Remodeling Community or Church Kitchens

Updating a community center or church kitchen is different from a home remodeling project. Understanding and applying specific guidelines will help ensure that foods are prepared and served safely and efficiently.

Kitchens owned by nonprofit organizations do not require licensing unless they are used to prepare, serve, and sell more than one meal per week. Kitchens that do so must be inspected by a state agency. (In Iowa, this is the Department of Inspection and Appeals.) However, a church that holds a weekend Turkey Dinner event must have a temporary foodservice license (see www.dia.iowa.gov for more information).

Kitchen inspections are based on the Food and Drug Administration's Food Code 2005. These regulations address:

- infrastructure needs, such as water quality and pressure;
- materials used on flooring, walls, ceilings, and food contact surfaces;
- storage and production equipment; and
- employee health status.

However, even unlicensed kitchens should strive to meet these best practices in order to help prevent an outbreak of a foodborne illness. Remodeling decisions should focus on safety and efficiency.

Involving the individuals who will use the facility in brainstorming all possibilities and setting priorities is an important part of a successful design process. For example, if the current location is a window-less basement, adding a window for improved lighting (and worker morale) might be worth the extra cost.

Final design plans also should consider typical food production needs, probable events, and accessibility for kitchen workers who use walkers or wheelchairs. A kitchen designer may be helpful in preparing the final plan and providing estimates.

**Step 1 – Define how the kitchen is used**

- **Number of people served and frequency of service**
  What is the greatest typical number of people served and how often does this occur? A church congregation of 400 members needs more storage and preparation equipment than a congregation of 25. If the kitchen is used for the occasional funeral luncheon only, then special plans can be made for handling events that exceed capacity, such as using roasters instead of installing another oven. Kitchens that are frequently used for community events, such as lunches for older adults or scout group banquets, also may have specific needs.

- **Typical menus or types of food prepared and served**
  Serving coffee and cookies on Sundays requires less equipment than serving weekly all-congregation dinners.

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**6 Steps to Successful Kitchen Remodeling**

1. Define how the kitchen is used
2. Consider general layout and design principles
3. Establish a budget
4. Draw a draft layout
5. Discuss project with contractor or builder
6. Monitor construction
• **Amount of on-site preparation versus purchase of convenience products**
An after-school program may only need snacks, which are typically purchased prepackaged, while a summer day care will need to prepare and serve breakfast and lunch. Cooking raw meats for an adult day care will require different storage and cooking equipment than a program that serves meals prepared elsewhere.

• **Number of people working in kitchen at the same time**
The kitchen is often a gathering spot. Analyzing typical events will help you estimate approximate numbers of people who might be in the food preparation and cleaning areas at any given time. For instance, a group of families with young children who use the facility for monthly dinner meetings might have specific concerns about kitchen layout and other safety issues. Hosting a special food fundraising event implies the presence of many people and the possibility of congestion that could lead to an accident unless traffic patterns are clearly thought through. Plan for typical use and consider posting safety rules or limiting access to food production areas.

• **Service timing and style**
Community kitchens often have a service window or counter. However, a kitchen that is used mainly to prepare daycare meals for family-style service in the classrooms may not need one. Likewise, hot or cold holding units may or may not be needed to ensure food safety during the serving time.

• **Type of plateware used**
If disposable ware typically is used, then a commercial dishwasher machine may not be needed. However, for environmental or economic reasons, your organization may wish to encourage use of permanent dishware. This decision affects both storage and clean-up needs. A three-compartment sink (one each for washing, rinsing and sanitizing) is a minimum requirement. However, if the kitchen is frequently used for on-site preparation for large group meals, then investing in a commercial style dishwasher may be wise. Commercial under-the-counter models are available that take minimum space and can provide assurance that dishware used for moderate sized groups is cleaned and sanitized properly.

