

# QUICK REFERENCE: KITCHEN PLANNING, DESIGN, & EQUIPMENT

Compiled by: Adam Howard, B.S.  
Henderson State University Student



Arkansas Department of Education  
Child Nutrition Unit

September 2003, Rev. January 2004

# Table of Contents

|   |    |
|---|----|
| <b>Introduction</b> .....   | 3  |
| <b>I. Steps for New Kitchen Construction/Renovation</b> .....             | 4  |
| A. Common Checklist for Renovations/Additions and New Construction .....  | 5  |
| B. Additional Checklist for New Construction.....                         | 6  |
| C. Additional Checklist for Renovations and Additions .....               | 7  |
| <b>II. Kitchen Planning</b> .....   | 8  |
| A. Project Communications   |    |
| 1. Key team member's roles .....  | 9  |
| 2. The Team: How It All Works .....                                       | 11 |
| B. Layout Design  |    |
| 1. Layout and Design -- Three basic areas.....                            | 12 |
| 2. Planning Considerations and Guide to Food Service Space.....           | 13 |
| 3. ADE Facilities Handbook--Cafeteria Minimum Space Recommendations       | 14 |
| 4. Kitchen Work Centers .....   | 15 |
| 5. Steps in Planning a Kitchen Facility.....                              | 16 |
| 6. Kitchen Design Considerations.....                                     | 17 |
| C. Equipment Selection  |    |
| 1. Suggested Equipment for Conventional Kitchens .....                    | 18 |
| 2. Equipment Purchase Decision – Sample Form.....                         | 21 |
| 3. Factors Affecting Need for Equipment Selection and Purchase .....      | 22 |
| D. Utilities Cost & Conservation  |    |
| 1. Energy considerations and cost.....                                    | 23 |
| 2. Energy alternatives .....  | 26 |
| <b>III. Regulatory Requirements</b>                                       |    |
| A. Regulatory Considerations for School Food and Nutrition Services.....  | 28 |
| B. Procurement Guidelines .....   | 29 |
| 1. Restricted Use of Federal Funds from Non-Profit School Food Service .. | 29 |
| 2. Funding Sources .....  | 29 |
| 3. Funding Source and Required Procurement Process .....                  | 29 |
| 4. Additional Federal Procurement Regulations .....                       | 32 |
| 5. Sales Tax .....  | 34 |
| 6. Allowable/Unallowable Procurement Practices.....                       | 34 |
| 7. Buy American .....   | 35 |
| 8. Debarment and Suspension.....  | 35 |
| <b>IV. References</b> .....   | 37 |

# Introduction

*This booklet is designed as a quick reference to provide technical assistance to child nutrition directors with steps involved in kitchen planning, design, and construction. This reference should enable new child nutrition directors to identify needed references, organize timelines and create a plan for new construction, renovations, additions, and equipment purchasing. The choice of equipment, kitchen layout, and design plays a concise role in determining if the food service facility will function effectively.*

**Materials in this booklet have been selected and printed verbatim from references noted at the bottom of each page. Inserted or adapted text will be shown in italics.**

*The Child Nutrition Unit, Arkansas Department of Education (ADE) will provide one printed copy to the district child nutrition director. Additional copies of this booklet can be downloaded from the Child Nutrition Network Website – <http://cnn.k12.ar.us>.*



## Acknowledgements

A special thank you to the following individuals who reviewed this manual or provided clerical support:

Wanda Shockey  
Barbara Smith  
Patricia Winders  
Sheila Brown

Barbara Graves  
Karen Franklin

# SECTION I

## STEPS FOR NEW KITCHEN CONSTRUCTION/RENOVATION

- A. Common Checklist for Renovations/Additions and New Construction**
- B. Additional Checklist for New Construction**
- C. Additional Checklist for Renovations and Additions**

Section I briefly consolidates three checklists from the *Design Handbook* to assist child nutrition personnel in determining the information necessary to plan for a food service construction project. For more specific information it may be necessary to check out this reference from the CNU, ADE library or purchase a copy from the National Food Service Management Institute.

## **SECTION I: Steps for New Kitchen Construction/Renovation**

### **A. Common Checklist for Renovations/Additions and New Construction**

1. Assemble the project team. *See diagram, The Team: How It All Works, Page 11.*
2. Who are the most qualified people to be involved in the project?
3. Make a list of equipment that will remain, will be removed, will be ordered, or will be used from other locations/schools.
4. Who will buy the equipment?
5. Is the equipment selected for purchase flexible for usage in the future?
6. Is natural gas service adequate in pressure and flow to meet requirements?
7. Decide on a path of future growth if possible. Can utilities be located away from this?
8. Can mechanical systems and equipment installation be located away from path of future growth?
9. Will new equipment add significant heat load to the kitchen?
10. Will mechanical systems be able to provide adequate cooling and heating?
11. Has 25% spare capacity been provided in electrical panel box?
12. Evaluate if lighting is going to be energy efficient.
13. Verify if Health Department checklist is met.
14. Complete checklist for facility completeness.
15. Verify that the capacity of water heaters is adequate to serve new equipment.
16. Is the grease separator adequately sized? Is the separator located to serve the kitchen properly (to meet code)?

***For steps of checklists that are specific to Renovations/Additions and New Construction, refer to pages 6 and 7 of this booklet.***

### **REFERENCE**

*Design Handbook -- National Food Service Management Institute – The University of Mississippi* Written and Reviewed by: Susan Crowl Silberberg, pages 8-8, 9-7, 10-7

## **SECTION I: Steps for New Kitchen Construction/Renovation**

### **B. Additional Checklist for New Construction**

1. Will owner make decisions by one person or by agreement of key staff?
2. Identify your needs.
3. What is the construction budget? Is there a percentage for food service?
4. What are the time constraints? *Create a timeline.*
5. Is there other specialized equipment that will need to be accommodated?
6. Assign staff to new facility if possible and include them in decision-making.
7. Identify all reviewing agencies for the project and their requirements.

