



Layers of light provide flexibility in a multi-function room. Modern kitchens are often more than just a place to cook. Different types of lighting make work areas more efficient and recreation more inviting.

The Well-Lit Kitchen

The hardest-working room in the house needs layers of light to do its job

BY NANCY MCCOY



Remember the kitchen with one circular fluorescent tube in the ceiling? Back then, kitchens were places to cook, period, and that fixture was a high-tech way of lighting the cook's workspace. These days, fluorescent fixtures still provide good light sources, but the kitchen is often part of a larger open space that also includes the breakfast, family and dining rooms. With such a wide assortment of activities and tasks, an area such as this one requires lots of different lighting created by a combination of incandescent, halogen and fluorescent fixtures (photo facing page). In this article, I'll discuss a number of ideas for lighting a modern kitchen and some things to consider when choosing light sources.

Layers of light give you options

Quality of light directly affects your behavior, as anyone who has spent a winter near the Arctic Circle can tell you. Sunlight is the optimal light, but we've extended our lives past sundown and have to settle for artificial

light sources. To make the best of the compromise, lighting designers think in terms of layers of light. Each of the four basic layers (ambient, task, accent and decorative) refers to one type of light in one area of the room; each light is controlled by a single dimmer or switch. Of the four types, accent lighting is rarely used in a kitchen.

Layering light (photos below) gives you the flexibility to create different moods or scenes in the room. For instance, a combination of undercabinet lights, recessed downlights and above-cabinet indirect fixtures creates good bright light for cooking. When it's time to eat, the mood can be shifted from utilitarian to a more intimate setting by turning on indirect fixtures and dimming task lighting.

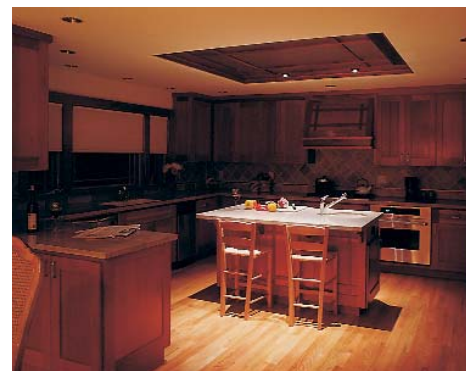
When you plan for layered light, there are some considerations to keep in mind: What do you want to light? What kind of fixtures and dimmers should you use? How reflective are the materials in the space? What sort of trims work better? When planning, it's a good idea to familiarize yourself first with



Downlights provide good ambient light. Recessed fixtures are relatively glare-free and can be used with incandescent or fluorescent lamps.



Task lighting needs to be bright and shadow-free. Fixtures are mounted toward the cabinets' fronts to direct light over the work and to reduce glare.



Halogen lamps shed good task lighting onto an island or table. Small MR16 lamps in adjustable downlights drive beams of light onto a work surface.

LAYERED LIGHT WORKS IN SMALL KITCHENS, TOO

Miniature strips of light mounted in the glass-front upper cabinets make them glow like lanterns (photo below left). Below them, strip halogens or rope lighting hidden above the toe kicks shines a soft light onto the floor. A solitary halogen reflector above the sink, a task light when used with the recessed downlights, becomes an accent light when used by itself. A variety of fixtures (photo right) can change the character of a room and emphasize aspects of an intricate design. Here, recessed downlights with gold trims warm the maple cabinets. Cove lighting (photo below center) makes a good indirect source of ambient light. Controlled by a dimmer, cove lights can also serve as night-lights.



Understanding Kelvin color temperature

The designation Kelvin color temperature describes the warmth or coolness of a light source. Measured in degrees, the scale ranges from 1700°K to 7500°K; the lower the number, the warmer the color.

Candlelight	1700°K
Incandescent	2700°K
Halogen	3000°K
Warm fluorescent	3000°K
Cool white fluorescent	4100°K
Daylight fluorescent	5000°K

Candlelight, sunsets, incandescent lamps and halogen lamps produce a warm color of light. Noonday sunlight, cool white fluorescent and daylight fluorescent bulbs produce a cool color of light.

Residential interiors and skin tones generally look better under a warm color of light. New fluorescent lamps are typically rated in three Kelvin temperatures: 3000°K, 3500°K and 4100°K. The first two are most commonly used in residential lighting. —N. M.

the types of lamps and the quality of their light (sidebar facing page).

Ambient light can make the room feel bigger

The first job is to provide good general, or ambient, lighting. If you have a limited budget, you can still create good light by installing a 16-in. by 48-in. fluorescent fixture in the center of the ceiling that has color-corrected (80 on the color-rendering index, 3000°K) lamps (sidebar p. 73) and a 16-in. by 24-in. fluorescent directly above the sink. You'll get lots of evenly distributed, natural-looking light.

On a larger budget, I like to use downlights recessed into the ceiling (photos inset p. 69;



LAMP SELECTION

INCANDESCENTS

When you hear “light bulb,” you usually think of the familiar incandescent bulb (1), or lamp, as it’s known in the industry. Always available and inexpensive, incandescents have good color rendering and come in a wide variety of sizes and wattages, including the newer rope lights (2). Less energy efficient, incandescents are the shortest-lived lamps on the market.



