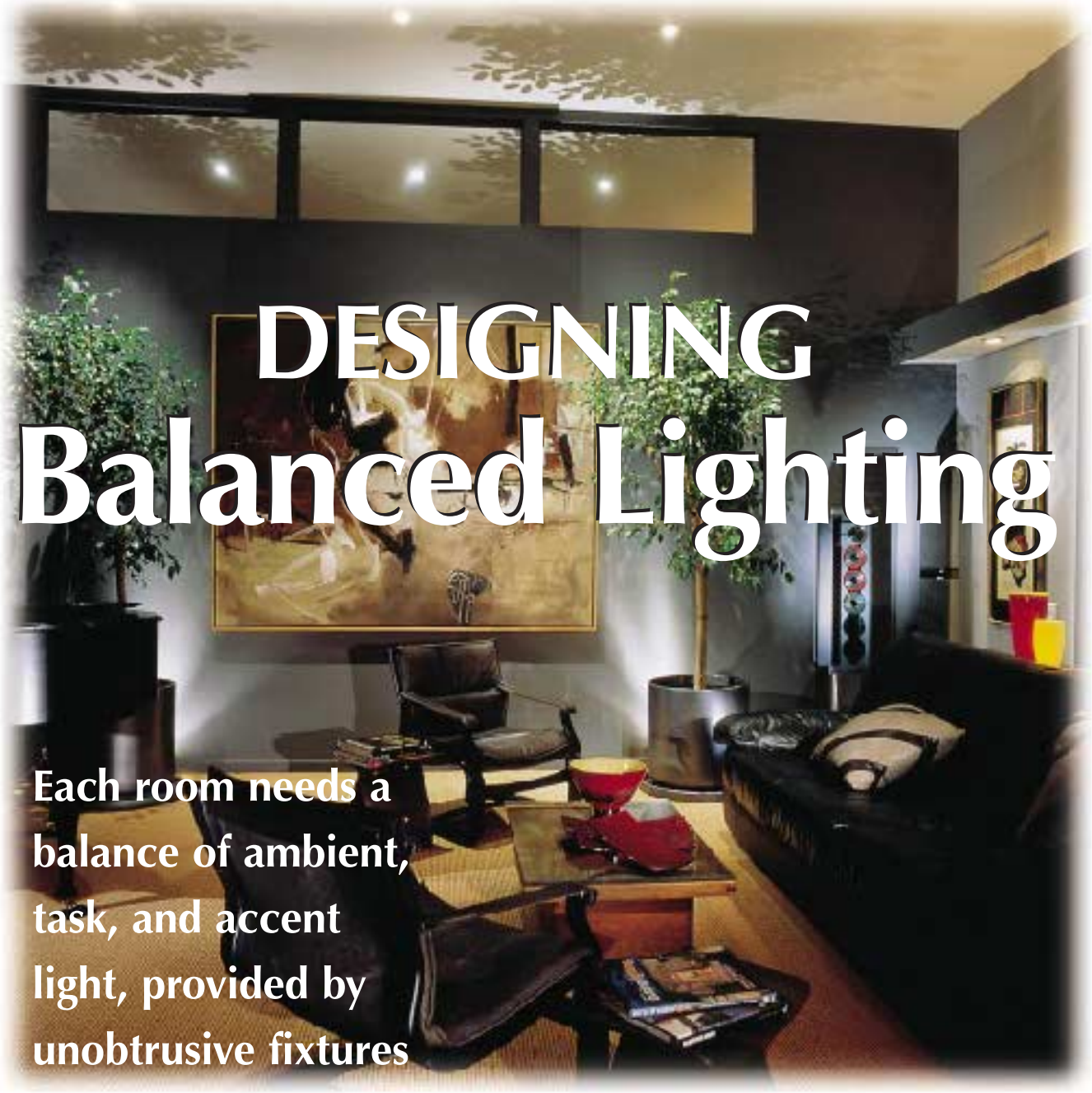

DESIGNING Balanced Lighting

Each room needs a balance of ambient, task, and accent light, provided by unobtrusive fixtures

by Randall Whitehead

When an ill-lit house leaves owners uncomfortable, they are often unsure of exactly what's wrong. Sometimes aspects of the design or construction get the blame when the culprit is improper lighting.

