

A Guide to Exterior Lighting

Safety, security and aesthetics all play an important part in illuminating the outside of your house



by Martha Tuzson Stockton

Evenly spaced driveway lights show the path to the door. Fixtures that cast small pools of light are more than adequate to lead a car up a winding driveway to the house. Lighting design by Sylvan Schemitz. Photo by Robert Perron.

Life hasn't been the same since Edison invented the light bulb. This handy source of light allows us to work, play and sleep without regard for the daily cycles of the sun. After the sun goes down, we can shine a light when things go bump in the night. With the proper illumination, we can change the exterior of our homes, too. Lighting allows you the rare opportunity to control the views of your house and your garden, to highlight your favorite elements and to create a setting different from the one seen during the daytime.

A few well-placed lights can make patios, gardens and porches more lively, and can show guests a safe, inviting path to your front door. The most successful lighting plans discover critical locations for lighting and combine them with appropriate fixtures, creating patches of slightly brighter light in key locations while pro-

viding enough light between them to avoid intense contrast (drawing pp. 102-103).

Use less light for better visibility when lighting for safety—Quantities of light given off by a light source are called lumens. The light output of lighting fixtures is usually measured in footcandles; 1 footcandle is equal to 1 lumen cast per sq. ft. of surface. The amount of light outside on a typical sunny day can measure between 5,000 footcandles and 10,000 footcandles. In comparison, the average living room has about 30 footcandles of light. But it takes little light to make a big impact in outdoor lighting. For example, a full moon provides 0.2 footcandles of illumination but still gives most of us more than enough light to get around. Our eyes adjust well to the dark, so providing too much light can create a glare that makes it hard to see.

Exterior lighting should provide a gentle transition from darkness outside to brightness inside and vice versa. This is particularly important for older people. As we age, our night vision becomes poorer, and we have more difficulty determining depth.

Typical lighting levels in an exterior residential-lighting plan range from about 0.25 footcandles to 15 footcandles, although most plans won't require much more than 8 footcandles on one particular surface. Most lighting catalogs have charts that list the light output of their fixtures in footcandles. The actual number of footcandles required in any location will vary. If the surrounding area is fairly bright, more light will be required to illuminate a surface or object. The reflectance of the object—how much light bounces off it and back to your eye—also affects the amount of light needed. A black-asphalt dri-

veway requires more light than a white-concrete one does.

Lights spread out evenly along the driveway are always a good idea to keep guests from driving over the shrubbery (photo facing page). Aim for between 2 footcandles and 5 footcandles per fixture, depending on the brightness of the areas surrounding the driveway and the color of its surface.

Also, changes in direction, levels or ground surfaces along the path from the car or sidewalk to the house should be lighted to guide people to the front door. Ideally, sidewalks and paths should be evenly illuminated from fixtures along the path (bottom photo) or overhead. Fixtures that perform best in this capacity cast a broad rather than a concentrated light over the path. Lighting that originates from trees or plantings at the sides of a path is also an option. Keep in mind that visitors will be most comfortable if light is directed toward the ground and not into their eyes.

Stairs are particularly important to consider when you're setting up lighting for safety. Options here include recessed lights installed flush with risers, in the walls on either side of the stair or just beside the tread. Post lights at the bottom of the stairs cast light across the steps and illuminate the transition from stair to walk but can be a potential source of glare because the light is at eye level.

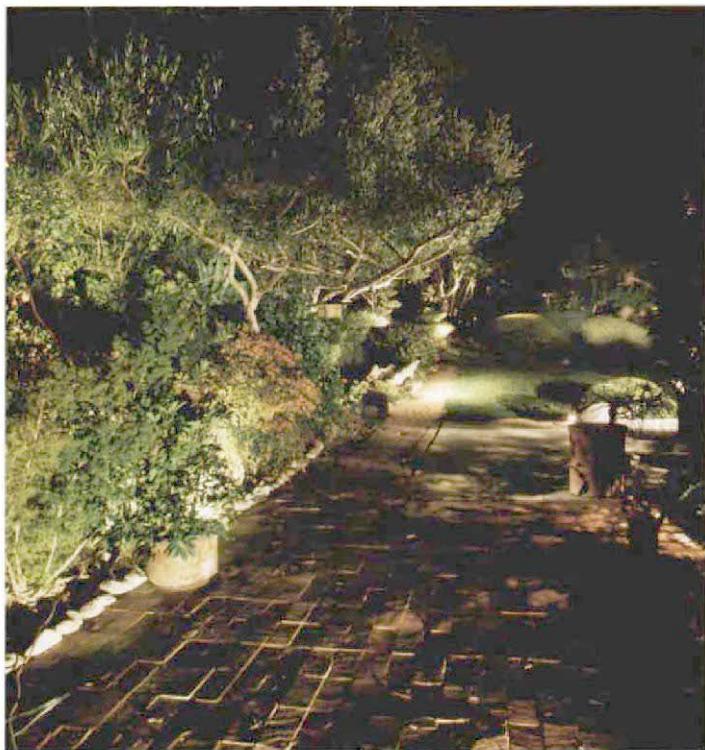
Lighting can create an air of hospitality—

Lighting to ensure physical mobility is important, of course. You don't want neighbors tripping up your front steps or falling into your birdbath. But psychological ease is important as well.

