COST |
|---|---|
| SERVING TABLE | $ 1,399.00 |
| DISH DISPENSER | 653.00 |
| TRAY AND SILVERWARE UNIT | 375.00 |
| CASH REGISTER WITH TABLE | 210.00 |
| SUB TOTAL FOR ADDITIONAL ITEMS REQUIRED FOR EMPLOYEE FOOD SERVICE | $ 2,637.00 |
| BAKERY/COLD PACK ADDITION | $86,379.50 |

APPENDIX D

ESTIMATED COST OF BREAD ITEM INGREDIENTS

Non-commodity prices for flour, shortening, and non-fat dry milk are Federal Stock Number prices. All other prices are MPUSD contract prices.

Ingredient quantities are U. S. Navy standard 100-portion recipe requirements.

WHITE BREAD: 1 BATCH = 8 LOAVES OR 100 ROLLS
FRENCH BREAD: 1 BATCH = 12 LOAVES OR 100 GRINDERS

1971-72 PURCHASES

| | | |
|---|---|---|
| WHITE BREAD: | 21,973 LOAVES @ .29 $/LOAF = | $ 6,372.17 |
| HAMBURGER & HOT DOG ROLLS | 23,387 DOZEN @ .36 $/DOZ. = | 8,419.32 |
| FRENCH BREAD | 7,002 LOAVES @ .34 $/LOAF = | 2,380.68 |
| GRINDER ROLLS | 684 DOZEN @ .49 $/DOZ. = | 335.16 |
| | TOTAL | $17,507.33 |

WHITE BREAD INGREDIENT COST

NUMBER OF BATCHES = 5,554 =

(21,973 LOAVES ÷ 8 LOAVES/BATCH) + (23,387 DOZ. x 12 ÷ 100/BATCH)

| INGREDIENT | NUMBER BATCHES | POUNDS/ BATCH | PRICE/ POUND | ITEM COST |
|---|---|---|---|---|
| FLOUR | 5,554 | 7.750 | .015 | $ 645.65 |
| SHORTENING | 5,554 | .375 | .020 | 41.66 |
| NON-FAT DRY MILK | 5,554 | .500 | .014 | 38.88 |
| YEAST | 5,554 | .078 | .900 | 389.89 |
| SUGAR | 5,554 | .375 | .130 | 270.76 |
| SALT | 5,554 | .188 | .040 | 41.77 |
| | | | TOTAL | $1,428.61 |

FRENCH BREAD INGREDIENT COST

NUMBER OF BATCHES = 667 =

(7,002 LOAVES ÷ 12 LOAVES/BATCH) + (684 DOZ. x 12 ÷ 100/BATCH)

| INGREDIENT | NUMBER BATCHES | POUNDS/ BATCH | PRICE/ POUND | ITEM COST |
|---|---|---|---|---|
| FLOUR | 667 | 9.000 | .015 | $ 90.05 |
| SHORTENING | 667 | .188 | .020 | 2.51 |
| YEAST | 667 | .094 | .900 | 56.43 |
| SUGAR | 667 | .188 | .130 | 16.30 |
| SALT | 667 | .188 | .040 | 5.02 |
| | | | TOTAL | $170.31 |

TOTAL INGREDIENT COST FOR BREAD ITEMS = $1,598.92

INGREDIENT COSTS AT NON-COMMODITY PRICES

Substitute item costs at non-commodity prices into above tables.

| COMMODITY INGREDIENT | NUMBER BATCHES | POUNDS/ BATCH | PRICE/ POUND | ITEM COST |
|---|---|---|---|---|
| FLOUR | | | | |
| WHITE BREAD | 5,554 | 7.750 | .09 | $3,873.92 |
| FRENCH BREAD | 667 | 9.000 | .09 | 540.27 |
| SHORTENING | | | | |
| WHITE BREAD | 5,554 | .375 | .22 | 458.21 |
| FRENCH BREAD | 667 | .188 | .22 | 27.59 |
| NON-FAT DRY MILK | | | | |
| WHITE BREAD | 5,554 | .014 | .43 | 33.44 |

TOTAL INGREDIENT COST FOR BREAD ITEMS

AT NON-COMMODITY PRICES = $5,713.60

APPENDIX E

ADDITIONAL EMPLOYEE EXPENSES

ALL EMPLOYEES

SICK LEAVE: ONE DAY PER MONTH

VACATION: ONE YEAR SERVICE -- TWO WEEKS PER YEAR
OVER ONE UNDER TEN YEARS -- THREE WEEKS
TEN OR MORE YEARS SERVICE -- FOUR WEEKS

SOCIAL SECURITY: 5.6% OF WAGES

WORKMAN'S COMPENSATION: $.42 FOR EACH $100 OF WAGES

UNEMPLOYMENT COMPENSATION: 1% OF WAGES

EMPLOYEES WORKING FOUR OR MORE HOURS PER DAY

| | | |
|---|---|---|
| HEALTH: | MEDICAL PLAN | $21.25 |
| | DENTAL PLAN | 6.44 |
| | VISION PLAN | 4.50 |
| | PRESCRIPTIONS | 3.00 |
| | | $35.19 PER MONTH |

PUBLIC EMPLOYEE RETIREMENT SYSTEM (PERS): 7.26% of WAGES

APPENDIX F

1972-73 MPUSD HOUR AND WAGE SCHEDULE

| SCHOOL<br>JOB TITLE | HOURS PER DAY / WAGE RATE / WEEKS VACATION |
|---|---|
| COVELL | |
| CAFE MGR I | 7/3.21/4 |
| CAFE WKR II | 6/2.92/4 |
| CAFE WKR II | 5½/2.72/3 |
| CAFE WKR II | 4/2.47/3 |
| CRUMPTON | |
| CAFE MGR I | 7½/3.16/3 |
| CAFE WKR II | 6/2.60/3 |
| CAFE WKR II | 5/2.72/3 |
| CAFE WKR I | 4/2.14/2 |
| DEL REY WOODS | |
| CAFE MGR I | 7/3.16/3 |
| CAFE WKR II | 6½/2.92/4 |
| CAFE WKR II | 5½/2.92/4 |
| CAFE WKR I | 4½/2.24/3 |
| CAFE WKR I | 3/2.14/2 |
| HAYES | |
| CAFE MGR I | 6/3.24/4 |
| CAFE WKR II | 5/2.60/3 |
| CAFE WKR I | 2/2.24/3 |
| HIGHLAND | |
| CAFE MGR I | 7/3.16/3 |
| CAFE WKR II | 5/2.36/3 |
| CAFE WKR II | 4/2.47/3 |
| CAFE WKR I | 3/2.14/2 |
| LA MESA | |
| CAFE MGR I | 6/3.21/4 |
| CAFE WKR II | 5½/2.72/3 |
| CAFE WKR I | 3/2.14/2 |
| MARINA DEL MAR | |
| CAFE MGR I | 6½/3.01/3 |
| CAFE WKR II | 5/2.47/3 |
| CAFE WKR I | 3/2.14/2 |
| MARINA VISTA | |
| CAFE MGR I | 5½/3.01/3 |
| CAFE WKR II | 5/2.86/4 |
| CAFE WKR II | 3½/2.86/3 |
| CAFE WKR I | 2/2.60/3 |

APPENDIX F (CONTINUED)

| SCHOOL<br>JOB TITLE | HOURS PER DAY / WAGE RATE / WEEKS VACATION |
|---|---|
| MARSHALL | |
| CAFE MGR I | 6/3.21/4 |
| CAFE WKR II | 5½/2.86/3 |
| CAFE WKR I | 3½/2.14/2 |
| MONTE VISTA | |
| CAFE MGR I | 5½/3.01/3 |
| CAFE WKR II | 4½/2.92/4 |
| CAFE WKR I | 3/2.36/3 |
| NOCHE BUENA | |
| CAFE MGR I | 7/3.21/4 |
| CAFE WKR II | 5/2.60/3 |
| CAFE WKR II | 5/2.60/3 |
| CAFE WKR I | 4/2.36/3 |
| OLSON | |
| CAFE MGR I | 6/3.21/4 |
| CAFE WKR II | 5/2.47/3 |
| CAFE WKR I | 2/2.24/3 |
| ORD TERRACE | |
| CAFE MGR I | 7/3.16/3 |
| CAFE WKR II | 6/2.86/3 |
| CAFE WKR II | 5/2.47/3 |
| CAFE WKR I | 3/2.60/3 |
| CAFE WKR I | 2/2.47/3 |
| PATTON | |
| CAFE MGR I | 6/3.16/3 |
| CAFE WKR II | 5/2.72/3 |
| CAFE WKR I | 3/2.24/3 |
| STILWELL | |
| CAFE MGR I | 6/2.86/3 |
| CAFE WKR II | 4/2.86/3 |
| CAFE WKR I | 3/2.14/2 |
| CAFE WKR I | 2/2.14/2 |
| MONTEREY CHILDREN CENTER | |
| CAFE MGR I | 6½/3.16/3 |
| COLTON JR. HIGH | |
| CAFE MGR II | 6½/3.45/4 |
| CAFE WKR II | 5½/2.86/3 |
| CAFE WKR II | 4½/2.60/3 |
| CAFE WKR I | 3½/2.60/3 |
| CAFE WKR I | 2/2.66/4 |