Lighting designers often talk of four different types of light: ambient, task, accent, and decorative. A single light source is rarely able to provide more than one type of light, so almost all rooms require multiple light fixtures.

Ambient Light

Ambient light (or fill light) is the soft, general illumination that fills a room and softens the shadows on people's faces. It comes from indirect sources that bounce illumination off the ceiling and walls, and it is essential in almost every room. If it's the only type of light in a room, however, the result is a "cloudy day" effect, where everything in the room looks flat, without depth or dimension.

The fixtures (or luminaires, as they are called in the lighting industry) used to provide ambient light should not draw attention to themselves. You can't provide ambient light by filling a room with table lamps with linen shades: Since bright lights draw one's gaze, the space becomes a lampshade showroom.

Ambient light is best provided by opaque wall sconces, cove lighting, torchiere floor lamps, or indirect pendants. An indirect pendant is a dish-shaped hanging

Figure 1. Indirect pendant fixtures, like this white clay lamp from Fabby Lighting, direct most of their light up toward the ceiling. This lamp is designed for two 75-watt bulbs and provides enough ambient light for a medium-sized room.

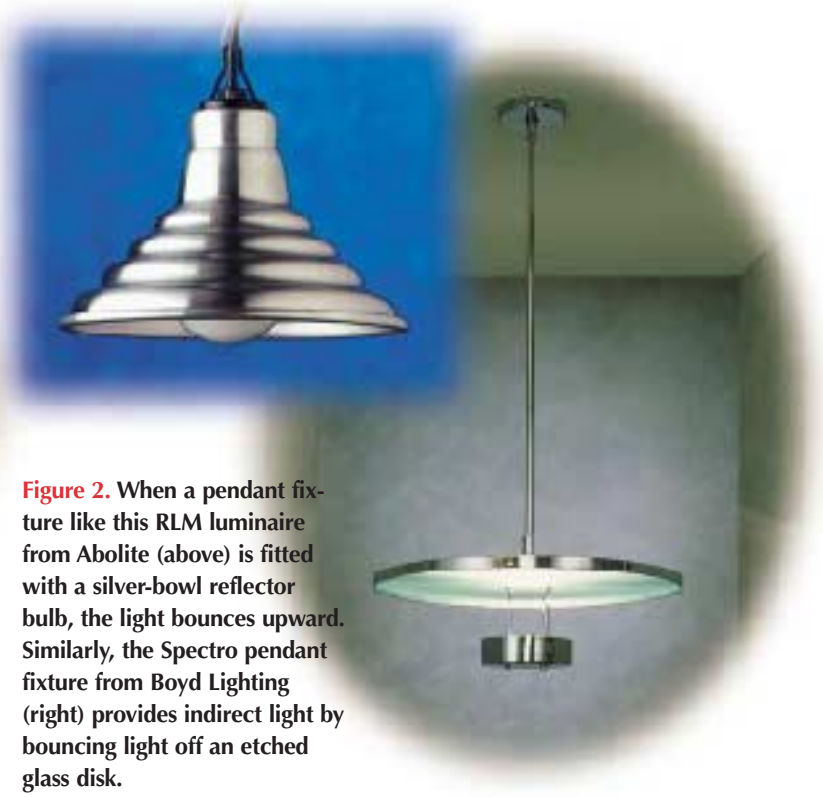

Figure 2. When a pendant fixture like this RLM luminaire from Abolite (above) is fitted with a silver-bowl reflector bulb, the light bounces upward. Similarly, the Spectro pendant fixture from Boyd Lighting (right) provides indirect light by bouncing light off an etched glass disk.

fixture that throws most of its light up toward the ceiling (see Figure 1).

Ambient light sources work only if the ceiling is light in color. A dark wooden ceiling absorbs light instead of reflecting it; one solution is to lighten the color of the ceiling; another is to use an RLM pendant fixture with a silver-bowl reflector bulb. (RLM is a generic term for a cone-shaped metal warehouse fixture; the interior of the cone is always white.) The silver-bowl reflector bulb bounces the light back up toward the inside of the fixture. Essentially, the RLM fixture provides its own ceiling. And the light is bounced off the inside of the shade. Some manufacturers produce modern versions of the RLM, like the Spectro by Boyd Lighting or the T-8100 by Estiluz (Figure 2).