• **Guest characteristics, including accommodations for disabilities**
Plan for accessibility. Avoid basement locations for kitchen or dining areas because these may require use of chair lifts or elevators to accommodate people who use wheelchairs. Wider doors (at least 36 inches) and modified counter heights (include some sit-down work areas) also are needed for accessibility.

• **Amount of available space**
As a general rule, commercial kitchen designers allow about 10 square feet per person in dining space and five square feet per person for the food preparation, storage, service, and cleaning areas. That means a facility that regularly serves 100 people would need about 1000 square feet for dining space and 500 square feet for preparation, storage, and cleaning areas. About 60 percent (300 square feet) would be designated for preparation space with the remaining 40 percent (200 square feet) for storage, cleaning, and service. When remodeling within an existing space, it may not be possible to match these guidelines, or it may be necessary to think creatively about how to meet storage needs.
Step 2 – Consider general layout and design principles

The following principles should be considered in the initial planning and designing of the remodeling project. Visiting other community and church kitchens is a good way to get ideas.

- **Efficient and safe flow of food from preparation to service**
  - Does the food path follow a logical flow from arriving at the facility to service without back-tracking? Consider where food is stored until used, prepared (are hand sinks and production sinks at logical points?), cooked, held for service (can food be kept hot or cold as needed?), and served.
  - Is there sufficient area available to accommodate expected number of kitchen workers?
  - Are uncooked/raw foods kept separate from cooked foods during storage and preparation?
  - Are soiled equipment, utensils, and dishware kept separate from clean items and away from food preparation areas?

- **Maximum utilization**
  - Is all space effectively used?
  - What about space above and below countertops and in corners? Corner locations are good to store equipment items that are used less frequently, such as the roasters used once a year. Carts can be stored under counters.

- **Flexible and functional**
  - Are counter heights and aisle widths acceptable to more than one type of user?
    The recommended counter height for the average adult is 36 to 38 inches. However, also include some counters at the 29- to 34-inch height with a 30-inch knee space opening for children and/or persons who use wheelchairs. Aisles should be three to four feet wide with consideration given to their location in kitchen (wider space is needed for major walk-ways and by hot food cooking units to avoid burns) and number of people likely to be working in the kitchen at any given time.
  - Can areas and equipment be used for more than one purpose without compromising food safety?
  - Can any items/equipment be placed on casters and wheeled away when not in use?

- **Environmental**
  - Are resources, such as electricity and water, used wisely?
  - Is the equipment energy efficient?
    Many municipalities and appliance dealers offer rebates or discounts for the purchase of energy efficient equipment—check what types of programs are available in your area.
  - Are buffers needed for noise reduction? Consider installing a tambour (roll down) door in the service window to effectively screen the production area from the dining area. Such doors also may be required for fire safety.

Carts with wheels (casters)

Tambour (roll down) door
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- Plumbing needs include both water source/safety and number of sinks and possibly a dishmachine. If well water is used, plans should be in place for annual tests to ensure that it is potable, or safe for drinking. Generally, three or four sinks are needed in addition to the three-compartment sink or dishmachine for cleaning: one or two for handwashing, one for food preparation work, and one for cleaning.

- List equipment needs
  Equipment designed for the commercial foodservice market may be a viable option if your facility is frequently used. This equipment is designed to withstand heavy use by many people, whereas home models of equipment are intended for families. Depending on the item and durability (with potential replacement concerns), costs may not be that much higher. One strategy is to purchase used commercial equipment from a restaurant closing, auction, or other outlet, although it is recommended someone knowledgeable about the equipment evaluate the item.

- Security
  - Is food protected from tampering within storage and work areas? Some foodservices use a padlock with key on a refrigerator door handle to protect their food investments from theft and tampering.
  - Are cleaning chemicals kept in a locked cupboard or container? These are dangerous if improperly used.
  - Are workers safe from physical (i.e. tornadoes or fire) and human threats? Can access to the kitchen and storage areas be restricted as needed? Is a telephone available along with a list of emergency contacts posted in a visible location?