APPENDIX F (CONTINUED)

| SCHOOL<br>JOB TITLE | HOURS PER DAY / WAGE RATE / WEEKS VACATION |
|---|---|
| **FITCH JR. HIGH** | |
| CAFE MGR II | 7/3.40/3 |
| CAFE WKR II | 5½/2.60/3 |
| CAFE WKR I | 4/2.47/3 |
| CAFE WKR I | 3/2.47/3 |
| CAFE WKR I | 2/2.14/2 |
| **FREMONT JR. HIGH** | |
| CAFE MGR II | 6/3.48/4 |
| CAFE WKR II | 5/2.91/4 |
| CAFE WKR II | 4/2.72/3 |
| CAFE WKR I | 3/2.60/3 |
| **KING JR. HIGH** | |
| CAFE MGR II | 7/3.40/3 |
| CAFE WKR II | 6½/2.86/3 |
| CAFE WKR II | 6½/2.86/3 |
| CAFE WKR II | 6/2.60/3 |
| CAFE WKR I | 3½/2.36/3 |
| CAFE WKR I | 3½/2.36/3 |
| **MONTEREY HIGH SCHOOL** | |
| CAFE MGR III | 7/3.53/4 |
| CAFE WKR II | 6/2.86/3 |
| CAFE WKR II | 5½/2.86/3 |
| CAFE WKR II | 5½/2.86/3 |
| CAFE WKR II | 5½/2.86/3 |
| CAFE WKR I | 4/2.60/3 |
| CAFE WKR I | 4/2.24/3 |
| CAFE WKR I | 3/2.60/3 |
| CAFE WKR I | 3/2.60/3 |
| CAFE WKR I | 3/2.14/2 |
| CAFE CLK II | 5/2.53/3 |
| **SEASIDE HIGH SCHOOL** | |
| CAFE MGR III | 6/3.80/4 |
| CAFE WKR II | 6/2.60/3 |
| CAFE WKR II | 5½/2.47/3 |
| CAFE WKR II | 5/2.86/3 |
| CAFE WKR II | 4/2.60/3 |
| CAFE WKR I | 3½/2.24/3 |
| CAFE WKR I | 2½/2.24/3 |
| CAFE WKR I | 2½/2.24/3 |
| CAFE WKR I | 2½/2.47/3 |
| CAFE WKR I | 2½/2.60/3 |
| CAFE CLK II | 4½/2.99/4 |

APPENDIX F (CONTINUED)

| OTHER EMPLOYEES | ANNUAL WAGES |
|---|---|
| DIRECTOR | $12,144.00 |
| DISTRICT BOOKKEEPER | 7,836.00 |

(1971-72 EXPENDITURES)

| | |
|---|---|
| TOTAL CLERICAL | 28,016.40 |
| TOTAL WAREHOUSE/DELIVERY | 9,557.80 |
| TOTAL SNACK BAR WAGES | 1,131.70 |
| STUDENT MEALS | 7,071.70 |

PACK-OUT ARRANGEMENTS

LOS ARBOLES FROM CRUMPTON
LARKIN, DEL MONTE, AND FOOTHILL FROM DEL REY WOODS
BAY VIEW AND HILLTOP FROM COVELL
CABRILLO AND MANZANITA FROM KING

APPENDIX G

LINCOLN CENTRAL KITCHEN PLAN HOUR AND WAGE SCHEDULE

| SCHOOL<br>JOB TITLE | HOURS PER DAY / WAGE RATE / WEEKS VACATION<br>LINCOLN | MODIFICATION I | MODIFICATION II |
|---|---|---|---|
| BAY VIEW<br>HOSTESS | 2/2.51/3 | 2/2.86/3 | 2/2.51/3 |
| CABRILLO<br>HOSTESS | 2/2.51/3 | 2/2.60/3 | 2/2.51/3 |
| COVELL<br>HOSTESS | 2/2.51/3 | 2/3.01/3 | 2/2.51/3 |
| CRUMPTON<br>HOSTESS | 2/2.51/3 | 2/3.01/3 | 2/2.51/3 |
| DEL MONTE<br>HOSTESS | 2/2.51/3 | 2/2.60/3 | 2/2.51/3 |
| DEL REY WOODS<br>HOSTESS | 2/2.51/3 | 2/2.72/3 | 2/2.51/3 |
| FOOTHILL<br>HOSTESS | 2/2.51/3 | 2/2.60/3 | 2/2.51/3 |
| HAYES<br>HOSTESS | 2/2.51/3 | 2/2.72/3 | 2/2.51/3 |
| HIGHLAND<br>HOSTESS | 2/2.51/3 | 2/2.60/3 | 2/2.51/3 |
| HILLTOP<br>HOSTESS | 2/2.51/3 | 2/2.72/3 | 2/2.51/3 |
| LA MESA<br>HOSTESS | 2/2.51/3 | 2/2.86/3 | 2/2.51/3 |
| LARKIN<br>HOSTESS | 2/2.51/3 | 2/2.72/3 | 2/2.51/3 |
| MANZANITA<br>HOSTESS | 2/2.51/3 | 2/2.60/3 | 2/2.51/3 |
| MARINA DEL MAR<br>HOSTESS | 2/2.51/3 | 2/2.60/3 | 2/2.51/3 |

APPENDIX G (CONTINUED)

| SCHOOL<br>JOB TITLE | HOURS PER DAY / WAGE RATE / WEEKS VACATION<br>LINCOLN | MODIFICATION I | MODIFICATION II |
|---|---|---|---|
| MARINA VISTA | | | |
| HOSTESS | 2/2.51/3 | 2/2.60/3 | 2/2.51/3 |
| MARSHALL | | | |
| HOSTESS | 2/2.51/3 | 2/2.72/3 | 2/2.51/3 |
| MONTE VISTA | | | |
| HOSTESS | 2/2.51/3 | 2/2.60/3 | 2/2.51/3 |
| NOCHE BUENA | | | |
| HOSTESS | 2/2.51/3 | 2/2.60/3 | 2/2.51/3 |
| OLSON | | | |
| HOSTESS | 2/2.51/3 | 2/2.60/3 | 2/2.51/3 |
| ORD TERRACE | | | |
| HOSTESS | 2/2.51/3 | 2/2.60/3 | 2/2.51/3 |
| PATTON | | | |
| HOSTESS | 2/2.51/3 | 2/2.60/3 | 2/2.51/3 |
| STILWELL | | | |
| HOSTESS | 2/2.51/3 | 2/2.47/3 | 2/2.51/3 |
| COLTON JR. HIGH | | | |
| CASHIER | 3/2.51/3 | 3/2.86/3 | 3/2.51/3 |
| CASHIER | 3/2.51/3 | 3/3.16/3 | 3/2.51/3 |
| FITCH JR. HIGH | | | |
| CASHIER | 3/2.51/3 | 3/2.86/3 | 3/2.51/3 |
| CASHIER | 3/2.51/3 | 3/2.86/3 | 3/2.51/3 |
| FREMONT JR. HIGH | | | |
| CASHIER | 3/2.51/3 | 3/3.16/3 | 3/2.51/3 |
| CASHIER | 3/2.51/3 | 3/3.16/3 | 3/2.51/3 |
| KING JR. HIGH | | | |
| CASHIER | 3/2.51/3 | 3/3.16/3 | 3/2.51/3 |
| CASHIER | 3/2.51/3 | 3/2.86/3 | 3/2.51/3 |
| LOS ARBOLES JR. HIGH | | | |
| CASHIER | 3/2.51/3 | 3/2.86/3 | 3/2.51/3 |
| CASHIER | 3/2.51/3 | 3/2.86/3 | 3/2.51/3 |
| MONTEREY CHILDREN CENTER | | | |
| CAFE MGR I | 6½/3.16/3 | 6½/3.16/3 | 6½/3.16/3 |