### **REFERENCE**

*Design Handbook – National Food Service Management Institute – The University of Mississippi* Written and reviewed by: *Susan Crowl Silberberg* page 10-7

## **SECTION I: Steps for New Kitchen Construction/Renovation**

### **D. Additional Checklist for Renovations and Additions**

1. Obtain set of any existing architectural drawings (include structural, mechanical, and electrical).
2. Verify information shown on existing drawings such as dimensions, utility locations, etc.
3. Call a structural engineer if you are adding equipment to the roof or a framed floor or if you are cutting openings in walls, floors, or the roof.
4. Determine if shutdown of facility is required and how this will affect school.
5. Do existing systems meet present building codes and health department regulations? What upgrading must be done to comply with new laws?
6. Contact electrical utility company to assist in evaluating the existing electrical service.
7. Review the plumbing plan sheets indicating connected fixture units or flow.
8. Can existing electrical panel box be left in place (to save money)?
9. Are the supply ducts lined? If so, removal is recommended.
10. *Review plumbing plans of piping below floor.*

### **REFERENCE**

*Design Handbook – National Food Service Management Institute – The University of Mississippi, Written and reviewed by: Susan Crowl Silberberg, page 8-8, 9-7*

# SECTION II

## Kitchen Planning

- A. **Project Communications**
- B. **Layout Design**
- C. **Equipment Selection**
- D. **Utilities Cost & Conservation**

Section II covers some of the major areas to reference for kitchen planning. The information in excerpts, tables and charts is provided to start the research and investigation process for a project. Check with the CNU area specialists for items such as sample kitchen layouts related to specific project needs. For in depth information consult the references listed in Section IV.

## **SECTION II: Kitchen Planning**

### **A. Project Communications**

#### **1. Key Team Member's Roles**

The local **Child Nutrition Program (CNP) Director** is a key individual in planning a new or renovated food service facility. The CNP Director provides input for the following functions:

- Works with the local planning committee during the early stages of planning.
- Determines the basic goals and objectives of the new or renovated food service facility.
- Determines the basic operational concepts and philosophy of the food service facility, including menu system, fit of food service to students' age/grade and ethnic diversity, and the food service role in the overall educational program.
- Provides input in the selection of a consultant for the food service facility.
- Reviews and recommends approval of the final architectural drawings.
- Provides information and details on equipment specifications.
- Monitors progress during construction to ensure that needs are met.
- Recommends final approval when specifications are met and items completed.

The **State Child Nutrition Programs Office** may provide the following:

- Guidance to school districts in the implementation of child nutrition programs by helping school districts comply with federal and state mandates.
- Assistance with the efficient production of quality meals and the financial integrity of local programs.
- Review of architectural plans for renovation or construction to assure properly designed food service facilities to provide the child nutrition programs with:
- Potential and efficient use of staff and maximal production.
- Adequate space for appropriate production of high-quality foods.
- The potential for efficient use of state, local, and private funding.

The **local Child Nutrition Program personnel** are responsible for providing input in the following areas:

- Sanitation and safety, including knowledge of OSHA and HAACP regulations.
- Work environment
- Simplifications of work areas
- Increasing productivity

## **REFERENCE**

*Design Handbook – National Food Service Management Institute – The University of Mississippi* Written and reviewed by: Susan Crowl Silberberg pages 2-2, 2-7, 2-8, 2-9, 2-10, 2-11, 2-12, 2-13, 2-14, 2-15, 2-16, 2-17, 2-18, 2-19, 2-20.

## **SECTION II: Kitchen Planning**

### **A. Project Communications**

#### **1. Key Team Member's Roles, continued**

**The food service consultant** works closely with the architect and local CNP director to develop a functional and efficient design of food service areas. He/she is knowledgeable of all the up-t-date equipment and new developments in the food service industry. He/she has no affiliation with any manufacturers or suppliers that would cause a conflict-of-interest in designing and specifying of equipment.

Services of the **food service consultant**:

- Visits the site, examines laws, codes, and regulations of governing agencies that apply to the preparation and serving of food.
- Prepares schematic design studies, construction documents, and cost estimates required to convey the scope of the food service equipment to the team members and bidders.
- Prepares an equipment layout, schedule, and other details required. This includes an engineering data manual with technical data for all of the food service equipment items.
- Assists the architect and owner in reviewing acceptable food service equipment contractors and bids and reviews all submittals of the food service equipment contractor to verify that they comply with the food service equipment contract documents.
- Provides on-site inspection *before, during, and after* completion of the food service equipment installation.
- Prepares a punch list of any deviations from the contract documents and makes recommendations for final approval of the installation.
- Observes and approves the satisfactory demonstration of the equipment and verifies that all warranties and guarantees have been submitted.

*These are some other members that play key roles in the planning and design of a food service facility.*

- **Local Superintendent/Board**
- **Electrical Engineer**
- **Mechanical/Plumbing Engineer**
- **Structural Engineer**
- **Health Department**
- **State Building Commission**
- **State School Architect**
- **Interior Designer**
- **Landscape Architect**
- **Acoustical Consultant**

See diagram on page 11, architect coordinates project input from these people

## **REFERENCE**

*Design Handbook – National Food Service Management Institute – The University of Mississippi  
Written and reviewed by: Susan Crowl Silberberg, pages 2-2, 2-7, 2-8, 2-9, 2-10, 2-11, 2-12, 2-13,  
2-14, 2-15, 2-16, 2-17, 2-18, 2-19, 2-20.*



## **SECTION II: Kitchen Planning**

### **B. Layout Design**

#### **1. Layout Design – Three Basic Areas**

A layout design is a plan that indicates spatial allowances, physical facilities, construction features, and work areas with equipment located therein. In such a design, work sections should be joined together so that all necessary functions in the facility can be performed efficiently.

#### **3 Basic Areas:**

1. Layout design, the selection and placement of equipment.
2. Work methods and factors that improve worker effort.
3. Utilization of equipment and materials to reduce labor required to produce and serve foods.