- Step 3 – Establish a budget
  Some organizations work from a budget based on available dollars; others prepare an itemized budget for fundraising. Many Web-based resources are available to help provide estimates for equipment and infrastructure needs (see Resources on page 10).

- List infrastructure needs
  - Electrical outlets should be strategically placed with at least one on each wall of the room (more on walls or counters by food preparation area) and located at easy-to-reach levels without bending or stretching. The actual number and plug type needed will be determined by the electrical needs and the number of equipment items.
  
  - Exhaust hoods for cooking equipment should be vented to the outside to improve air quality. While not a requirement in unlicensed kitchens, installation is advised.
  
  - Gas is one form of energy used in cooking appliances. Your operation may not have any equipment that uses gas as the energy source.

- Sinks
  Having enough sinks available for task-specific usage helps prevent dangerous cross contamination situations. Ideally, three types of sinks should be installed and dedicated specifically for handwashing, food production, and cleaning purposes. Placing a handwashing sink close to cleaning areas makes it easier for people to wash their hands after handling dirty dishes and before handling clean dishware.

Handwashing sink
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- **Dishwashing**
  Will dishes and pots/pans be cleaned manually or mechanically? If planning for manual dishwashing because disposable table service will be used most often, then the budget should include installation of a three-compartment sink in a designated clean-up area. The first compartment is for washing, the second for rinsing, and the third for sanitizing. Compartments should be large enough to accommodate the largest cooking equipment (pots, mixing bowls, and/or sheet trays) with drainage space for air-drying items.

- **Cold storage**
  The recommended amount of refrigerated storage space is .25 cubic feet per person. Thus, a kitchen that regularly serves 100 people needs 25 cubic feet of refrigerated space.

  Freezer space requirements depend upon the particular needs of the facility. For example, a kitchen that offers daily snacks and after-service coffee will not need the same amount of freezer storage space as a facility that prepares food from scratch on a daily basis.

- **Cooking equipment**
  An operation that regularly prepares food should have at least a home model oven and range with a minimum of four burners. For those operations where preparation and cooking occur regularly, investing in commercial cooking equipment could be cost-effective. A commercial range will offer two to three times more power (measured in BTUs) than a home model. For instance, a 60-inch range with 10 burners and two 26-inch wide ovens will cost approximately $3,000 compared to two home models that might be about $900 each. Including a griddle as part of the range top also adds flexibility for meal preparation.
Kitchens preparing and serving food to specific at-risk groups (young children, older adults, those on medication, or pregnant women) should consider including a dishwasher in their plans. A commercial single-compartment dish machine will cost about $12,000 while an under-the-counter model (similar in design to one used in homes and as seen on page 2) will cost about $5,500. Check these Web sites for additional information:
www.hobartcorp.com/products/warewashing/door-type/
www.hobartcorp.com/products/warewashing/undercounters/

- **Food preparation equipment**
  The type and amount of needed equipment depends on the number and variety of menu items prepared from scratch. Unless the facility anticipates a change in menu offerings, or wants to update old equipment, new items may not need to be purchased as part of the remodeling.

  A smaller operation serving only afternoon snacks is not likely to need much more than a few baking sheets, pots and pans, and perhaps a small mixer, and can opener. Additional small equipment items—such as wire whips, serving spoons, tongs, and hot pads—also may be needed. Consideration also should be given to where items will be stored.

- **Choosing large or small equipment**
  When choosing commercial equipment look for indication of approval or certification from third party evaluators. For example, NSF International provides a seal of approval for equipment items. UL provides similar certification for electrical equipment. Commercial equipment advice and buyer’s guides can be obtained from equipment sales persons as well as equipment distributors’ Web sites (see Resources on page 10).

- **Selecting materials**
  **Floors** should be of materials that are durable, sealed, and provide some texture to avoid slips and falls when wet. Examples are vinyl, tile, or sealed concrete. Carpet or unsealed wood floors should not be used in kitchen areas because their porous nature allows bacteria from spilled food and beverages to survive and grow. Trim, such as corner rounds or coving, should be installed between the floor and wall to prevent sharp corners or gaps that would allow soil and food debris to collect.