APPENDIX G (CONTINUED)

| SCHOOL<br>JOB TITLE | HOURS PER DAY / WAGE RATE / WEEKS VACATION<br>LINCOLN | <br>MODIFICATION I | <br>MODIFICATION II |
|---|---|---|---|
| MONTEREY HIGH | | | |
| CASHIER | 3/2.51/3 | 3/2.86/3 | |
| CASHIER | 3/2.51/3 | 3/3.16/3 | |
| CAFE MGR III | | | 7/3.53/4 |
| CAFE WKR II | | | 6/2.86/3 |
| CAFE WKR II | | | 5½/2.86/3 |
| CAFE WKR II | | | 5½/2.86/3 |
| CAFE WKR II | | | 5½/2.86/3 |
| CAFE WKR I | | | 4/2.60/3 |
| CAFE WKR I | | | 4/2.24/3 |
| CAFE WKR I | | | 3/2.60/3 |
| CAFE WKR I | | | 3/2.60/3 |
| CAFE WKR I | | | 3/2.14/2 |
| CAFE CLK II | | | 5/2.53/3 |
| SEASIDE HIGH | | | |
| CASHIER | 2½/2.51/3 | 2½/2.86/3 | |
| CASHIER | 2½/2.51/3 | 2½/2.86/3 | |
| CASHIER | 2½/2.51/3 | 2½/3.40/3 | |
| CASHIER | 2½/2.51/3 | 2½/3.01/3 | |
| CAFE MGR III | | | 6/3.80/4 |
| CAFE WKR II | | | 6/2.60/3 |
| CAFE WKR II | | | 5½/2.47/3 |
| CAFE WKR II | | | 5/2.86/3 |
| CAFE WKR II | | | 4/2.60/3 |
| CAFE WKR I | | | 3½/2.24/3 |
| CAFE WKR I | | | 2½/2.24/3 |
| CAFE WKR I | | | 2½/2.24/3 |
| CAFE WKR I | | | 2½/2.47/3 |
| CAFE WKR I | | | 2½/2.60/3 |
| CAFE CLK II | | | 4½/2.99/4 |

APPENDIX G (CONTINUED)

| SCHOOL<br>JOB TITLE | HOURS PER DAY / WAGE RATE / WEEKS VACATION<br>LINCOLN | <br>MODIFICATION I | <br>MODIFICATION II |
|---|---|---|---|
| CENTRAL KITCHEN | | | |
| CAFE MGR III | 8/3.54/3 | 8/3.80/4 | 8/3.54/3 |
| CAFE WKR II | 8/2.77/3 | 8/3.48/4 | 8/2.77/3 |
| CAFE WKR II | 8/2.77/3 | 8/3.24/4 | 8/2.77/3 |
| CAFE WKR II | 8/2.77/3 | 8/2.91/4 | 8/2.77/3 |
| CAFE WKR II | 8/2.77/3 | 8/2.92/4 | 8/2.77/3 |
| CAFE WKR II | 8/2.77/3 | 8/3.45/4 | 8/2.77/3 |
| CAFE WKR II | 8/2.77/3 | 8/3.21/4 | |
| CAFE WKR I | 7/2.51/3 | 7/3.21/4 | 7/2.51/3 |
| CAFE WKR I | 7/2.51/3 | 7/3.53/4 | 7/2.51/3 |
| CAFE WKR I | 7/2.51/3 | 7/3.21/4 | 7/2.51/3 |
| CAFE WKR I | 7/2.51/3 | 7/3.21/4 | 7/2.51/3 |
| CAFE WKR I | 7/2.51/3 | 7/2.60/4 | 7/2.51/3 |
| CAFE WKR I | 7/2.51/3 | 7/2.92/4 | |
| CAFE CLK II | 8/2.51/3 | 8/2.99/4 | 8/2.51/3 |
| PACKER | 6½/2.51/3 | 6½/3.21/4 | 6½/2.51/3 |
| PACKER | 6½/2.51/3 | 6½/2.92/4 | 6½/2.51/3 |
| PACKER | 6½/2.51/3 | 6½/2.66/4 | 6½/2.51/3 |
| PACKER | 6½/2.51/3 | 6½/2.92/4 | 6½/2.51/3 |
| PACKER | 6½/2.51/3 | 6½/2.86/4 | 6½/2.51/3 |
| PACKER | 6½/2.51/3 | 6½/3.40/3 | 6½/2.51/3 |
| PACKER | 6½/2.51/3 | 6½/2.86/3 | 6½/2.51/3 |
| PACKER | 6½/2.51/3 | 6½/2.86/3 | 6½/2.51/3 |
| DRIVER | 8/3.37/3 | 8/3.37/3 | 8/3.37/3 |
| DRIVER | 8/3.37/3 | 8/3.37/3 | 8/3.37/3 |
| DRIVER HELPER | 8/2.77/3 | 8/2.77/3 | 8/2.77/3 |
| DRIVER HELPER | 8/2.77/3 | 8/2.77/3 | 8/2.77/3 |

| OTHER EMPLOYEES | ANNUAL WAGES |
|---|---|
| DIRECTOR | $12,144.00 |
| ASSISTANT DIRECTOR | 9,984.00 |
| DISTRICT BOOKKEEPER | 7,836.00 |
| ASSISTANT BOOKKEEPER | 5,556.00 |
| (1971-72 EXPENDITURES) | |
| TOTAL SNACK BAR WAGES | 1,131.70 |
| STUDENT MEALS | 7,071.70 |

APPENDIX H

BAKERY/COLD PACK HOUR AND WAGE SCHEDULE

| SCHOOL<br>JOB TITLE | HOURS PER DAY / WAGE RATE / WEEKS VACATION<br>MODIFICATION<br>I | <br>MODIFICATION<br>II |
|---|---|---|
| COVELL | | |
| CAFE MGR I | 7/3.21/4 | 7/3.21/4 |
| CAFE WKR II | 4/2.74/4 | 4/2.86/4 |
| CAFE WKR I | | 2/2.44/3 |
| HOSTESS | 1½/2.44/3 | 1½/2.36/3 |
| HOSTESS | 1½/2.44/3 | 1½/2.60/3 |
| CRUMPTON | | |
| CAFE MGR I | 7/3.16/3 | 7/3.16/3 |
| CAFE WKR II | 4/2.74/4 | 4/2.86/3 |
| CAFE WKR I | | 2/2.44/3 |
| HOSTESS | 1½/2.44/3 | 1½/2.60/3 |
| DEL REY WOODS | | |
| CAFE MGR I | 6/3.16/3 | 6/3.16/3 |
| CAFE WKR II | 4/2.74/4 | 4/2.86/3 |
| CAFE WKR I | | 2/2.44/3 |
| HOSTESS | 1½/2.44/3 | 1½/2.47/3 |
| HOSTESS | 1½/2.44/3 | 1½/2.47/3 |
| DEL MONTE | | |
| CAFE MGR I | 6/3.16/3 | 6/2.92/4 |
| CAFE WKR I | 2/2.44/3 | 2/2.72/3 |
| CAFE WKR I | | 2/2.44/3 |
| HAYES | | |
| CAFE MGR I | 6/3.24/4 | 6/3.24/4 |
| CAFE WKR I | 2/2.44/3 | 2/2.60/3 |
| CAFE WKR I | | 2/2.44/3 |
| LA MESA | | |
| CAFE MGR I | 6/3.21/4 | 6/3.21/4 |
| CAFE WKR I | 2/2.44/3 | 2/2.72/3 |
| CAFE WKR I | | 2/2.44/3 |
| MARINA DEL MAR | | |
| CAFE MGR I | 7/3.01/3 | 7/3.01/3 |
| CAFE WKR I | 2/2.44/3 | 2/2.72/3 |
| CAFE WKR I | | 2/2.44/3 |
| MARINA VISTA | | |
| CAFE MGR I | 6/3.01/3 | 6/3.01/3 |
| CAFE WKR I | 2/2.44/3 | 2/2.60/3 |
| CAFE WKR I | | 2/2.44/3 |

APPENDIX H (CONTINUED)

| SCHOOL<br>JOB TITLE | HOURS PER DAY / WAGE RATE / WEEKS VACATION | MODIFICATION I | MODIFICATION II |
|---|---|---|---|
| MARSHALL | | | |
| CAFE MGR I | 6/3.21/4 | 6/3.21/4 | 6/3.21/4 |
| CAFE WKR I | 2/2.44/3 | 2/2.60/3 | 2/2.44/3 |
| CAFE WKR I | | | 2/2.44/3 |
| MONTE VISTA | | | |
| CAFE MGR I | 6/3.01/3 | 6/3.01/3 | 6/3.01/3 |
| CAFE WKR I | 2/2.44/3 | 2/2.60/3 | 2/2.44/3 |
| CAFE WKR I | | | 2/2.44/3 |
| NOCHE BUENA | | | |
| CAFE MGR I | 7/3.21/4 | 7/3.21/4 | 7/3.21/4 |
| CAFE WKR I | 2/2.44/3 | 2/2.72/3 | 2/2.44/3 |
| CAFE WKR I | | | 2/2.44/3 |
| OLSON | | | |
| CAFE MGR I | 6/3.21/4 | 6/3.21/4 | 6/3.21/4 |
| CAFE WKR I | 2/2.44/3 | 2/2.60/3 | 2/2.44/3 |
| CAFE WKR I | | | 2/2.44/3 |
| ORD TERRACE | | | |
| CAFE MGR I | 7/3.16/3 | 7/3.16/3 | 7/3.16/3 |
| CAFE WKR I | 2/2.44/3 | 2/2.60/3 | 2/2.44/3 |
| CAFE WKR I | | | 2/2.44/3 |
| PATTON | | | |
| CAFE MGR I | 6/3.16/3 | 6/3.16/3 | 6/3.16/3 |
| CAFE WKR I | 2/2.44/3 | 2/2.60/3 | 2/2.44/3 |
| CAFE WKR I | | | 2/2.44/3 |
| STILWELL | | | |
| CAFE MGR I | 6/2.86/3 | 6/2.86/3 | 6/2.86/3 |
| CAFE WKR I | 2/2.44/3 | 2/2.60/3 | 2/2.44/3 |
| CAFE WKR I | | | 2/2.44/3 |
| MONTEREY CHILDREN CENTER | | | |
| CAFE MGR I | 6½/3.16/3 | 6½/3.16/3 | 6½/3.16/3 |
| COLTON JR. HIGH | | | |
| CAFE MGR II | 7/3.45/4 | 7/3.45/4 | 7/3.45/4 |
| CAFE WKR II | 4/2.74/4 | 4/2.86/3 | 4/2.74/4 |
| CAFE WKR I | 2/2.44/3 | 2/2.47/3 | 2/2.44/3 |
| CAFE WKR I | 2/2.44/3 | 2/2.47/3 | 2/2.44/3 |
| CAFE WKR I | | | 2/2.44/3 |