## **REFERENCE**

*Foodservice Planning Layout and Equipment 2<sup>nd</sup> Edition. Lendal H. Kotschervar, Margaret E. Terrell. John Wiley & Sons Inc., Copyright 1961, 1977.*

## SECTION II: Kitchen Planning

### B. Layout Design

#### 2. Planning Considerations and Guide to Foodservice Space

Factors to be considered in planning a school foodservice project include the following:

1. Capacity of the school
2. Future expansion plans
3. How many meals will be served – breakfast, lunch, dinner
4. Menus and type service to be offered – single menu, choice menus, a la carte, etc.
5. Age of children
6. Location of building
7. Type of facility – feeder central kitchen, satellite kitchen, self-contained unit
8. Type of equipment needed
9. Utilities to be used
10. The uses of the school building and foodservice by the community

### General Considerations

#### Guide to Space (in square feet)

##### Required for School Foodservice On-Site Preparation

#### Meals

| Area  | Up to 350   | 351-500          | 501-700          | 700-1000         |
|---|-------------|------------------|------------------|------------------|
| <b>Receiving Area</b>                           |             |                  |                  |                  |
| Loading platform                                | 60          | 80               | 100              | 100              |
| Receiving area inside building                  | 48          | 48               | 60               | 80               |
| <b>Storage</b>                                  |             |                  |                  |                  |
| Dry storage, 1/3-1/2 sq ft per meal             | 175         | 250              | 325              | 450              |
| Nonfood storage                                 | 30          | 50               | 70               | 90               |
| <b>Office Space</b>                             |             |                  |                  |                  |
| Lockers & toilet for employees                  | 40-48       | 48               | 60               | 80               |
|   | 45          | 60               | 75               | 85               |
| <b>Kitchen &amp; Serving</b>                    |             |                  |                  |                  |
| <b>Preparation including refrigeration</b>      |             |                  |                  |                  |
| 1.1-1.5 sq ft per meals                         | 500         | 650              | 800              | 980              |
| Serving   | 200         | 300              | 400              | 600              |
| Dishwashing                                     | 150         | 150              | 180              | 210              |
| <b>Maintenance Area</b>                         |             |                  |                  |                  |
| Mop area  | 25          | 25               | 30               | 30               |
| Garbage area                                    | 30          | 48               | 60               | 75               |
| <b>Total Kitchen &amp; Serving Area</b>         | <b>1303</b> | <b>1709</b>      | <b>2160</b>      | <b>2780</b>      |
| <b>Dining Area (based on two seatings)</b>      |             |                  |                  |                  |
| Elementary - 10 sq ft/meal                      | 1750        | 1750-2500        | 2500-3500        | 3500-5000        |
| Secondary - 12 sq ft/meal                       | 2100        | 2100-3000        | 3000-4200        | 4200-6000        |
| <b>Total Dining, Kitchen &amp; Serving Area</b> |             |                  |                  |                  |
| Elementary                                      | <b>3053</b> | <b>3459-4209</b> | <b>4635-5635</b> | <b>6280-7780</b> |
| Secondary                                       | <b>4303</b> | <b>3809-4709</b> | <b>5135-6335</b> | <b>6980-8780</b> |

### REFERENCE

*School Foodservice 3<sup>rd</sup> Edition.* Dorothy Van Egmond – Pannell AVI Publishing Company Inc. Westport, Connecticut. Copyright 1985.

## SECTION II: Kitchen Planning

### B. Layout Design

#### 3. ADE Facilities Handbook – Cafeteria Minimum Space Recommendations

In general most child nutrition programs allow 10 to 12 square feet of floor area per person seated at one time. Many schools now provide round, square or oblong tables spaced individually. While this requires more space, the transition from rigid, institutional settings makes it worthwhile.

Most schools extend the lunch period to accommodate at least two seatings daily. Close scheduling can permit three seatings daily; however, more than three seatings may result in meals being served too early or too late.

The amount of space for preparation, storage and serving will be influenced heavily by the menu. Many schools offer more than one menu choice. Some provide choices on one serving line, while others provide separate lines for different types of menus (i.e. sandwich lines, salad bars, etc.). Additional storage space, especially refrigerated and freezer space, will be required if both the lunch and breakfast programs are operated. The type of service and number of child nutrition programs should be considered early in the building planning process. It is important to provide flexibility for future needs by carefully planning layouts and making wise selections of appropriate and versatile equipment.

#### **Recommended Square Feet in Receiving, Preparation and Storage Area**

| <b>Total Lunches Served Daily</b> | <b>250</b>  | <b>500</b>  | <b>750</b>  | <b>1000</b> |
|-----------------------------------|-------------|-------------|-------------|-------------|
| Loading Platform                  | 70          | 70          | 80          | 100         |
| Dry Storage Area                  | 150         | 350         | 425         | 550         |
| Kitchen Area                      | 560         | 600         | 675         | 750         |
| Serving Area                      | 200 *       | 400 *       | 600 **      | 800 ***     |
| Dishwashing Area                  | 140         | 200         | 250         | 300         |
| Walk-in & Reach-in Refrigerator   | 80          | 90          | 100         | 110         |
| Walk-in & Reach-in Freezer        | 80          | 90          | 100         | 110         |
| Office Area                       | 75          | 75          | 75          | 100         |
| Locker & Toilet Area              | 50          | 75          | 100         | 125         |
| <b>Kitchen and Service Area</b>   | <b>1405</b> | <b>1950</b> | <b>2405</b> | <b>2945</b> |
| <b>Dining Area (two seatings)</b> | <b>1500</b> | <b>3000</b> | <b>4500</b> | <b>6000</b> |
| <b>Gross Recommended Areas,</b>   | <b>2905</b> | <b>4950</b> | <b>6905</b> | <b>8945</b> |

\* One serving line

\*\* Two serving lines

\*\*\* Three serving lines

## REFERENCE

*Minimal School Health Construction Standards, Arkansas Department of Education, Rules and Regulations, 1992*



## **SECTION II: Kitchen Planning**

### **B. Layout Design**

#### **5. Steps in Planning a Kitchen Facility**

##### **Goals in the Planning Process**

In designing a kitchen facility, planners should seek to:

1. Provide for an efficient kitchen with a minimal amount of floor space in which a minimal number of employees can prepare and serve specific numbers of optimum-quality foods in an established way. (*Provide for efficient traffic or workflow.*)
2. Provide for proper equipment and adequate storage areas.
3. Plan wise use of construction funds.
4. Plan a facility that will be energy efficient.
5. Provide for a safe and comfortable working environment for employees.
6. Ensure that the facility will be easy to clean and maintain.