Figure 3. Wall sconces used for ambient lighting should be opaque, so that the fixtures themselves aren't bright enough to be distracting. This clay sconce from Fabby Lighting can be ordered in two designs, for either a single 150-watt incandescent bulb or two 13-watt compact fluorescent bulbs.

Wall sconces. Wall sconces should be opaque, not transparent, so that the light will be softer and will not draw the eye to the fixtures (Figure 3). Sconces almost always come in pairs, and they can be used to flank a door, fireplace, or console table. Two sconces are often adequate to provide ambient light in the average room, while four are usually ideal. In most cases, more than four is overkill.

Cove lighting. Cove lighting is installed near the ceiling, behind a cornice or ledge (Figure 4). Suitable fixtures include strip lights with miniature incandescent or xenon lamps, compact fluorescents, or standard-length fluorescent tubes (see "Incandescent or Fluorescent?" page 4).

For cove lighting, I usually recommend either xenon or fluorescent lamps, and I plan on between 20 to 30 watts per foot for either type. One of our favorite fluorescent fixtures for cove lighting is the Belfer Ramp fixture (2855 NX2), which uses overlapping size 2611 compact fluorescent lamps.

If a room has a 9-foot ceiling, cove lighting can be installed between 12 and 24 inches down from the ceiling. In a room with an 8-foot ceiling, cove lighting is typically installed 12 inches down. This can leave the center of some rooms rather dark; the solution is to include an indirect pendant fixture in the center of the ceiling.

Figure 4. The ambient light in this room is provided by cove lighting mounted above the ledge and cantilever.

Task Lighting

Task lighting is needed for activities like reading, cutting vegetables, and sorting laundry. The best location for task light is between your head and your work surface. Light from the ceiling is less effective, since it can cast a shadow of your head onto the book or countertop you are trying to see.

Incorrectly placed task lighting can cause glare, especially when light from the ceiling hits a shiny surface (like glossy paper). Light coming in from one or both sides of the direction of your gaze is less likely to cause glare than light coming toward you from the direction you're looking in.

For casual reading, portable table lamps with solid shades often do the best job. In a kitchen or study, task light can be provided by fluorescent or incandescent strip lights installed under wall cabinets or under a shelf above a desk.

Accent Lighting

Accent lighting (also called feature lighting or highlighting) is directed illumination that spotlights objects like art, tabletops, or houseplants. Accent light is usually provided by track lighting or recessed adjustable fixtures (see "Shopping for Recessed Lights," 6/00). Choose lamps that cast a narrow or focused beam of light, like a halogen 50-watt MR 16 lamp (Figure 5).

If accent light is the only type of light in a room, the result is the "museum effect" — the spotlighted objects take over the room, while the people fall into darkness. If the seating area remains dark while every painting glistens in its own pool of light, how will the homeowners go through the mail, do their taxes, or put together a puzzle with the kids?

Figure 5. Recessed adjustable fixtures, like the Multilum from Prescolite shown here, are often used for accent lighting. The Multilum usually takes a halogen bulb and is available in either a 120-volt AC or a 12-volt DC version.

Decorative Lighting

Decorative lighting comes from fixtures chosen for their attractiveness — chandeliers or candlestick-type wall sconces, for example. You shouldn't expect such fixtures to perform any other function than to look pretty. They add sparkle to a room, but don't count on them to provide usable illumination.

Kitchens

The best kitchen task lighting is usually undercabinet lighting (see "Undercabinet Lighting Options," 8/01). Several types of undercabinet lighting are

available, including halogen hockey-puck lights, fluorescent strip lights, and incandescent strip lights (Figure 6). Mount the fixtures as close as possible to the front face of the wall cabinet. It's a good idea to choose a fixture with a light shield, to prevent the light from glaring in the eyes of people sitting nearby. Undercabinet lighting is easiest to conceal if the wall cabinets have a 2-inch recess, although the standard $1^1/_2$-inch recess is adequate. Both Alkco and Progress have a good selection of undercabinet lights.