APPENDIX H (CONTINUED)

| SCHOOL<br>JOB TITLE | HOURS PER DAY / WAGE RATE / WEEKS VACATION | MODIFICATION I | MODIFICATION II |
|---|---|---|---|
| FITCH JR. HIGH | | | |
| CAFE MGR II | 7/3.40/3 | 7/3.40/3 | 7/3.40/3 |
| CAFE WKR II | 4/2.74/4 | 4/2.86/3 | 4/2.74/4 |
| CAFE WKR I | 2/2.44/3 | 2/2.36/3 | 2/2.44/3 |
| CAFE WKR I | 2/2.44/3 | 2/2.36/3 | 2/2.44/3 |
| CAFE WKR I | | | 2/2.44/3 |
| FREMONT JR. HIGH | | | |
| CAFE MGR II | 6/3.48/4 | 6/3.48/4 | 6/3.48/4 |
| CAFE WKR II | 4/2.74/4 | 4/2.72/3 | 4/2.74/4 |
| CAFE WKR I | 2/2.44/3 | 2/2.60/3 | 2/2.44/3 |
| CAFE WKR I | | | 2/2.44/3 |
| KING JR. HIGH | | | |
| CAFE MGR II | 7/3.40/3 | 7/3.40/3 | 7/3.40/3 |
| CAFE WKR II | 6/2.74/4 | 6/2.86/4 | 6/2.74/4 |
| CAFE WKR I | 2/2.44/3 | 2/2.47/3 | 2/2.44/3 |
| CAFE WKR I | 2/2.44/3 | 2/2.36/3 | 2/2.44/3 |
| CAFE WKR I | | | 2/2.44/3 |
| HOSTESS | 1½/2.44/3 | 1½/2.47/3 | 1½/2.44/3 |
| HOSTESS | 1½/2.44/3 | 1½/2.24/3 | 1½/2.44/3 |
| MONTEREY HIGH | | | |
| CAFE MGR III | 7/3.53/4 | 7/3.53/4 | 7/3.53/4 |
| CAFE WKR II | 6/2.86/3 | 6/2.86/3 | 6/2.86/3 |
| CAFE WKR II | 5½/2.86/3 | 5½/2.86/3 | 5½/2.86/3 |
| CAFE WKR II | 5½/2.86/3 | 5½/2.86/3 | 5½/2.86/3 |
| CAFE WKR I | 4/2.60/3 | 4/2.60/3 | 4/2.60/3 |
| CAFE WKR I | 3/2.60/3 | 3/2.60/3 | 3/2.60/3 |
| CAFE WKR I | 3/2.60/3 | 3/2.60/3 | 3/2.60/3 |
| CAFE WKR I | 3/2.14/2 | 3/2.14/2 | 3/2.14/2 |
| CAFE CLK II | 5/2.53/3 | 5/2.53/3 | 5/2.53/3 |
| SEASIDE HIGH | | | |
| CAFE MGR III | 6/3.80/4 | 6/3.80/4 | 6/3.80/4 |
| CAFE WKR II | 6/2.60/3 | 6/2.60/3 | 6/2.60/3 |
| CAFE WKR II | 5/2.86/3 | 5/2.86/3 | 5/2.86/3 |
| CAFE WKR I | 3½/2.24/3 | 3½/2.24/3 | 3½/2.24/3 |
| CAFE WKR I | 2½/2.24/3 | 2½/2.24/3 | 2½/2.24/3 |
| CAFE WKR I | 2½/2.24/3 | 2½/2.24/3 | 2½/2.24/3 |
| CAFE WKR I | 2½/2.47/3 | 2½/2.47/3 | 2½/2.47/3 |
| CAFE WKR I | 2½/2.60/3 | 2½/2.60/3 | 2½/2.60/3 |
| CAFE CLK II | 4½/2.99/4 | 4½/2.99/4 | 4½/2.99/4 |

APPENDIX H (CONTINUED)

| SCHOOL<br>JOB TITLE | HOURS PER DAY / WAGE RATE / WEEKS VACATION | MODIFICATION I | MODIFICATION II |
|---|---|---|---|
| HIGHLAND SCHOOL AND BAKERY/COLD PACK KITCHEN | | | |
| CAFE MGR I | 6/3.16/3 | 6/3.16/3 | 6/3.16/3 |
| SALAD COOK | 7/3.24/4 | 7/2.91/4 | 7/3.24/4 |
| CAFE WKR I | 3/2.44/3 | 3/2.60/3 | 3/2.44/3 |
| BAKER | 7/3.24/4 | 7/2.92/4 | 7/3.24/4 |
| ASST. BAKER | 7/2.74/3 | 7/2.92/4 | 7/2.74/3 |
| ASST. BAKER | 7/2.74/3 | 7/2.92/4 | 7/2.74/3 |
| PACKER | 7/3.24/4 | 7/2.66/4 | 7/3.24/4 |
| PACKER | 5/2.44/3 | 5/2.86/3 | 5/2.44/3 |
| PACKER | 5/2.44/3 | 5/2.86/3 | 5/2.44/3 |
| PACKER | 5/2.44/3 | 5/2.86/3 | 5/2.44/3 |
| DRIVER | 8/3.16/3 | 8/3.16/3 | 8/3.16/3 |
| DRIVER | 8/3.16/3 | 8/3.16/3 | 8/3.16/3 |
| DRIVER | 8/3.16/3 | 8/3.16/3 | 8/3.16/3 |

| OTHER EMPLOYEES | ANNUAL WAGES |
|---|---|
| DIRECTOR | $12,144.00 |
| ASSISTANT DIRECTOR | 9,984.00 |
| DISTRICT BOOKKEEPER | 7,836.00 |
| ASSISTANT BOOKKEEPER | 5,556.00 |

(1971-72 EXPENDITURES)

| | |
|---|---|
| TOTAL SNACK BAR WAGES | 1,131.70 |
| STUDENT MEALS | 7,071.70 |

HOT PACK ARRANGEMENTS

LOS ARBOLES FROM CRUMPTON
LARKIN AND FOOTHILL FROM DEL REY WOODS
BAY VIEW AND HILLTOP FROM COVELL
CABRILLO AND MANZANITA FROM KING

APPENDIX I

ESTIMATED EMPLOYEE RELATED EXPENSE SUMMARY
(ANNUAL)

1972-73 HOUR AND WAGE SCHEDULE

| | |
|---|---|
| GROSS PAY | $295,388 |
| VACATION PAY | 22,295 |
| SICK LEAVE | 13,729 |
| HEALTH | 24,774 |
| PERS | 16,954 |
| SOC. SEC. | 17,320 |
| WORK. COMP. | 1,305 |
| UNEMP. COMP. | 3,106 |
| SUMMER SCH. WAGES | 3,418 |
| TOTAL | $398,289 |

LINCOLN CENTRAL KITCHEN PLAN HOUR AND WAGE SCHEDULE

| | | MODIFICATION I | MODIFICATION II |
|---|---|---|---|
| GROSS PAY | $177,920 | $196,883 | $211,230 |
| VACATION PAY | 14,390 | 18,138 | 17,478 |
| SICK LEAVE | 9,183 | 10,236 | 11,034 |
| HEALTH | 11,190 | 11,190 | 15,413 |
| PERS | 10,168 | 11,394 | 12,617 |
| SOC. SEC. | 10,298 | 11,570 | 12,337 |
| WORK. COMP. | 778 | 874 | 931 |
| UNEMP. COMP. | 1,853 | 2,079 | 2,217 |
| SUMMER SCH. WAGES | 3,418 | 3,418 | 3,418 |
| TOTAL | $239,198 | $265,782 | $286,675 |
| ESTIMATED SAVINGS | $159,090 | $132,507 | $111,614 |
| % SAVINGS | 39.9% | 33.3% | 28.0% |