Knowing the difference between “just enough” and “too small” or “too large” is the key to a well-planned, efficient kitchen. According to Kazarian (1979), “A well-planned facility is developed by utilizing the basic principles from many years of knowledge.”<sup>1</sup> The areas that he refers to include the concepts of work analysis, time and motion studies, human engineering management, economics, psychology, and material handling. The planning objective is optimum use of money, materials, equipment, utilities, and labor.

**The concept, design, space requirements, and arrangement of equipment that are ultimately planned for the food service areas will depend on the information that the architect and the food service facility’s consultant receive.**

## **REFERENCE**

*School Nutrition Facility Planning Guide. California Department of Education-Sacramento, 1991.*

## **SECTION II: Kitchen Planning**

### **B. Layout Design**

#### **6. Kitchen Design Considerations**

##### **Kitchen Project**

1. Space Allowance and Range of Motion for Work Simplicity
2. Accessible Route (for delivery and service)
3. Ground and Floor Surfaces (such as non-slip and easy to clean)
4. Doors (left or right hinges)
5. Sinks (easy access and not in the way)
6. Storage (adequate for goods needed and easily accessible for the workers, also neat and orderly)
7. Control and operating mechanisms (must be simple enough for non-experienced workers to operate)
8. Fixed or Built-in Seating and Tables (to make they will not in the way of work flow and production because they are fixed)
9. Assembly Areas (make sure than there is adequate space to assemble food but not wasted space)

The distance between fixed equipment must meet circulation and access space requirements. Moveable equipment can be effectively used and easily shifted to meet individual needs. Standard furniture and equipment can often be specified to meet standards set forth by Americans With Disability Act Accessibility Guidelines (ADAAG) and Uniform Federal Accessibility Standards (UFAS).

Adjustable seat, table and display surface heights are desirable. Handrails or hand grips may be of assistance to some individuals at work surfaces or when using power equipment.” (pg. 89, Maryland State Department of Education School Food and Nutrition Service).

## **REFERENCE**

*Maryland State Department of Education School Food and Nutrition Service. January 1996.*

## **SECTION II: Kitchen Planning**

### **C. Equipment Selection**

#### **1. Suggested Equipment for Conventional Kitchens**

##### **RECEIVING AREA**

Receiving table  
Scales (optional)  
Heavy-duty cart  
Hand truck  
Hand sink (desired)  
Fly fan

##### **DRY STORAGE AREA**

Metal shelving  
Dunnage racks (storage racks)  
Can storage rack (optional)  
Utility carts

##### **CHEMICAL / JANITOR STORAGE AREA**

Metal shelving  
Janitor sink  
Washer/dryer (optional)

##### **CHILLED/FROZEN STORAGE AREA**

Walk-in freezer  
Walk-in cooler  
Cooler/freezer shelving  
Dunnage racks

##### **VEGETABLE/COLD FOOD PREPARATION AREA**

Worktables  
2-compartment sink with drain boards  
Disposer  
Mixer (shared with production)  
Food processor  
Slicer (shared with production)  
Reach-in refrigerator  
Utility cart  
Utility racks  
Storage racks for pans  
Hand sink

### **REFERENCE**

*Guidelines for Equipment to Prepare Healthy Meals* By Mary Frances Nettles, PhD, RD. Deborah H. Carr, MS, RD. National Foodservice Management Institute. Publication No. NFSMI-R-25-96.

## **SECTION II: Kitchen Planning**

### **C. Equipment Selection**

#### **1. Suggested Equipment for Conventional Kitchens, continued**

##### **MODIFIED DIET PREPARATION AREA**

Worktables

Food processor

Blender

Individualized adaptive feeding equipment

2-compartment sink (shared with vegetable/cold food)

Reach-in refrigerator (shared with vegetable/cold food)

Transport equipment (if applicable)

Pass through heated cabinets (shared with customer service)

##### **PRODUCTION AREA**

Worktables

Baking table with mobile ingredient bins

2-compartment sink with drain boards

Convection oven

Tilting braising pan

Steam jacketed kettle

Steamer

Range

Ventilation system with utility distribution system

Mixer (shared with vegetable/cold foods)

Slicer (shared with vegetable/cold foods)

Utility carts

Reach-in freezer

Reach-in refrigerator

Deep fat fryer with filter system (optional)

Proofing cabinet

Storage racks for pans

Utility racks

Scales

##### **POT AND PAN WASHING AREA**

3-compartment sink with drain boards

Disposer

Sink heater (optional)

Storage racks for pans

##### **WAREWASHING AREA**

Dish machine

Disposer

Booster heater

Hand sink

Soiled dish table

Pre-rinse sink with spray

Racking shelf

##### **REFERENCE**

*Guidelines for Equipment to Prepare Healthy Meals.* By Mary Frances Nettles, PhD, RD. Deborah H. Carr, MS, RD. National Foodservice Management Institute. Publication No. NFSMI-R-25-96.

## **SECTION II: Kitchen Planning**

### **C. Equipment Selection**

#### **1. Suggested Equipment for Conventional Kitchens, continued**

##### **WAREWASHING AREA (continued)**

Tray dispensers

Dish dispensers

Utility carts

##### **CUSTOMER SERVICE AREA**

Pass-thru heated cabinets

Pass-thru refrigerators

Heated serving counters

Refrigerated serving counters

Milk coolers

Ice cream freezers

Cashier counters

Point-of-sale computer

Ice machine

Chilled water dispenser

Tray dispensers

Dish dispensers

Utility carts

Hand sink

##### **CHILD NUTRITION OFFICE**

Computer

Calculator

Telephone

Desk and chair

Filing cabinets

Bookshelves

## **REFERENCE**

*Guidelines for Equipment to Prepare Healthy Meals.* By Mary Frances Nettles, PhD, RD. Deborah H. Carr, MS, RD. National Foodservice Management Institute. Publication No. NFSMI-R-25-96.