To provide task lighting for islands, or for kitchens without wall cabinets, I often recommend a series of pendant fixtures at eye level; the most unobtrusive are only 2 or 3 inches in diameter.

Above a sink, task lighting can sometimes be provided by an undershelf light, as long as there's room for a shelf at the level of the bottom of the wall cabinets. If there's a window above the sink, the solution is to use a pair of adjustable recessed ceiling fixtures, arranged to cross. It isn't perfect, but it works.

Although track lights work well for accent lighting, they are usually a poor choice for task lighting. However, if the kitchen has exposed ceiling joists that make recessed fixtures impossible, it may be necessary

Incandescent or Fluorescent?

One of the first decisions when shopping for fixtures is what type of bulb to choose. In the lighting industry, bulbs are called lamps. Incandescent bulbs, the standard lamps for over a century, now come in several new varieties, including halogen and xenon.

Standard incandescent. Incandescent bulbs have several advantages:

- They are inexpensive and widely available.
- They are easily dimmed.
- They are available in a wide range of wattages.

They also have several disadvantages:

- The lamp life is relatively short (about 750 hours).
- The light yellows as the lamp is dimmed.
- They are the least energy efficient of available lamps.

Halogen. The halogen (or quartz) lamp is an improved version of the incandescent lamp. Halogen lamps contain halogen gas, which allows the bulb to burn brighter and last longer.

Advantages of halogen lamps:

- They are usually smaller than standard incandescents.
- They last longer than standard incandescents (2,500 to 3,000 hours).
- They are more energy efficient than standard incandescents.
- They lend themselves well to being focused in a narrow beam.

Disadvantages of halogen lamps:

- The light yellows as the lamp is dimmed.
- Dimming may shorten the lamp life.
- The glass envelope of the lamp should not be touched without gloves on.
- Halogens can get very hot, and some types of halogen fixtures have been associated with fires.

Many halogen fixtures operate at 12 volts DC and require a transformer (see "Low-Voltage Lighting," 5/96).

Xenon. Xenon lamps are similar to halogen lamps, with several advantages:

- They don't get as hot as halogen lamps.
- The lamp life is much longer than that of halogen lamps (about 20,000 hours).
- There is no need to avoid handling xenon lamps with your fingers.

Fluorescent. In recent years, residential use of fluorescent lamps has greatly increased, due to improvements in fluorescent ballast technology and greater variety in the available color rendition of fluorescent lamps. Moreover, some states, including California, have mandated the inclusion of energy-efficient fluorescent fixtures in kitchens and bathrooms.

Fluorescent lamps require a ballast; most compact fluorescents include the ballast with the lamp. Solid-state or electronic ballasts are less likely to hum than heavy magnetic ballasts. The best types of electronic ballasts permit fluorescent lamps to be dimmed.

Advantages of fluorescent lamps:

- They last a long time (between 10,000 and 22,000 hours).
- They are very energy efficient (providing three to five times the light output per watt of a standard incandescent).
- They produce less heat than a standard incandescent or a halogen, so they can be installed closer to combustible materials in a closet.
- They do not change much in color when dimmed.

Disadvantages of fluorescent lamps:

- Some ballasts, especially cheap magnetic ballasts, have an irritating hum.
- As they age, they produce less light (halfway through their expected life, they may produce 20% less light than when new).
- They are usually large and are hard to focus for accent lighting.
- They can be hard to start in cold temperatures, although cold-weather ballasts are available to solve that problem.

Figure 6. The undercabinet task lighting in the kitchen at left is provided by xenon Puklights from Lucifer Lighting (above).

Figure 7. Lucifer's Naiad fixture, a recessed adjustable low-voltage halogen for wet locations, is perfect for tubs and showers.

to use a track system or an open-conductor system to provide task lighting for a sink. (Open-conductor systems, available from Translite Sonoma, support the small fixtures on horizontal low-voltage conductors the diameter of a pencil.)

Ambient lighting. If the wall cabinets don't go all the way to the ceiling, their tops are a good location for indirect light fixtures for ambient light. If the ceilings in the kitchen are at least 8 feet 6 inches, we sometimes use a series of pendant fixtures to provide ambient light (see *Kitchen & Bath,* 12/97).