BAKERY/COLD PACK PLAN HOUR AND WAGE SCHEDULE

| | | MODIFICATION I | MODIFICATION II |
|---|---|---|---|
| GROSS PAY | $233,855 | $235,170 | $251,423 |
| VACATION PAY | 20,950 | 20,983 | 22,414 |
| SICK LEAVE | 12,290 | 12,363 | 13,266 |
| HEALTH | 18,932 | 18,932 | 18,932 |
| PERS | 15,363 | 15,384 | 15,363 |
| SOC. SEC. | 13,799 | 13,876 | 14,865 |
| WORK. COMP. | 1,041 | 1,047 | 1,121 |
| UNEMP. COMP. | 2,474 | 2,487 | 2,664 |
| SUMMER SCH. WAGES | 3,418 | 3,418 | 3,418 |
| TOTAL | $322,122 | $323,660 | $343,466 |
| ESTIMATED SAVINGS | $ 76,167 | $ 74,629 | $ 54,823 |
| % SAVINGS | 19.1% | 18.7% | 13.8% |

APPENDIX J

LINCOLN PLAN IMPLEMENTATION

MAY 1, 1973: DECISION POINT

FIRST SEMESTER 1973-74:

1. Hire District Assistant Food Service Director.
2. Submit building plans to architect/contractor.

SECOND SEMESTER 1973-74:

1. Commence building construction.

FIRST SEMESTER 1974-75:

1. Complete building construction and major equipment installation prior to February 1, 1975.
2. Purchase equipment items 3,4,5,6,7,11,16,18,21,23 and 32 (see Appendix A).

SECOND SEMESTER 1974-75:

1. Implement satellite service at Highland, Del Rey Woods, Covell, Larkin, Del Monte, Foothill, Bay View, and Hilltop schools. This is approximately 1269 meals per day, a 21% implementation.
2. Purchase equipment items 1,2,8,10,13,15,17,20, and 22; 67% of item 19; 50% of item 25; 33% of items 12 and 14; and 21% of items 24,26,27,28,29,30, and 31.
3. Hire a District Assistant Bookkeeper and transfer all clerical duties to food service personnel.
4. Hire the following central kitchen personnel: Central Kitchen Manager, one Driver, one Driver's Helper, three Cafeteria Worker II, three Cafeteria Worker I, and three packers (see Appendix G).

FIRST SEMESTER 1975-76:

1. Implement satellite service at King, Manzanita, Cabrillo, Noche Buena, Ord Terrace, La Mesa, Monte Vista, Colton, Fremont, and Hayes schools. This is an additional 2256 meals per day, a 36% incremental implementation.
2. Purchase equipment item 1; 50% of item 25; 33% of items 12,14, and 19; and 36% of items 24,26,27,28,29,30, and 31.
3. Hire the following central kitchen personnel: two Cafeteria Worker II, two Cafeteria Worker I, three Packers, one Driver, one Driver's Helper, and the Central Kitchen Clerk.

SECOND SEMESTER 1975-76:

1. Implement satellite service at Fitch, Stilwell, Patton, Marshall, Crumpton, Los Arboles, Marina Vista, Olson, and Marina Del Mar. This is an additional 2137 meals per day, a 35% incremental implementation.
2. Purchase 33% of items 12 and 14; and 35% of items 24,26,27, 28,29,30, and 31.
3. Hire the following central kitchen personnel: one Cafeteria Worker II, one Cafeteria Worker I, and two Packers.

FIRST SEMESTER 1976-77:

1. Implement satellite service at Monterey and Seaside High Schools. This is an additional 523 meals per day, an 8% incremental implementation.
2. Purchase 8% of items 24,26,27,28,29,30, and 31.

SEPTEMBER 1976: FULLY IMPLEMENTED

APPENDIX K

BAKERY/COLD PACK PLAN IMPLEMENTATION

MAY 1, 1973: DECISION POINT

FIRST SEMESTER 1973-74:

1. Hire District Assistant Food Service Director.
2. Submit building plans to architect/contractor.

SECOND SEMESTER 1973-74:

1. Complete building construction and major equipment installation prior to September 1, 1974.
2. Purchase equipment items 1,2,3,4,5,8,9,16,17,25, and 67% of item 26 (see Appendix B).
3. Hire two Drivers (see Appendix H).

FIRST SEMESTER 1974-75:

1. Implement cold pack service at Highland, Del Rey Woods, Covell, Larkin, Del Monte, Foothill, Bay View, and Hilltop schools. This is approximately 1269 packs per day, a 21% implementation.
2. Purchase equipment items 12 and 21; 50% of items 7 and 15; 33% of items 6,20,22,23, and 24; and 21% of items 18 and 19.
3. Hire a District Assistant Bookkeeper and transfer all clerical duties to food service personnel.
4. Hire the following central kitchen personnel: Salad Cook, Baker, and two Packers.

SECOND SEMESTER 1974-75:

1. Implement cold pack service at King, Manzanita, Cabrillo, Noche Buena, Ord Terrace, La Mesa, Monte Vista, Colton, Fremont, and Hayes schools. This is an additional 2256 packs per day, a 36% incremental implementation.
2. Purchase equipment items 11,13, and 14; 50% of items 7 and 15; 33% of items 6,20,22,23, and 24; and 36% of items 18 and 19.
3. Hire the following central kitchen personnel: one Baker and one Packer.

FIRST SEMESTER 1975-76:

1. Implement cold pack service at Fitch, Stilwell, Patton, Marshall, Crumpton, Los Arboles, Marina Vista, Olson, and Marina Del Mar schools. This is an additional 2137 packs per day, a 35% incremental implementation.
2. Purchase 33% of equipment items 6,20,22,23,24, and 26; and 35% of items 18 and 19.
3. Hire the following central kitchen personnel: one Driver, one Cafeteria Worker I, one Baker, and one Packer.

SECOND SEMESTER 1975-76:

1. Implement cold pack service at Monterey and Seaside High Schools. This is an additional 523 packs per day, an 8% incremental implementation.
2. Purchase 8% of equipment items 18 and 19.

FEBRUARY 1976: FULLY IMPLEMENTED

APPENDIX L

INVESTMENT EXPENSE STREAM

LINCOLN PLAN

| YEAR | SEMESTER | BUILDING | EQUIPMENT | TOTAL |
|---|---|---|---|---|
| 1973-74 | 1 | $ 12,815 ( 5%) | - | $ 12,815 |
| | 2 | 25,630 (10%) | - | 25,630 |
| 1974-75 | 3 | 38,445 (15%) | $ 98,996 | 137,441 |
| | 4 | 179,410 (70%) | 87,406 | 266,816 |
| 1975-76 | 5 | - | 79,994 | 79,994 |
| | 6 | - | 60,938 | 60,938 |
| 1976-77 | 7 | - | 13,288 | 13,288 |
| | 8 | - | - | - |
| TOTAL | | $256,300 | $340,622 | $596,922 |

BAKERY/COLD PACK PLAN

| YEAR | SEMESTER | BUILDING | EQUIPMENT | TOTAL |
|---|---|---|---|---|
| 1973-74 | 1 | $ 4,658 ( 5%) | - | $ 4,658 |
| | 2 | 23,288 (25%) | $ 50,868 | 74,156 |
| 1974-75 | 3 | 65,208 (70%) | 3,542 | 68,750 |
| | 4 | - | 25,319 | 25,319 |
| 1975-76 | 5 | - | 6,369 | 6,369 |
| | 6 | - | 282 | 282 |
| 1976-77 | 7 | - | - | - |
| | 8 | - | - | - |
| TOTAL | | $ 93,154 | $ 86,380 | $179,534 |

## APPENDIX M

## OPERATING SAVINGS STREAM

LINCOLN PLAN

| YEAR | SEMESTER | TRANS. V.A. | UTILITIES V.B. | PACKAGING V.C. | FROZEN STORAGE V.D. | FOOD V.E. | EMPLOYEE V.F. | TOTAL |
|---|---|---|---|---|---|---|---|---|
| 1973-74 | 1 | - | - | - | - | - | $ (6,136) | $ (6,136) |
| | 2 | - | - | - | - | - | (6,136) | (6,136) |
| 1974-75 | 3 | - | - | - | - | - | (6,136) | (6,136) |
| | 4 | $(1,003) | $ (720) | $ (3,624) | $1,870 | $ 1,649 | (633) | (2,461) |
| 1975-76 | 5 | (2,006) | (720) | (9,838) | 1,870 | 4,475 | 21,921 | 15,702 |
| | 6 | (2,006) | (720) | (15,879) | 1,870 | 7,222 | 50,830 | 41,317 |
| 1976-77 | 7 | (2,006) | (720) | (17,260) | 1,870 | 7,850 | 79,545 | 69,279 |
| | 8 | (2,006) | (720) | (17,260) | 1,870 | 7,850 | 79,545 | 69,279 |
| FULLY IMPLEMENTED SAVINGS PER YEAR | | $(4,012) | $(1,439) | $(34,519) | $3,740 | $15,700 | $159,090 | $138,560 |