## SECTION II: Kitchen Planning

### C. Suggested Equipment for Conventional Kitchens, continued

#### 2. Equipment Purchase Decision Forms -- Sample

|   |  |
|---|--|
| <b>CONVECTION OVENS</b><br><i>SAMPLE FORM</i> |  |
| School _____                                  | Breakfast ADP _____<br>Lunch ADP _____ |
| Manufacturer _____                            |  |
| Model No. _____                               |  |
| Manufacturer's Representative<br>_____        |  |
| Phone # (____) _____                          | Fax # (____) _____                     |

### **QUESTIONS TO CONSIDER**

1. How many meals are to be prepared?
2. Do I need a single or stacked oven?
3. What types of food products will be prepared in this oven?
4. Does this oven have the necessary capacity to allow for this increased production due to participation growth?
5. Does this oven provide production flexibility?
6. How often and for how many items will this oven be used?
7. What power requirements are necessary? Do I have the necessary utilities available in this kitchen? If not, how much will it cost to obtain necessary utilities?
8. Do I need a gas or electric oven?
9. How many KWs or BTUs does this oven use? Is it energy efficient?
10. What is the life expectancy for this oven?

See resource below for additional types of equipment.

### **REFERENCE**

*Guidelines for Equipment to Prepare Healthy Meals.* By Mary Frances Nettles, PhD, RD. Deborah H. Carr, MS, RD. National Foodservice Management Institute. Publication No. NFSMI-R-25-96.

## **SECTION II: Kitchen Planning**

### **C. Equipment Selection**

#### **3. General Factors Affecting Equipment Selection and Purchase**

**Cost: There are four main factors in cost:**

1. Purchase Price – What you paid for the equipment.
2. Operating Costs – What it costs to operate this piece such as, electricity or gas.
3. Installation expense – The price to hook up and put together the piece to be ready to use.
4. Repair – What it cost to repair, how complicated or hi-tech do you want?  
The more hi-tech usually means that it costs more to repair, because of the skill needed by the repairman.
5. Warranty

*Compare products from a variety of manufacturers. Check warranty for a piece of equipment to determine length, limitations and/or exclusions. Request a list of facilities currently using equipment. Arrange for kitchen staff training on operation and maintenance of equipment.*

## **REFERENCE**

*Principles of Equipment and Layout Design for Child Nutrition Programs. United States Department of Agriculture. Food and Nutrition Service. June, 1977.*

## **SECTION II: Kitchen Planning**

### **D. Utilities Cost and Conservation**

#### **1. Energy Considerations and Cost**

##### **a. Equipment Selection**

*In order to get the right piece of equipment and keep the energy cost as minimum as possible, consider:*

- Thermal characteristics of materials (like how much heat or cool do they absorb or reflect)
- Initial cost of materials and systems
- Maintenance requirements
- Operating expenses based on occupancy, use and fuel sources (i.e. availability of gas and electricity)
- Types of illumination and power (what types would be most effective for the least amount of energy expenditure).
- Types of heating, ventilating and air conditioning systems including special exhaust and ventilation systems. *Exhaust needs are directly related to the size of the facility and the quantity of food production, specific equipment exhaust and hours/length of operation.*

## **REFERENCE**

*Maryland State Department of Education School Food and Nutrition Service. January 1996.*

## **SECTION II: Kitchen Planning**

### **D. Utilities Cost and Conservation**

#### **b. Future planning considerations**

To forecast the future of energy use in school food service is to speculate the trends of the consumer and the environment. Trends in population, food choices, implementation, and environmental impact are indicators for planning all food service changes.

Customers are becoming more informed and insist on appropriate and high quality food. Customers respond to regional and “healthy” foods that are presented well and served quickly. The focus gradually is moving away from fried foods in order to reduce the fat content of the menu. Baking and steaming can become the major preparation methods.

Energy considerations can take an indirect but important role in meeting the customer’s food preferences. One area of opportunity is the focus on food service equipment. Equipment can be purchased for multiple uses such as steaming, baking, or sautéing. Smaller batch food production with capability to provide several regional or ethnic menu items at any meal should be investigated. The equipment manufacturer will continue to develop and provide energy efficient equipment. More automatic control and recycling of energy will be in the forefront. Equipment also will be developed to allow food service to manage human and food resources as well as energy.

Another focus should be energy conservation as it relates to clean air and the environment. Broiling and frying production methods can be decreased to not only meet nutrition trends but also to decrease wasted heat and grease to the work areas and surrounding environment.

Waste management continues to be a focus in food service as well as in the community. Reduction in the use of paper, plastic, and plastic wrap as well as recycling these products continues to be a concern of customers. Methods of incineration, reclaiming, and use reduction are key waste management techniques that will drive food service to environmental leadership and save energy.

Trends related to nutrition, high quality food, and conservation all address energy management and conservation. To incorporate energy conservation into food service, several major activities must be addressed. First, energy measurement and conservation issues should be addressed in any food service remodeling and construction. Structural and energy engineering need to accommodate the conservation trend. Second, the purchase of equipment should focus on energy use as well as production and labor needs. Third, menu and production management should contain an energy variable in addition to the traditionally recognized variables, such as nutrition, taste, color, flavor, texture, production method, cost, and employee skills. Menu items and production should be balanced to conserve energy.

Fourth, methods of conservation can be used in the service of food. For example, recyclable dishes minimize the volume of paper supplies and recoverable waste for revenue generation, environmental conservation, and air quality.