  **Kitchen walls and ceilings** should be of smooth, non-absorbent materials that cover all pipes and studs. Examples of acceptable wall and ceiling materials include wall panels with moisture-proof surfaces, washable paint, tile, and stainless steel.

  **Aluminum** may be used in shelving or interior lining of large equipment.

  **Stainless steel** is a common option when purchasing commercial foodservice equipment. Stainless steel usually comes in three grades: 14, 16, and 18 gauge with 14 gauge being the heaviest. A lower gauge number (i.e. gauge 14) is needed for items requiring more stability, such as a work table with a heavy piece of equipment sitting on it. Countertops and shelving should be at least 16 gauge. The mix of steel and alloys is identified by a given ratio: 18/8 indicates the stainless steel alloy contains 18 percent chromium and 8 percent nickel. The chromium gives the stainless steel strength and the nickel adds shine and rust resistance.

  **Synthetic materials**, such as plastic or rubber, can be used for shelving, exteriors of equipment, and for small equipment items. Many are very durable.
Step 4 – Draw a draft layout
Measure and draw the current kitchen layout to scale on graph paper (¼ inch = 1 foot); include doors and windows. After analyzing the site and your needs, brainstorm alternative layouts and design ideas. Place see-through tracing paper over your current kitchen drawing to sketch possible alternative designs.

The illustrations on pages 8 and 9 show examples of different types and sizes of kitchen layouts. Costs will be less if you can work with existing utility lines for water and electricity but their current placement should not dictate the design, especially if moving them will improve work flow, efficiency, and/or safety.

Evaluate and revise your draft as necessary.
• Is a sink designed for handwashing installed just inside the entry area and/or by the cleaning area?

• Is the area designated for food preparation separate from the area designed for cleaning and sanitizing soiled dishware?

• Are food and chemical storage areas separate? Ideally, all cleaning agents should be kept in a locked storage area. The amount and type of storage space for food items will depend on the scope and amount of food preparation. If the kitchen is used only for Sunday coffee, for example, then a single home-style refrigerator will be sufficient. But if lunch is served daily, then a one- or two-compartment reach-in commercial refrigerator may be needed.

• How will traffic patterns flow through the kitchen work areas and from door openings into the kitchen from the dining room and from the outside? Can soiled dishware from the dining room be carried directly to the dish cleaning area, rather than through the food production and service areas?

Step 5 – Discuss project with contractor or builder
• Identify several potential contractors and schedule appointments with each one at the kitchen site to discuss your vision and needs. Share your sketch of the proposed layout and discuss your priorities for improvement.

• Select your contractor carefully. Check references and inspect completed work projects. Ask about timeliness of completion and satisfaction with work. If the kitchen project is supported by any type of public funds, find out what the process is for selecting a contractor and clarify who needs to give final approval.

• Put in writing:
  ▪ what will be done,
  ▪ when it will be completed, and
  ▪ other details related to compensation.

• Purchase equipment installed. Depending on a volunteer or staff person to install the item is seldom cost-effective. Proper installation is critical for effective operation and for any future warranty claims. For example, unaligned door handles on refrigerators or ovens can result in energy losses.

Step 6 – Monitor construction
• Identify a designated contact person from the committee for the contractor. If you must split responsibilities among remodeling committee members, make sure all are kept informed of all discussions and decisions. Decide who will visit the site on a regular basis.

• Ask questions and point out concerns while work is in progress.

• If desired, document progress with photos before, during, and after the remodeling.