APPENDIX M (CONTINUED)

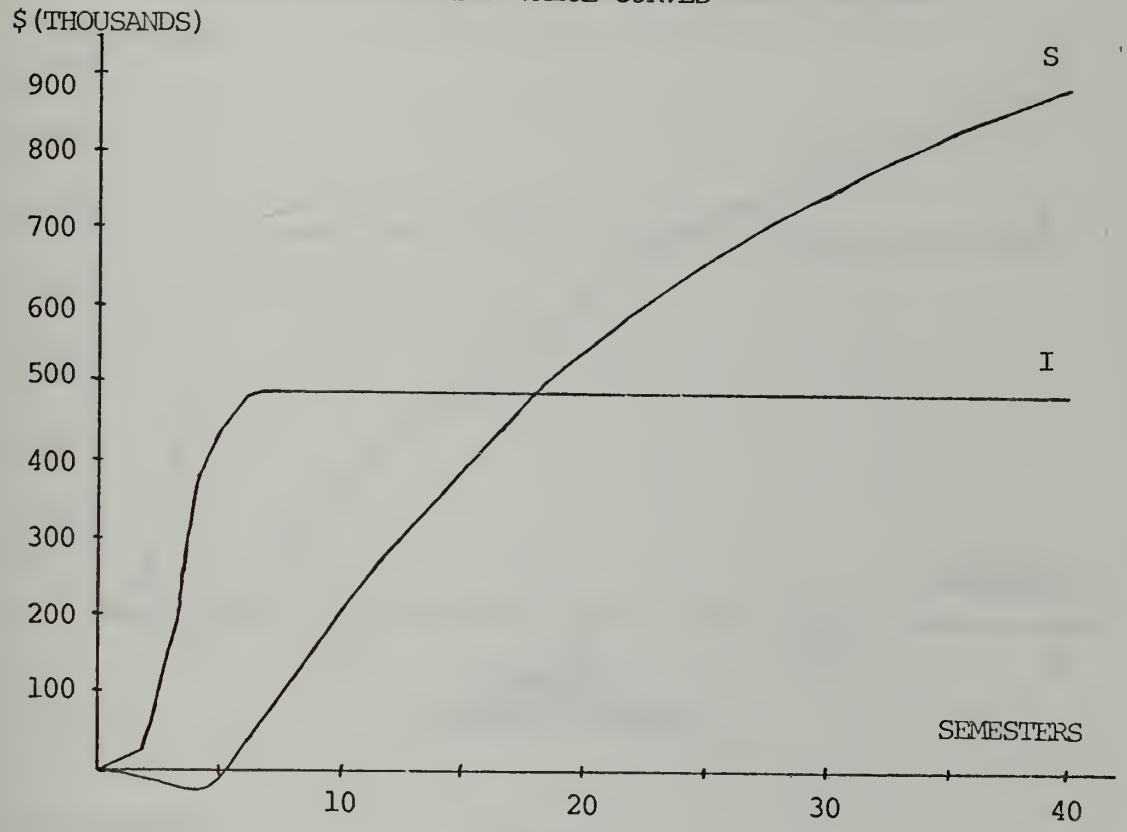
OPERATING SAVINGS STREAM

BAKERY/COLD PACK PLAN

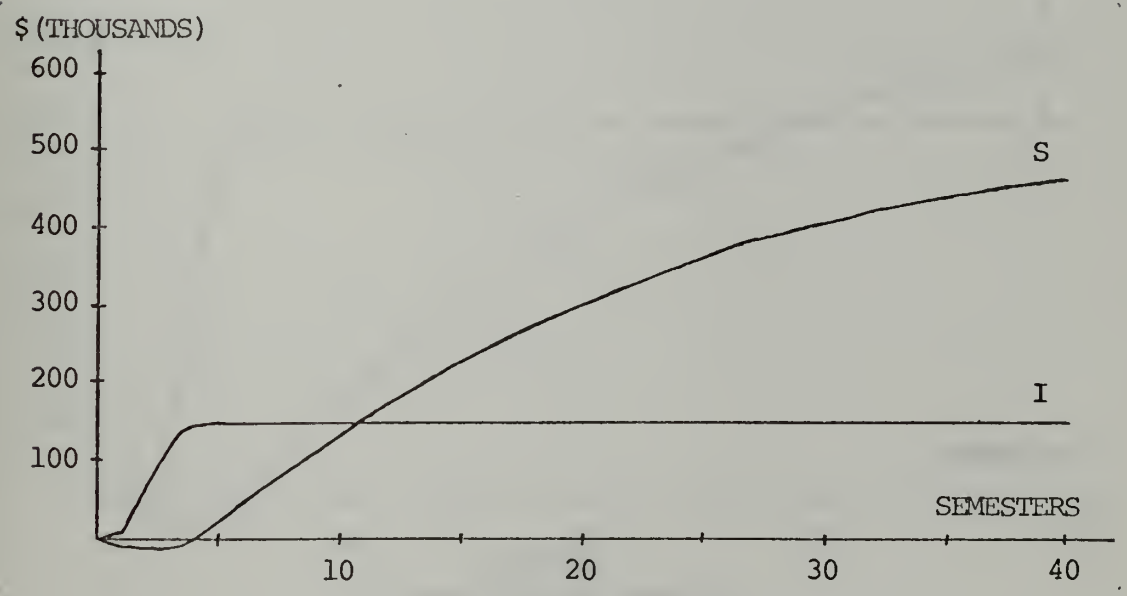
| YEAR | SEMESTER | TRANS. V.A. | UTILITIES V.B. | PACKAGING V.C. | FROZEN STORAGE V.D. | FOOD V.E. | EMPLOYEE V.F. | TOTAL |
|---|---|---|---|---|---|---|---|---|
| 1973-74 | 1 | - | - | - | - | - | $(6,136) | $(6,136) |
| | 2 | - | - | - | - | - | (7,260) | (7,260) |
| 1974-75 | 3 | $(1,067) | $ (517) | $ (1,568) | $1,870 | $ 835 | 2,875 | 2,428 |
| | 4 | (1,600) | (517) | (4,256) | 1,870 | 2,267 | 22,208 | 19,972 |
| 1975-76 | 5 | (2,133) | (517) | (6,868) | 1,870 | 3,659 | 31,713 | 27,724 |
| | 6 | (2,133) | (517) | (7,466) | 1,870 | 3,977 | 38,084 | 33,815 |
| 1976-77 | 7 | (2,133) | (517) | (7,466) | 1,870 | 3,977 | 38,084 | 33,815 |
| | 8 | (2,133) | (517) | (7,466) | 1,870 | 3,977 | 38,084 | 33,815 |
| FULLY IMPLEMENTED SAVINGS PER YEAR | | $(4,266) | $(1,034) | $(14,931) | $3,740 | $7,954 | $76,167 | $67,630 |