### **REFERENCE**

*Energy Conservation Manual for School Food Service, National Food Service Management Institute*

## **SECTION II: Kitchen Planning**

### **D. Utilities Cost and Conservation**

#### **b. Future planning considerations, continued**

Implementation of an energy conservation program in school food service involves all people, employees and customers alike. Future energy conservation will be based on commitment from school food service managers and extensive training of personnel. School food service personnel should be trained in the energy conservation role that they will have throughout their employment. The hiring process should contain an energy focus, as should new employee orientation and continued on-the-job training procedures and accountability. Customers (school children and school personnel) should be trained to conserve energy through their responsibility to recycle food and waste.

The future consideration of energy consumption in school food service should continue to develop and affect food service management. In addition, the education process of personnel and customers to energy responsibility will be enhanced. Energy conservation in food service will serve as a resource and cost management tool, an educational focus, and an environmental enhancement as natural energy resources are conserved. The need to educate children to conserve energy will be a lifetime investment.

*The Child Nutrition Director's decisions as to equipment selection and food delivery system should include an assessment of the environmental and conservation impact in the community. Refer to resource, which contains chart with conservation actions and the rationale for the action that can be implemented by food service employees in existing and new facilities.*

## **REFERENCE**

*Energy Conservation Manual for School Food Service, National Food Service Management Institute*

## **SECTION II: Kitchen Planning**

### **D. Utilities Cost and Conservation**

#### **2. Energy Alternatives**

##### **Solar Orientation**

*Designers should recognize the possibility of the use of natural light in a facility. They have the opportunity to utilize a cheap alternative to electric lights. The use of natural light can be utilized along with conventional electric ones. The cost may be high on the front end of the project to add windows or possibly skylights, but in the long run it would save money. Even in older facilities a skylight or a window here and there could be feasible if the layout of the building and location make it possible.*

##### **Service Access**

*There should be an adequate area specifically designed for deliveries. There should be enough room and space to allow bulky food items and equipment to enter the facility. There should also be enough room for large trucks to back-up and unload with ease. This area should not be in the way of school activities, and should not cross student pedestrian paths or any other traffic.*

## **REFERENCE**

*Maryland State Department of Education School Food and Nutrition Service. January 1996*

# **SECTION III**

## **Regulatory Requirements**

- A. Regulatory Considerations for School Food and Nutrition Service**
- B. Procurement Guidelines**

Section III provides a brief resource list of web sites, regulatory agencies and industry abbreviations. An architect or kitchen consultant can provide additional guidance on industry standards and regulations.

The procurement guidelines are subject to change based on federal and state regulations. Check with the Child Nutrition Unit, ADE for specific federal changes related to federal child nutrition programs. Always check for the local school districts most current procurement policies.

## **SECTION III: Regulatory Requirements**

### **A. Regulatory Considerations for School Food and Nutrition Services**

“When building a new or renovating an existing food service and nutrition facility, the school must comply with the requirements of several regulatory agencies to ensure that the facility will meet or exceed health and safety requirements” Grote pg. 94

HACCP for more info. (<http://vm.cfsan.fda.gov/~Ird/haccp.html>)

Health Codes for more info (contact Health Dept)

OSHA for more info (<http://www.osha.gov/>)

Fire and Building Codes for more info (<http://electrical-contractor.net/TheStore/ArkansasCodes.html>)

Equipment Regulations and Codes for more info (contact NSF, VL, ANSI, AGA, NFPA, ASME) (<http://www.1-800-arkansas.com/energy/CommercialIndustry>)

NSF = National Sanitation Foundation

UL = Underwriter’s Laboratories

ANSI = American National Standards Institute

AGA = American Gas Association

NFPA = National Fire Protection Association

ASME = American Society of Mechanical Engineers

ADAAG = Americans with Disability Act Accessibility Guidelines

UFAS = Uniform Federal Accessibility Standards

## **REFERENCE**

*Maryland State Department of Education School Food and Nutrition Service. January 1996.*

## SECTION III: Regulatory Requirements

### B. Procurement Guidelines

#### 1. Restricted Use of Federal Funds from the Non-Profit School Food Service Account

*School districts with federal child nutrition programs agree to furnish facilities in which the programs are to operate. These structures/facilities are to be built with state and local revenues (bond money, etc.) and not federal funds from child nutrition programs.*

*Federal funds from the non-profit food service account of child nutrition programs may be used under restricted provisions for the purchase of:*

- (1) Movable equipment for preparation and service of school meals*
- (2) Utility final connections within six feet of the installed equipment*
- (3) Prior approved items that have been submitted as part of a school meals marketing plan, i.e. neon lighting, decorative awnings, mobile vending carts for additional serving lines.*

#### 2. Funding Sources

*The source of funding will determine the procurement regulations that need to be followed for the renovation, addition or new construction. This guidance booklet is not meant to maintain current regulations after the date of publication. Always check with the school district purchasing agent for the most current local and state procurement regulations. Check with the Child Nutrition Unit, Arkansas Department of Education for the current federal regulations with regard to federal funds.*

#### 3. Funding Source and Required Procurement Process

***The most restrictive regulations must be used when determining the procurement method to be used when federal funds from the non-profit school food service account will pay for the items to be procured.***

|  |
|--|
| <p><i>The federal child nutrition program procurement procedure used to purchase food, equipment, supplies and services must follow the provisions of 7 CFR 3015, 301, 3019 and OMB Circulars A-87/A-122, as well as state and local requirements.</i></p> |
|--|

## SECTION III: Regulatory Requirements

### B. Procurement Guidelines

#### 3. Funding Source and Required Procurement Process, continued

##### a. Non-Profit School Food Service Account Funds:

*USDA regulations require (a) Formal Bid or (b) Request For Proposal (RFP) for purchases of \$100,000 or more.*

*Example: The procurement of kitchen equipment for a new construction project has an aggregate cost of \$100,000 or more. A formal sealed bid process of a request for proposal (RFP) must be used for all kitchen equipment for the project.*

##### **(1) Formal Sealed Bid Process**

The invitation to bid will contain:

- An adequate specification
- The time and location for the opening of the bids,
- Any bonding requirements,
- The criteria for awarding the bid

Additional federal requirements:

- The specifications for the item(s) or services to be purchased will be published in the local newspaper.
- All companies known to supply the item(s) or service will be notified in writing.
- **A vendor or potential vendor will be excluded from the process if the vendor writes or assists in writing the specifications.**
- The district will not use cost plus a percentage of cost to purchase item(s).