HALOGENS

Halogen lamps are incandescents that are filled with halogen gas, which makes the lamp burn brighter and last longer. The color of the light is whiter than an incandescent, the color rendering is excellent, and the different types of bulbs last approximately 2,500 to 10,000 hours. Miniature 12v bulbs, like those used in puck lights (3), can be used in undercabinet task lights; 12v and 120v reflector shapes (4) are used in recessed downlights. Like regular incandescents, halogens can be dimmed with standard line-voltage and low-voltage dimmers. Due to the excessive heat the lamps generate, manufacturers recommend that halogens not be used in confined spaces.

FLUORESCENTS

The most efficient lamps for indoor residential use are fluorescents. They generate 4 to 5 times more lumens per watt than incandescent bulbs, produce less heat and have a longer life, as much as 20,000 hours. In the past few years, compact shapes that have become more available can be used in recessed downlights and decorative fixtures. These new compact shapes include twin-tube (5), triple-tube (6) and quad-tube biaxial shapes that can squeeze more light from incandescent-size bulbs. To estimate equivalent incandescent wattage from a fluorescent, multiply fluorescent wattage times four. For example, one 26w quad-fluorescent equals a 100w incandescent.

Instead of the cool blue light, the new color-corrected triphosphor lamps make room finishes and skin tones appear more natural; I like 3000°K and 82 CRI fluorescent tubes. The familiar cool white lamps should not be used in modern residential construction because they give cabinets, food and people a slightly blue-green cast.

— N. M.

above). Arranged around the perimeter of the room, downlights can illuminate the fronts of the upper cabinets, a trick that makes the room seem bigger. The light that grazes the cabinet doors highlights the molding profiles and illuminates the inside of the cabinet when you open the door. I start the layout by centering fixtures on the cabinet door or on pairs of doors, about 6 in. to 8 in. from the face frame.

When choosing downlight lamps for this application, I prefer a wider beam spread and softer punch of light, so I usually specify 100w halogen A-lamps, which have the widest beam spread available. This type of lamp will also throw supplemental task lighting on

countertops and help to erase harsh shadows. If I want a narrower, more intense beam of light, I use 75w PAR30 halogen floods. When the ceiling is high (10 ft. or more), I sometimes use recessed downlights to supplement a pendant. This option provides a soft fill light in the space.

Once you’ve taken care of the essentials, you can get creative with cove lighting (photo right, facing page). If you have high ceilings, lights above the upper cabinets give a wash of light that’s shadow-free. Cove lighting can be used as ambient light in conjunction with task lights or by itself as a night-light. You need a minimum of 18 in. between the top of the cabinets and the ceiling. I gen-

erally prefer fluorescent lighting here because the lamps have a 20,000-hour life and bounce large amounts of soft light off the ceiling. I center 4-ft. fluorescent tubes end to end on the top of the cabinet to prevent shadowlines between the fixtures from appearing on the wall. To shield the view of the fixtures from below, you must have a 4-in. fascia projecting from the top of the cabinet. Halogen strip lighting can also be used here and has the added attraction of being easily dimmed.

Task lighting can come from the ceiling or under the cabinets

Task lighting should be bright, as shadow-free as possible and focused on places where

SELECTING RECESSED-DOWNLIGHT REFLECTOR FINISHES

Recessed downlights are available with five basic types of reflectors known as trims. These trims help to direct the light, to reduce excess light at the ceiling and to affect the quality of light, so it's a good idea to think about what you need before you spend \$15 to \$25 for each reflector.

Gold specular: Wood cabinetry and skin tones can be enhanced with gold trims, which cast a warm glow. These trims can also make white colors look slightly muddy.

Black specular: Used when you don't want to notice the fixture. Black absorbs stray light at the ceiling, reduces glare and focuses your attention on the object being lighted.

Clear specular: Polished chrome is good for rooms with stainless-steel or similar finishes; the trim doesn't add any color to the light.

Black or white step-baffle reflector trims: Some people buy white step-baffle downlights because they look so good when they are turned off. When the recessed white step-baffle fixture is lighted, it becomes the brightest object in your field of view. If the ceiling height is 12 ft. or more, you could install white step-baffle trims because the light fixture would be out of your peripheral view. Baffles are easier to clean than specular reflectors and usually cost about 10% to 20% less.



Lighting design on the Web

Most major lighting manufacturers offer on-line catalogs and good overall information on lighting design. For more detailed design information and links to manufacturers, check out the following sites:

inter-Light Inc.
www.lightsearch.com
Lighting-industry search engine.

The Lighting Research Center
www.lrc.rpi.edu
Great site for design ideas and new technology; based at Rensselaer Polytechnic Institute.