Bathrooms

Good task lighting is essential in a bathroom. A single fixture mounted above the mirror is inadequate, because it casts strange shadows on one's face. It's better to use two fixtures flanking the mirror for cross-illumination. Don't skimp on wattage; if you're using incandescent lamps, each fixture should provide at least 100 watts. A good mounting height is 5 feet 6 inches above the finish floor (measured to the center of the electrical box).

Good choices for flanking a mirror include the ubiquitous three-bulb vanity light bar and a translucent wall-mount fixture like the Full Robbia from Artemide.

If it's impossible to flank the mirror with wall-mount fixtures, it may be necessary to use fluorescent or incandescent soffit lights above the sink, fitted with an acrylic diffuser or egg-crate louvers. This isn't ideal, because soffit lighting mostly illuminates the top half of a person's face. A white countertop will reflect some light up, but that bouncing effect is lessened as soon as the countertop gets covered with towels and cosmetic bottles.

Ambient lighting. Bathroom ambient light can be provided by either wall sconces or cove fixtures. A tub or shower also requires good general light. Make sure that any light fixture used in a shower is approved for damp locations. (UL-listed fixtures suitable for damp locations have a blue label.) My favorite fixtures for showers are waterproof recessed low-voltage halogen fixtures with adjustable trims (Figure 7). These fixtures, which usually take an MR 16 lamp, are available from Contrast, Iris, Juno, and Lucifer.

Living Rooms

Living rooms often include portable lighting — table lights for reading and torchieres for ambient light, for example. If the living room is large, and furniture is located in a cluster in the middle of the room, floor outlets may be required. In that case, it's important to get the homeowners to decide as soon as possible where they'll be placing their furniture.

Sometimes it's necessary to make lighting decisions before the homeowner knows where the art will hang. Include a few recessed adjustable fixtures for accent light near the most likely locations for wall art, and you'll probably be safe.

Figure 8. The pendant fixture in this dining room directs most of its light toward the ceiling. The light from the pendant is balanced with ambient cove light and accent light on the painting.

Figure 9. A pair of separately switched, recessed ceiling fixtures over the bed provide reading lights for two people. The light on the right is aimed at the left side of the bed and vice versa, so that one person can read and the other can sleep without getting light in their eyes.

Dining Rooms

A dining room illuminated only by a chandelier creates a glare-bomb situation. If you crank up the dimmer to provide enough light to see by, the chandelier becomes a supernova, and everything else in the room fades into secondary importance. The solution is to balance the chandelier with ambient light from wall sconces, torchieres, or cove lighting. Most dining rooms also require accent light (Figure 8).

A fixed chandelier makes it hard to move the dining table to a different location. For more flexibility, consider a decorative fixture that hugs the ceiling; that way the fixture won't look so odd if the table is moved. Or select a pendant light on a pulley system that allows the fixture to be raised and lowered. A third option is to skip the chandelier entirely and simply use recessed adjustable fixtures to illuminate the table.

Bedrooms

To make it easier to pack for trips or go through drawers, a bedroom needs good ambient light, usually provided by wall sconces or an opaque pendant fixture. Most bedrooms have insufficient ambient light; when in doubt, plan for more rather than less.

One way to provide task lights for reading is to use recessed adjustable fixtures on the ceiling above the bed. To reduce glare, adjust the fixture on the left to provide light to the person on the right and vice versa (Figure 9).

Of course, all of the lights in a bedroom should be controlled with three-way switches, located near the bed as well as near the door.

Circulation Areas

Non-room areas such as entryways, hallways, stairs, and closets have their own special lighting needs.

Entries. In an entryway, avoid using recessed downlights, which make people look like gargoyles. If the entry includes a mirror, it can be flanked by a pair of wall sconces to provide ambient light. A painting should be accented with a recessed adjustable fixture.

Hallways. Recessed downlights are also a mistake in a hallway. Since the light comes out tepee-shaped, the upper quadrants of the hall fall into darkness, making the hall look like a bowling alley.

Light a hallway with a combination of wall sconces and recessed adjustable fixtures highlighting art on the walls. The best location for hallway art is on a blank wall opposite a door; the doorway provides enough room to stand back and admire the picture.