##### **(2) Request for Proposal (RFP):**

The request for proposal will contain:

- Adequate description of the services, equipment or supplies needed
- The evaluation factors and their relative importance for the RFP. See 7 CFR 3016.36(d)(3)(i).
- The time and location for the evaluation of the RFP
- Any bonding requirements

Additional Federal Requirements:

- The RFP will be announced publicly in the local newspaper
- All companies known to supply the item(s) or service will be notified in writing.
- **A vendor or potential vendor will be excluded from the process if the vendor writes or assists in writing the description for the services, equipment or supplies needed.**
- The district will not use cost plus a percentage of cost to purchase item(s).

## SECTION III: Regulatory Requirements

### B. Procurement Guidelines

#### 3. Funding Source and Required Procurement Process, continued

##### b. State Funds:

*The State of Arkansas purchasing requirements require formal bids or RFP procedures for purchases of \$10,000 or more.*

*Example: The procurement of items that cost \$10,000 to \$100,000 will be purchased by a formal sealed bid process or a request for proposal (RFP).*

*See previous description above in (a) formal sealed bid and (b) request for proposal. Please Note, THE EXCEPTION: USE OF STATE FUNDS DOES NOT require the provision that: “A vendor or potential vendor will be excluded from the process if the vendor writes or assists in writing the description for the services, equipment or supplies needed.”*

##### b. Local Funds:

*Local districts determine the threshold for formal and informal procurement to be used below the \$10,000 level.*

*Example: For all purchases of \$5,000 or less, a description will be developed for all items to be purchased. Price quotation (written, phone, e-mail or fax) will be taken monthly. The purchasing agent will purchase items that best meet the need of the child nutrition program (quality of item, services provided, etc) with the lowest price available. All aggregate purchases of more than \$5,000 will be made using a formal bid or RFP (see previous description, above). The purchasing agent will follow district procedures for making purchases (completing purchase orders, maintaining documentation, etc).*

*It is the responsibility of the child nutrition director to abide by the local school district's procurement policies for all procurement dollar thresholds when spending federal funds from child nutrition program funds. The most restrictive regulations must be used when determining the procurement method to be used when federal funds will pay for the items to be procured. For example: if the local school district policy is more restrictive than the state and federal regulations, all procurement with federal dollars must follow the local school district policy.*

#### 4. Additional Federal Procurement Regulations:

*All procurement transactions must reflect the intent and purpose of federal regulations as to open and free competition, code of conduct/ethics, and the prohibition of state preference in bid award determinations.*

## SECTION III: Regulatory Requirements

### B. Procurement Guidelines

#### 4. Additional Federal Procurement Regulations, continued

*Federal procurement procedures are found in 7 CFR 210.21, 7 CFR Part 3015, Part 3016 (Public governmental entities), Part 3017, Part 3018 and 7 CFR 3019 (Non-profit organizations, i.e.: Charter schools with non-profit status).*

*These regulations require: "All procurement transactions... without regard to dollar value shall be conducted in a manner that provides maximum open and free competition." Documentation must be maintained to prove that the appropriate procurement procedures were used and that the final selection is the most efficient and economical for the Child Nutrition programs. In addition, that portion of all commissions, considerations, donations (including scholarship funds) or any other funds received by the district that is based on the participation of the Child Nutrition programs in this contract must be deposited in the Child Nutrition account for Child Nutrition programs use only."*

*The following are additional excerpts from 7 CFR Part 3016, which must be followed during the procurement process.*

##### a. Code of Conduct

*7 CFR Part 3016.36 (b) (3) A School Food Authority (SFA, local school district) "will maintain a written code of conduct governing the performance of their (SFA) employees engaged in the award and administration of the contract. No employee ...shall participate in selection or in the award or administration of a contract supported by Federal funds if a conflict or interest, real or apparent would be involved."*

*7 CFR Part 3016.36 (b) (3) (iv) This regulation states: "...employees...will neither solicit nor accept gratuities, favors, or anything of monetary value from contractors, potential contractors, or parties...."*

##### b. Competition

*7 CFR Part 3016.36 (c) (1) Situations considered to be restrictive of competition include but are not limited to:*

- (iii) "Non-competitive pricing practices between firms or between affiliated companies*
- (iv) Non-competitive awards to consultants that are on retainer contracts*
- (v) Organizational conflicts of interest*
- (vi) Specifying only a "brand name" product instead of allowing "an equal" product to be offered and describing the performance of other relevant requirements of the procurement"*

## SECTION III: Regulatory Requirements

### B. Procurement Guidelines

#### 4. Additional Federal Procurement Regulations, continued

##### c. Non-geographic Preference

**7 CFR Part 3016.36 (c) (2)** *A School Food Authority (local school district) “will conduct procurements in a manner that prohibits the use of statutorily or administratively imposed in-State or local geographical preferences in the evaluation of bids or proposals...”*

##### d. Selection Procedures

**7 CFR Part 3016.36 (c)(3)(i)** *The request for proposal (RFP) or invitation to bid shall: "incorporate a clear and accurate description of the technical requirements for the material, product, or service to be procured. Such description shall not... contain features, which unduly restrict competition."*

**7 CFR Part 3016.36 (c)(3)(ii)** *The RFP or invitation to bid shall: "Identify all requirements which offertory (vendors) must fulfill and all other factors to be used in evaluating bids or proposals."*

##### e. Access to Contractor Records

**7 CFR Parts 3016.36 (i) (10)** *"Access by the grantee (state agency), the Federal grantor agency (USDA), the Comptroller General of the United States, or any of their duly authorized representatives to any books, documents, papers, and records of the contractor which are directly pertinent to that specific contract for the purpose of making audit, examination, excerpts, and transcriptions."*

**7 CFR 3016.36 (i) (11)** *Regulations require “retention of all required records for three years after ... the final payments and all other pending matters are closed.”*