APPENDIX N

PRESENT VALUE CURVES



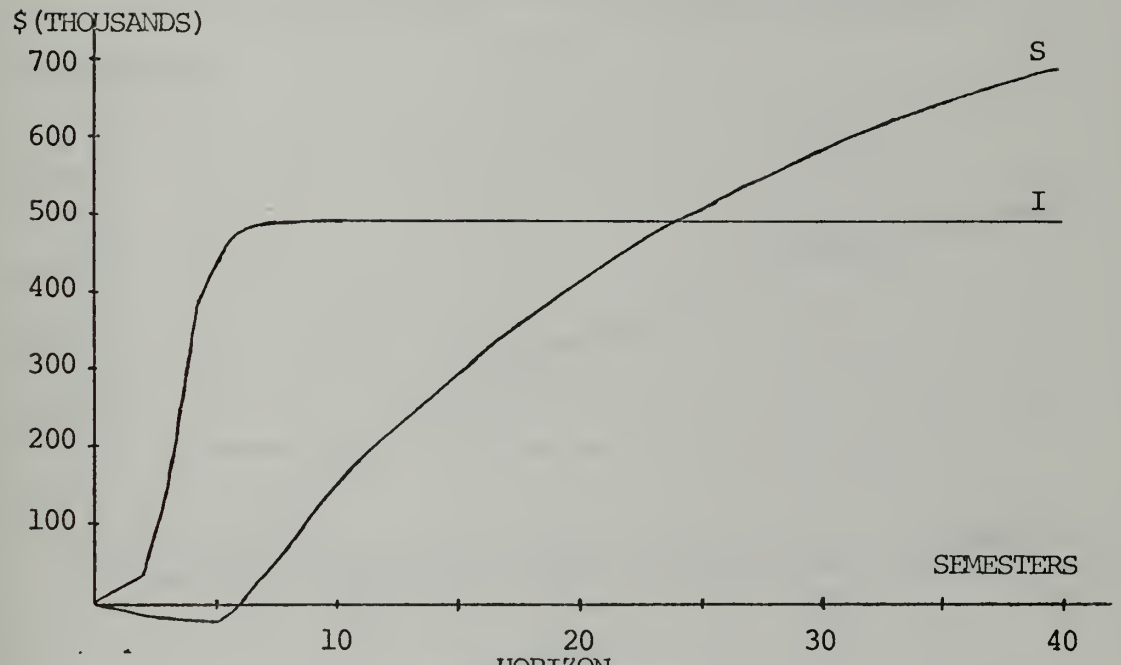

HORIZON
LINCOLN PLAN



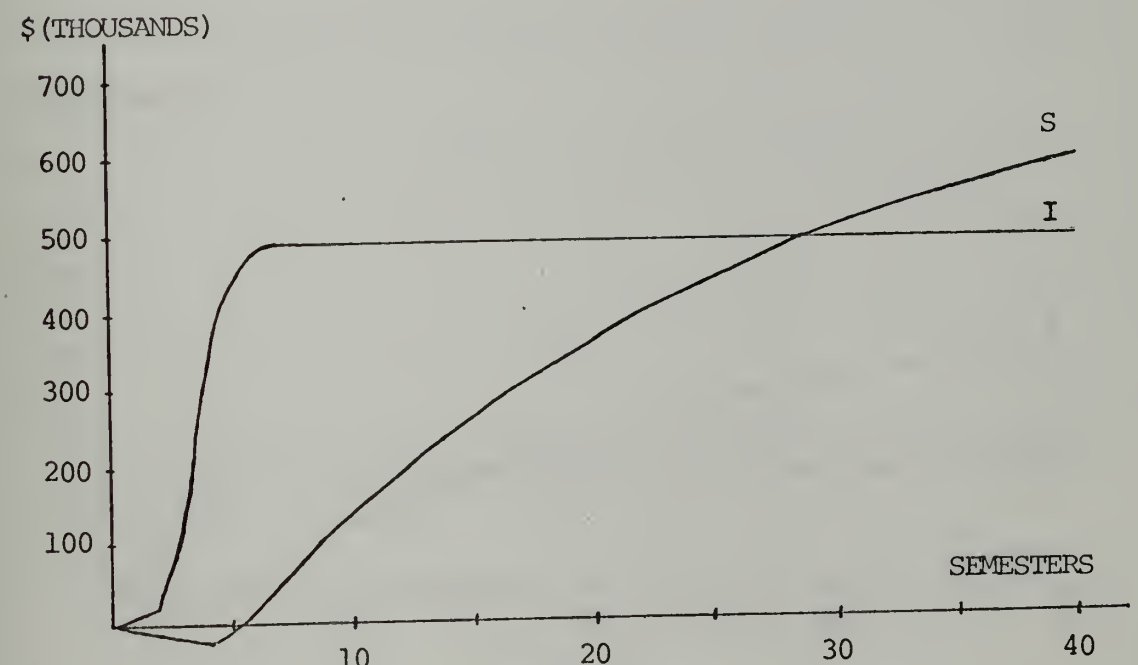

HORIZON
BAKERY/COLD PACK PLAN

APPENDIX O

PRESENT VALUE CURVES LINCOLN PLAN MODIFICATIONS



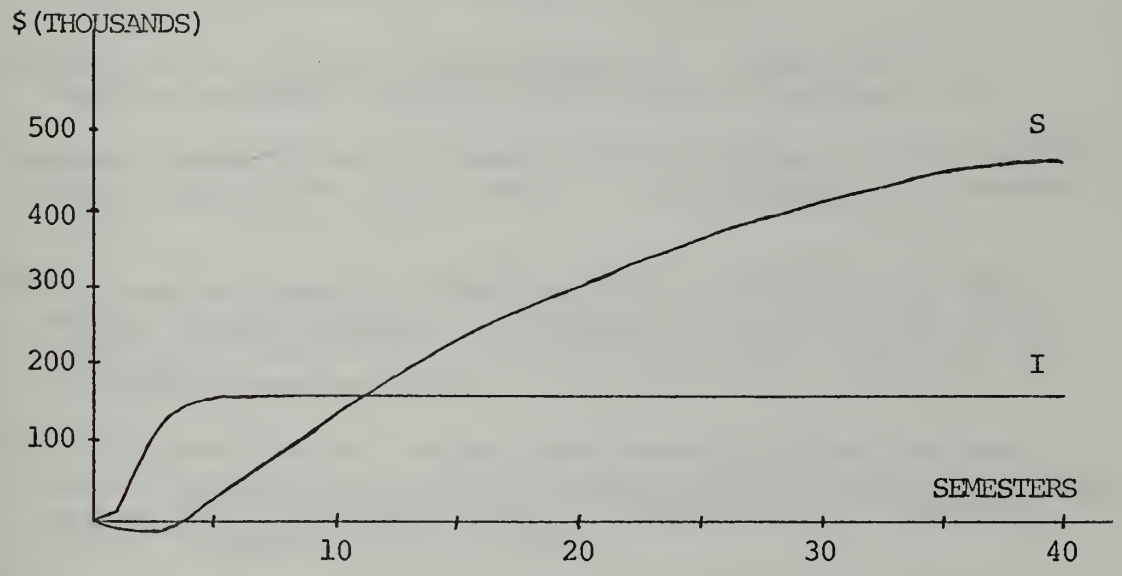

I HIGHER WAGE RATE



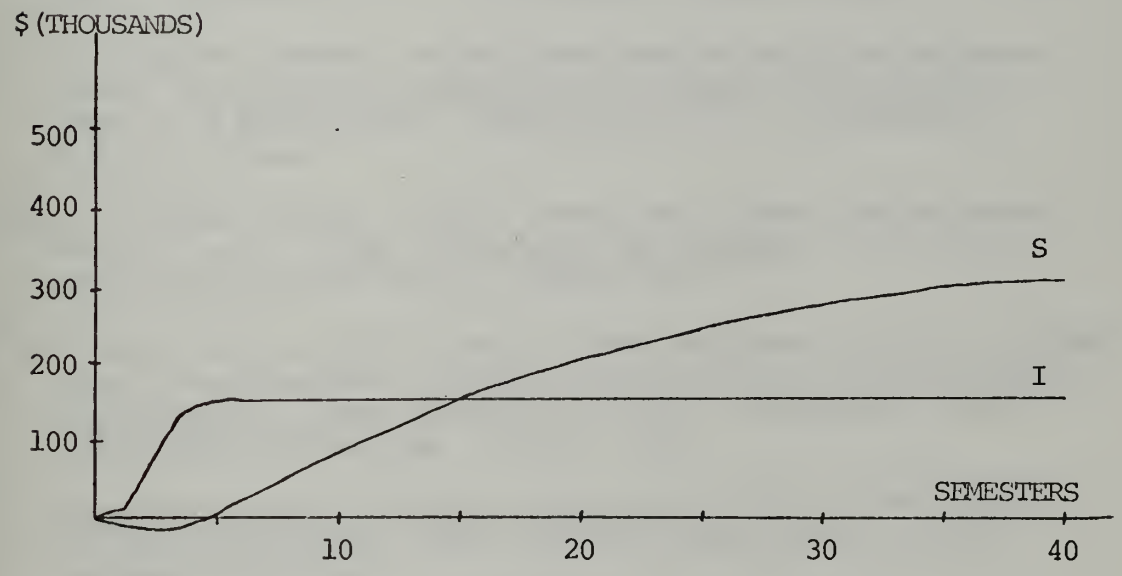

II WITHOUT HIGH SCHOOLS

APPENDIX P

PRESENT VALUE CURVES BAKERY/COLD PACK MODIFICATIONS




HORIZON
I HIGHER WAGE RATE




HORIZON
II WITH ADDITIONAL EMPLOYEES

## SELECTED BIBLIOGRAPHY


1. Allega, T. J., Experience Tour Report, paper presented to Monterey Peninsula Unified School District, July 1972.

2. Allega, T. J., Frozen Storage Requirements, paper presented to Monterey Peninsula Unified School District, September 1972.

3. Monterey Peninsula Unified School District Letter to Superintendent, Naval Postgraduate School, Subject: Lt. Tim Allega, 16 November 1972.

4. U.S. Congress. Senate. Select Committee on Nutrition and Human Needs. Implementation, 1970 Amendments to the National School Lunch Act. Part 4-P. L. 91-248, 3-4 May 1971. Washington, D. C.: Government Printing Office.

5. U.S. Congress. Senate. Select Committee on Nutrition and Human Needs. Implementation of Public Law 91-248, National School Lunch Act of 1970, In Michigan. Part 5, 25-26 May 1971. Washington, D. C.: Government Printing Office.