Stairs. I don't recommend using recessed ceiling fixtures above stairs, where setting a ladder to change a

Figure 10. Step lights, like this model from Juno Lighting, provide adequate but unobtrusive light for safely navigating stairs.

bulb is awkward. They can work well, however, in a flat ceiling above a landing. Stairs can also be lit with shallow wall sconces.

A third option is to use step lights, which are small fixtures mounted flush with the walls, usually about nine inches above the tread (Figure 10). Most models have a louvered face plate that throws the light down onto the stair treads. All you need is one light every three steps — usually, four or five fixtures for the average flight of stairs. Most step lights take a 20-watt halogen lamp and can be left on at night. In combination with recessed ceiling lights on the landings, step lights can provide adequate illumination for safely navigating stairs.

Closets. In closets, we often use a fluorescent fixture with a color-corrected (daylight) lamp, mounted on the wall above the door. We've had good success with the Progress P7148-15EB fixture; it has a non-humming electronic ballast and can take a daylight T-8 lamp.

Switches

Keep a few rules in mind when locating switch boxes. They should be located at a consistent height from room to room; although many electricians center their switch boxes at 48 inches from the floor, I prefer 42 inches. The maximum number of ganged switches is four; if more than four switches are required at one location, consider going to a smart-house system. If a homeowner wants rocker switches instead of toggle switches, be sure they're used consistently throughout the house and not just in a few rooms. Finally, remember not to locate the switches behind the door swing.

***Randall Whitehead**, IALD, a lighting designer in San Francisco, has written five books on lighting design. They can be ordered online at www.atlasbooks.com/marktplc/00478.htm.*

Sources of Supply

Alkco Lighting
847/451-0700
www.alkco.com
A variety of fixtures, including linear strip undercabinet fluorescent and xenon fixtures

Artemide Inc.
631/694-9292
www.artemide.com

Belfer
732/493-2666
www.belfer.com
A variety of fixtures, including step lights, wall sconces, fluorescent cove lighting, and low-voltage lights

Boyd Lighting
415/778-4300
www.boydlighting.com

Con-Tech Lighting
800/728-0312
www.con-techlighting.com
A variety of fixtures, including RLM fixtures and track lighting

Contrast Lighting
888/839-4624
www.contrastlighting.com
A variety of fixtures, including a recessed adjustable halogen fixture for wet locations (Artlite 2)

Estiluz
201/641-1997
www.estiluz.com

Fabby Lighting
323/939-1388
www.fabby.com
Wall sconces, pendant fixtures, and ceiling fixtures made of paintable bisque (unglazed ceramic)

Halo Lighting / A division of Cooper Lighting
847/956-8400
www.cooperlighting.com
A variety of fixtures, including RLM pendants

Ingo Maurer
212/965-8817
www.ingo-maurer.com

Iris Lighting Systems / Brand of Cooper Lighting
770/486-4800
www.cooperlighting.com
A variety of fixtures, including a recessed adjustable halogen fixture for wet locations (model N3/MR AASR/C)

Juno Lighting
847/827-9880
www.junolighting.com
A variety of fixtures, including RLM pendants and a recessed adjustable halogen fixture, for wet locations (TC44-441W-WH)

Justice Design Group
213/437-0102
www.jdg.com
A good range of reasonably priced wall sconces and pendant fixtures

Kichler Lighting
216/573-1000
www.kichler.com
A variety of fixtures, including step lights

Koch & Lowy
508/588-4700
www.kochlowy.com

LSI Abolite Lighting
513/793-3200
www.lsi-industries.com
A variety of commercial-industrial fixtures, including RLM pendants

Lucifer Lighting Company
800/879-9797
www.luciferlighting.com
A variety of fixtures, including a recessed adjustable halogen fixture for wet locations (Naiad DL21X) and halogen hockey-puck fixtures (Puklights)

Prescolite, Inc.
510/562-3500
www.prescolite.com
A variety of fixtures, including step lights and wall sconces

Progress Lighting
864/599-6000
www.progresslighting.com
A variety of fixtures, including indirect xenon fixtures for cove lighting, fluorescent closet lights, halogen hockey pucks, and linear strip undercabinet fixtures

Translite Sonoma
800/473-3242
www.translite.com
Low-voltage dual-conductor cable systems