• Designate a specific place for storing all manuals for new equipment and/or care instructions for new surfaces.
Production Kitchen Examples

Service kitchen (No food production)

This space is primarily used for preparing beverages and for staging the service of already prepared or packaged items. This kitchen is less than 100 square feet in size and features a handwashing sink, two-compartment production sink, commercial under-the-counter dishwasher, home-sized refrigeration/freezer, microwave, coffee machine, and service counter. Neither an oven nor a cooktop are likely to be needed. The dishwasher could be eliminated if disposable dishware is typically used and/or if there is a separate main kitchen area where permanent dishware could be washed.

Minimal food production needs

This kitchen is primarily used for short term storing, assembling, or holding of food that is prepared elsewhere; only a few food items are prepared on-site from start to finish. Only four or five workers are needed at any one time to prepare coffee, fresh fruits or vegetables, and/or light meals to serve up to 100 people on an infrequent schedule. Staff may prepare food snacks on site for 100 or so children once a week. The kitchen area has about 360 square feet for preparation, service, storage, and cleaning and includes a handwashing sink, a double basin food-preparation sink, commercial mixer, refrigeration and freezer units, and two four-burner ranges with ovens. A three-compartment dish washing sink is used for manual cleaning of the permanent dishware and glassware that are stored in rolling carts stored under the counters.
Moderate food production needs

This kitchen is used frequently for a variety of events. Meals for 150 guests could easily be prepared on-site. Six to eight workers can work comfortably in this 600 square foot space. An additional 80 square feet of storage space also is provided. A one-tank commercial dishmachine with external exhaust is set in an area away from the food preparation and service areas. It includes staging, rinsing, and drying areas. Cooking can be done in a microwave or on a 10-burner commercial range with two ovens beneath and an exhaust hood over top. Cold storage is provided by a two-door commercial refrigerator plus two home-style upright freezers. Washing facilities include a two-compartment preparation sink; a handwashing sink centrally located near the entrance, food production, and cleaning areas; and a soaking/cleaning sink in the dish cleaning area. Dishes and glassware are stored in rolling dish carts. The center work area has both a stationary work table, as well as mobile work tables for preparation-to-service flexibility.
Resources

General
Food Code
www.fda.gov/Food/FoodSafety/RetailFoodProtection/FoodCode/default.htm

Iowa Department of Inspection and Appeals
www.dia.iowa.gov

Iowa State University Hotel, Restaurant and Institution Management Extension
www.extension.iastate.edu/healthnutrition/food/safety/hrim_extension.htm

NSF International
www.nsf.org/

Underwriters Laboratory
www.ul.com/global/eng/pages/

Dishmachine
Big Tray (Hobart, Jackson)
www.bigtray.com

Food Service Warehouse (Fagor, Insinger, Jet Tech, Thunder Group, Turbo Air)
www.foodservicewarehouse.com

Restaurant Source (Carlisle, Hobart, Jackson)
www.restaurantsource.com

Exhaust hood
American Hood Systems
www.americanhood.com

Central Restaurant Products
www.centralrestaurant.com

Hood Mart
www.hoodmart.com

Oven
Big Tray (Vulcan, Wolf)
www.bigtray.com

Oven World (Amana, Bakers Pride, Blodgee, Cadco, Duke, Equipex, Garland, Southbend, Vollrath, Vulcan, Wolf)
www.ovenworld.com

Restaurant Source (Anvil, Blodgett, Nemco, Vulcan, Wolf)
www.restaurantsource.com

Range
Big Tray (Vulcan, Wolf)
www.bigtray.com

Imperial Range
www.imperialrange.com

Restaurant Source (Southbend, Vulcan, Wolf)
www.restaurantsource.com

Refrigeration
Big Tray (Traulsen, True)
www.bigtray.com

Food Service Warehouse (Arctic Air, Beverage-Air, Dean, True, Turbo Air)
www.foodservicewarehouse.com

Restaurant Source (Alamo, Continental, Traulsen, True, Victory)
www.restaurantsource.com

Steam Table
Big Tray
www.bigtray.com

Instawares Restaurant Supply Superstore – Duke
www.instawares.com

Restaurant Source (Duke, Eagle)
www.restaurantsource.com

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