6. U.S. Congress. Senate. Select Committee on Nutrition and Human Needs. Crisis in the National School Lunch Program. Part 7, 7 September 1971. Washington, D. C.: Government Printing Office.

7. U.S. Congress. Senate. Select Committee on Nutrition and Human Needs. Universal School Lunch Program. Part 9, 13-14 October 1971. Washington, D. C.: Government Printing Office.

8. U.S. Congress. Senate. Select Committee on Nutrition and Human Needs. Micronutrient Supplements for School Lunch Program. Part 10, 7 December 1971. Washington, D. C.: Government Printing Office.

9. U.S. Congress. Senate. Select Committee on Nutrition and Human Needs. Hunger in the Classroom: Then and Now. Washington, D. C.: Government Printing Office, January 1972.

10. California Association of Public School Business Officials, Southern, School Lunch Section, Current Practices in Food Service of California Schools, paper presented at Annual Conference, 38th, Los Angeles, California, 31 March 1965.

11. Operational Manual for School Food Service, School Food Services Research Committees, 1969, California Association of School Business Officials.

12. Bard, Bernard, The School Lunchroom: Time of Trial, Wiley, 1968.

13. School Lunch Breakthrough: Politics, Technology Spur Expansion of Food Programs, National School Public Relations Association, 1972.

14. Proposal for Monterey Peninsula Unified School District, Lincoln Food Services Systems, 1972.

15. Applicant Handbook for State School Building Aid, California School Building Aid Law of 1952, Articles 1,2,3, Chapter 10, Division 14, California Education Code.

16. U.S. Department of Labor. Bureau of Labor Statistics. Consumer Price Index, July 1972. Washington, D. C.: Government Printing Office, November 1972.

17. Monterey Peninsula Unified School District Budget, 1972-1973, 7 August 1972.

18. Fisher, Gene H., Cost Considerations in Systems Analysis, American Elsevier Publishing Company, Inc., 1971.

19. McKean, Roland N., Efficiency in Government Through Systems Analysis, Wiley, 1958.

INITIAL DISTRIBUTION LIST

| | | No. Copies |
|---|---|---|
| 1. | Defense Documentation Center<br>Cameron Station<br>Alexandria, Virginia 22314 | 2 |
| 2. | Library, Code 0212<br>Naval Postgraduate School<br>Monterey, California 93940 | 2 |
| 3. | Assistant Professor F. R. Richards, Code 55Rh<br>Department of Operations Research<br>and Administrative Sciences<br>Naval Postgraduate School<br>Monterey, California 93940 | 1 |
| 4. | Lieutenant Timothy James Allega, SC, USN<br>430 South 10th Street<br>Vincennes, Indiana 47591 | 1 |
| 5. | Superintendent of Schools<br>Monterey Peninsula Unified School District<br>700 Pacific Street<br>Monterey, California 93940 | 1 |
| 6. | Chief of Naval Personnel<br>Pers 11b<br>Department of the Navy<br>Washington, D. C. 20370 | 1 |
| 7. | Naval Postgraduate School<br>Department of Operations Research<br>and Administrative Sciences<br>Monterey, California 93940 | 1 |
| 8. | Commanding Officer<br>Navy Subsistence Office<br>Washington Navy Yard<br>Washington, D. C. 20390 | 1 |
| 9. | Captain J. J. Scheela, SC, USN, Code 002<br>Comptroller, Naval Postgraduate School<br>Monterey, California 93940 | 1 |

UNCLASSIFIED
Security Classification

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

ORIGINATING ACTIVITY (Corporate author)

aval Postgraduate School
onterey, California 93940

2a. REPORT SECURITY CLASSIFICATION
UNCLASSIFIED

2b. GROUP

REPORT TITLE

Cost Analysis of Centralized Food Preparation and Distribution Systems for onterey Peninsula Unified School District

DESCRIPTIVE NOTES (Type of report and inclusive dates)

aster's Thesis; March 1973

AUTHOR(S) (First name, middle initial, last name)

imothy James Allega

| REPORT DATE | 7a. TOTAL NO. OF PAGES | 7b. NO. OF REFS |
|---|---|---|
| arch 1973 | 90 | 19 |

| CONTRACT OR GRANT NO. | 9a. ORIGINATOR'S REPORT NUMBER(S) |
|---|---|
| PROJECT NO. | |
| | 9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report) |

DISTRIBUTION STATEMENT

pproved for public release; distribution unlimited.

| 11. SUPPLEMENTARY NOTES | 12. SPONSORING MILITARY ACTIVITY |
|---|---|
| | Naval Postgraduate School<br>Monterey, California 93940 |

ABSTRACT

This report contains a cost analysis of two alternative methods of centrali ng the preparation of school lunches in the Monterey Peninsula Unified School Dist ict. The first alternative proposed that the school lunch be centrally prepared and packaged prior to delivery to satellite schools. The second alternative called for centralized preparation of only the portion of the meal normally served cold (i.e., bread, salad, and dessert).

Cost streams for building and equipment investment and cost streams for various operating expenses and savings were estimated. Discounting techniques were applied to these cost streams to determine the present worth of the alternative ventures as a function of the planning horizon.

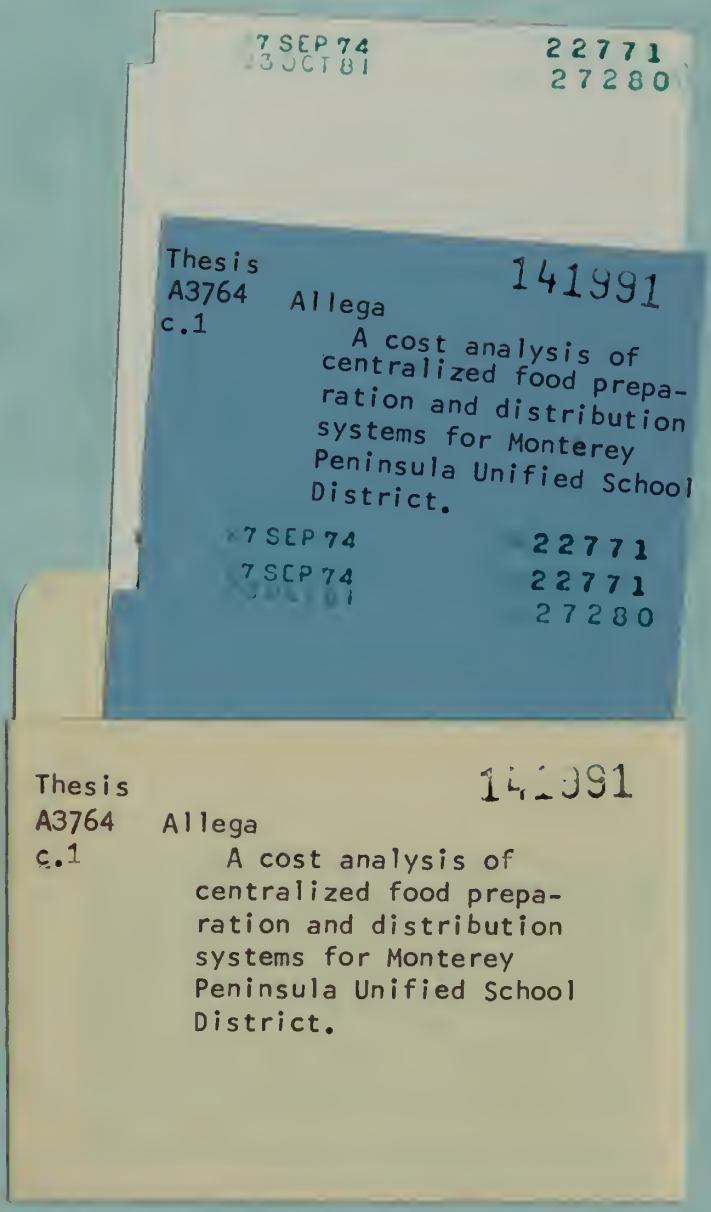
DD FORM 1 NOV 68 1473 (PAGE 1)
S/N 0101-807-6811



UNCLASSIFIED
Security Classification

A-31408

| 14. KEY WORDS | LINK A | | LINK B | | LINK C | |
|---|---|---|---|---|---|---|
| | ROLE | WT | ROLE | WT | ROLE | WT |
| School Food Service | | | | | | |
| Costing | | | | | | |


7 SEP 74
30 OCT 81
22771
27280
Thesis
A3764
c.1
Allega
141991
A cost analysis of centralized food preparation and distribution systems for Monterey Peninsula Unified School District.
7 SEP 74
22771
7 SEP 74
22771
27280
Thesis
A3764
c.1
Allega
141991
A cost analysis of centralized food preparation and distribution systems for Monterey Peninsula Unified School District.

thesA3764
A cost analysis of centralized food prep
3 2768 000 98959 4
DUDLEY KNOX LIBRARY