*When a school district agrees to participate in the United States Department of Agriculture (USDA) Child Nutrition Programs, the district signs an agreement. In this School Food Authority Agreement between the Arkansas Department of Education and the local education agency, the school district agrees to make all accounts and records pertaining to its school food service available to both the state and federal audit for review.*

*There are several other very specific requirements in the regulations based on the method selected to procure products. If a district includes Child Nutrition programs in an exclusive beverage contract, and the district does not have copies of 7 CFR 210.21, 7 CFR 3015, 3016, 3017, 3018, and 3019 or OMB Circulars A-87 or A-122, please contact this office.*

*If the exclusive beverage contract does not include the federal Child Nutrition programs, the contract does not have to comply with the USDA procurement*

*regulations cited above, but it must still comply with the appropriate state procurement requirements.*

#### **f. Contract Provisions**

**7 CFR 3016/36(i) [Private Non-Profit/Charter entities refer to 3019.48 and attachment A-122].** See this section for remedies in event of breach of contract, termination for cause, work hours and safety, EEO, clean air and water, and compliance with State energy conservation plans.

#### **5. Sales Tax**

*School districts are not exempt from the sales tax on non-food items used in the operation of the school foodservice program.*

*It is the responsibility of a non-resident vendor to be registered with Arkansas to collect Arkansas tax. If you have a vendor who is not collecting sales tax, you may contact Sales and Use Tax Section, Arkansas Department of Finance and Administration, P. O. Box 1272, Little Rock, AR, 72203, or at (501) 682-7104.*

#### **6. Allowable/Unallowable Procurement Practices**

*The purpose of Federal procurement requirements is to provide a system where maximum open and free competition allows a purchaser to acquire the goods and services needed at the best possible price. It is not the purpose of Federal procurement rules to require child nutrition program operators to purchase sub-standard goods simply because the price is lowest; nor is it the purpose of Federal procurement rules to permit unreliable suppliers access to the child nutrition programs simply because these suppliers underbid reliable companies.*

##### **a. Allowable Procurement Practices:**

##### **1. Obtaining publicly available information such as:**

- Product brochures, product specification handouts, etc.
- Information obtained from the Internet
- Information/recommendations obtained from other food service personnel
- Information obtained by visiting food service operations, industry and professional trade shows
- Trade journal information

##### **2. Obtaining information from manufacturers and distributors including:**

- Recommendations of one product versus another product
- Features that make one product different from another
- The price for the product
- The price for specific features
- The model number, make and manufacturer of products that may be acceptable
- Specification sheets and product information hand-outs

#### **REFERENCE**

*Child Nutrition Administrative Guidance Booklet. Child Nutrition Unit, Arkansas Department of Education, Wanda Shockey*

## SECTION III: Regulatory Requirements

### B. Procurement Guidelines

#### 6. Allowable/Unallowable Procurement Practices

##### b. Unallowable Procurement Practices:

1. Allowing a potential contractor to write the bid or proposal terms, product specifications, and procurement procedures or contract terms
2. Allowing a potential contractor to evaluate bids or proposals submitted by competitors.
3. Delegating bid/proposal acceptance or recommendation for acceptance to a potential contract competing on the procurement.
4. Allowing a potential contractor access to sealed bid information before the bids are publicly opened.
5. Disclosing the content of proposal offers submitted by others to a potential supplier prior to the supplier submitting an offer.
6. Negotiating under the formal advertising method (sealed bid) of procurement.
7. Accepting non-responsive bids or offers

For additional information on USDA procurement requirements see 7 CFR 210.21; Title 7 Code of Federal Regulations (CFR) Part 3015, Part 3016, Part 3017 Part 3018, Part 3019 as well as OMB Circulars A-87 and A-122.

#### 7. Buy American

*USDA requires that whenever possible, School Food Authorities shall only purchase food products that are produced in the United States. **Exceptions to the “Buy American” requirement are allowed when:***

- *Products are not produced or manufactured in the United States in sufficient and reasonable available quantities of a satisfactory quality;*
- *The cost of the domestic produced food products is significantly higher than that of foreign products.*

#### 8. Debarment and Suspension

*A school district is prohibited from contracting with a company or individual that has been debarred or suspended in accordance with 7CFR 3017. This prohibition applies to new contracts and extensions or renewals of existing contracts of \$100,000 or more and to contracts for audit services, regardless of amount. A “Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion” must be filed with all bids of \$100,000 or more. An area specialist can assist school districts with questions regarding debarment and suspension.*

## REFERENCE

*Child Nutrition Administrative Guidance Booklet. Child Nutrition Unit, Arkansas Department of Education, Wanda Shockey*

# SECTION IV

## REFERENCES

The references listed in this section are just a few that CN Directors may find useful for more in depth review.

Contact the CN Area Specialist assigned to the school district for training or workshops that may be available for child nutrition personnel in facility design and equipment selection.

# References

1. Child Nutrition Administrative Guidance Booklet. Child Nutrition Unit, Arkansas Department of Education, 2003, Wanda Shockey. ADE Director's Memo IA-04-O22.
2. Design Handbook-National Food Service Management Institute – The University of Mississippi. Written by Susan Crowl Silberberg. 10-7
3. Energy Conservation Manual for School Food Service. National Food Service Management Institute. April, 1994.
4. Guidelines for Equipment to Prepare Healthy Meals. By Mary Frances Nettles, PhD, RD. Deborah H. Carr, MS, RD. National Foodservice Management Institute. Publication No. NFSMI-R-25-96. April, 1996.
5. Maryland State Department of Education School Food and Nutrition Service. January 1996.
6. Minimal School House Construction Standards – Rules and Regulations. Arkansas Department of Education. 1992.
7. Principles of Equipment and Layout Design For Child Nutrition Programs. United States Department of Agriculture, Food and Nutrition Service. June 1977.
8. School Foodservice 3<sup>rd</sup> Edition. Dorothy Van Egmond – Pannell AVI Publishing Company Inc. Westport, Connecticut. Copyright 1985.
9. School Nutrition Facility Planning Guide. California Department of Education. Sacramento, 1991.