The Research Center for Lighting Design and Applications
www.lightforum.com
Industry association site that offers design ideas, forums, literature and links to designers and manufacturers.

you mince garlic, read a cookbook or watch a candy thermometer. When used as task lights, downlights work best positioned over an island or table where their beams can cancel each other's shadows. In a kitchen with an 8-ft. to 10-ft. ceiling height, I like to use incandescent downlights with small 50w MR16 halogen reflector bulbs or 75w PAR-30 floods on 5-ft. to 6-ft. centers over islands or tables. If I use compact fluorescent lamps, I reduce the interval between fixtures a bit to about 4 ft. to 5 ft. o. c. Over the sink, two similar fixtures spaced 15 in. to 18 in. apart work well.

One problem with downlights is that the upper cabinets create shadows on the countertop, the main workspace of the kitchen. Undercabinet lights, either fluorescent or halogen, are a good remedy (photo center, p. 69). The first thing to consider for undercabinet task lighting is the location of the

“Your eye is always drawn to the brightest object in the room. Don't let that be a light bulb.”

fixtures. They should be mounted at the front edge of the cabinet's underside, for two reasons: First, the task is at the front of the counter, not at the back where the canisters are placed. Second, when you're sitting at the adjacent table, you won't see the fixtures because they're hidden by the lower edge of the face frame. Slim fluorescent fixtures and halogen strip lights are commonly used for task lighting. Halogens are initially more expensive but are easily dimmed, whereas fluorescents are inexpensive to buy but costly (about \$25 per lin. ft.) to dim.

The countertop material is important, too. Any highly polished material will reflect undercabinet lights, and glare can be distracting when you're trying to work. Matte finishes are more compatible with undercabinet task lighting. However, if the kitchen has a shiny marble counter, I try to use 12v halogen puck



Decorative pendants create an intimate glow. A row of small incandescent fixtures provides a uniform wash of light across the table and contributes to the ambient light in the larger space.

Color-rendering index (CRI)

Have you ever gone to a sports game and noticed the orange lights in the parking lot? What color is your blue car under one of these lights? Who knows? Your blue car looks gray or brown. This example is a good illustration of the color-rendering index, which refers to how realistic colored objects will appear under a given light source. The scale ranges from 0 (the worst) to 100 (the best) and is listed on all fluorescent lamps. Daylight, incandescent and halogen sources render colored objects well and are rated at 100. Cool white fluorescent lamps have a CRI of 64. This rating means that 64% of the objects look normal and 36% don't look normal under this light source. There are also new fluorescent lamps that now use tricolor phosphor coatings that equally mix blues, greens and reds; the three primary colors make everything look better under these sources. With a CRI in the 70s or 80s, they're ideal for residential use.

—N. M.

lights spaced every 12 in. to 18 in. o. c. These individual sources aren't as noticeable as a long continuous strip of fluorescents or halogens. However, they generate higher temperatures. Newer types of xenon halogen lamps made by companies such as Alico (905-305-6606) and Starfire Lighting (800-443-8823) supposedly operate at a cooler temperature and have a longer life.

Pendants add a decorative light source over islands and tables

Used in conjunction with recessed downlights for task lighting, decorative fixtures add a soft ambience and human scale to the kitchen. Large-diameter, bowl-shaped pendants covered with translucent frosted glass fill a room with light; a line of smaller fixtures is a good option, too (photo above). A hanging fixture should have at least 30 in. of space over a tabletop; over an island or counter where someone is likely to stand and lean, the fixture should hang a bit higher, at least 36 in. to 48 in. from the horizontal surface.

The cabinets themselves are another good lighting location. Miniature halogen strip

lights or rope lighting can be installed behind a fascia at the base of the cabinets (photo left, p. 70). These 12v circuits (or 24v for longer runs) make great light sources for a change in mood or as night-lights. I don't recommend this lighting technique if the kitchen has a polished floor; you'll see the lighting fixture reflected in the finish.

These same fixtures look even better inside a glass-front cabinet. Hidden behind the face frame, the slim fixtures make the cabinet interiors glow like lanterns, especially effective in low-light conditions.

Dimmers make lighting creative

If you have a room full of lights that are controlled by a simple switch, it's like having a stereo that has no volume control: It's on and really loud, or off and completely quiet—there's nothing between. I use lots of dimmers because you can vary the intensities of light according to your mood or the task at hand. As I said earlier, incandescents are easier to dim than fluorescent fixtures. I like a dimmer that all family members can operate and that has a red or green LED night-light

that locates the dimmer in a dark room. Lutron and Lightolier both make good ones that cost about \$25 each.

For rooms that have more complex lighting schemes, I sometimes specify programmable scene controllers that feature a one-button touch to create an entire scene. Two examples are the Grafik Eye by Lutron (610-282-3800) or the Compli Scenist by Lightolier (508-679-8131); these scene controllers integrate four dimmers into a four-gang box; four buttons on the faceplate are programmed to control four different combinations of lighting levels. Programming is simple, and it's easy to make changes later. Plus, the dimmer is below the button if you want to override the preset. Another application that's often overlooked is installing a dimmer that controls outdoor deck lighting. This option gives you the ability to get lots of light on the barbecue while you're cooking and then to lower the level at dinner: no more floodlights while dining under the stars. □

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