A light over your front door illuminating the steps below shows approaching visitors where to go and welcomes them by directing them the safest way. Some of the options to choose from are shielded wall sconces at eye level; a single wall-mounted fixture above the door; a surface-mounted fixture on the porch ceiling; or down lights recessed in the porch or entry ceiling (photo left, p. 104).

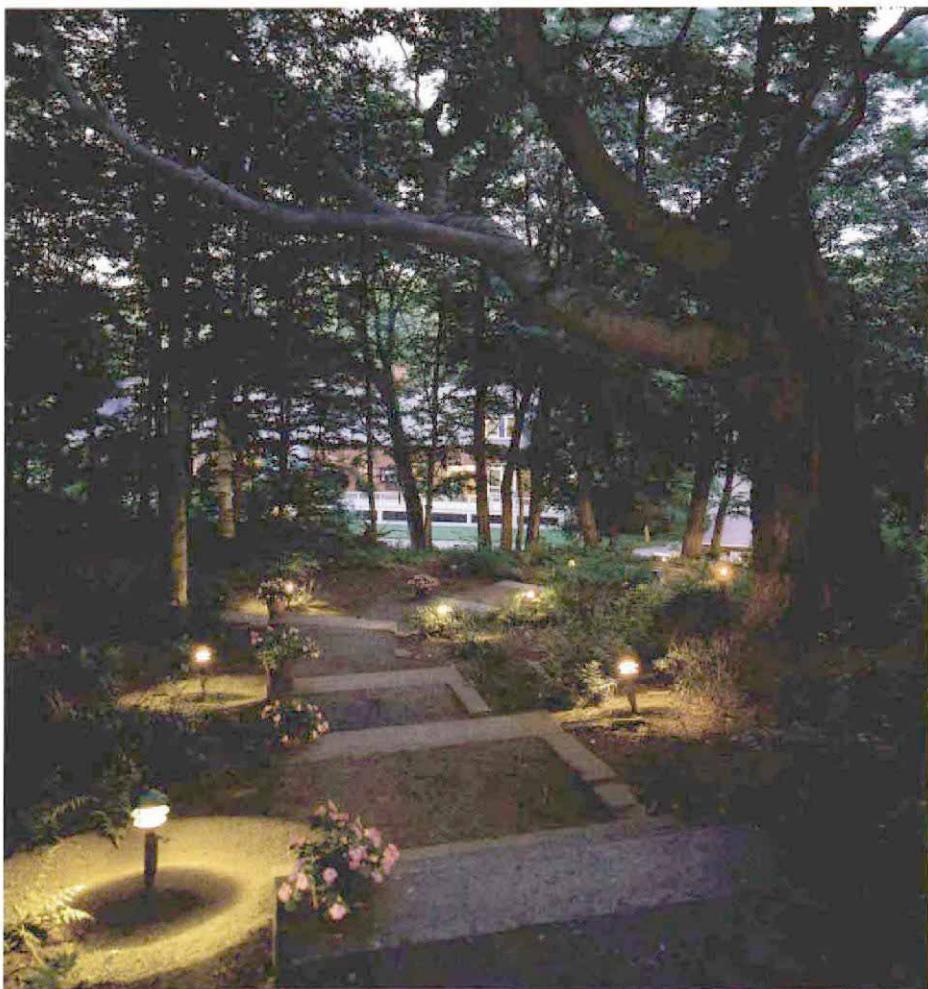
When patios are illuminated, they can become extensions of your house on warm evenings, drawing people outside. Shielded sconces that are mounted to the walls of the house can be used in combination with fixtures trained on nearby trees. Strings of tiny lights in a bush (photo right, p. 104) or even candles can light a small informal patio, while two or more different types of fixtures might be necessary to light a larger one.

Consider the different activities that take place on the patio. Conversation areas require only a low level of light, between 2 footcandles and 5 footcandles, but a barbecue area should be



Lighting creates a dramatic showcase for the garden.

Trees, shrubs and walkways that are lighted at night can change the character of a garden, inviting strolls. Lighting design by Gil Eddlestein Studios. Photo courtesy of Lumiere USA.



Path lights spread an even light over changing terrain. Partially shielded light fixtures illuminate steps and possible obstacles without causing glare, especially important on irregular steps. Photo by Brian Vanden Brink, courtesy of Diamond Cove.



1
A louvered 12v incandescent fixture illuminates the street-address numeral from above.

Photo courtesy of Hadco.



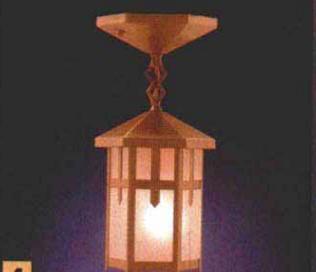
2
Recessed into stairs, 12v louvered incandescents light up stair treads for safety.

Photo courtesy of Hadco.



3
Twelve-volt shielded path lights throw pools of overlapping light onto walkways.

Photo courtesy of Hadco.



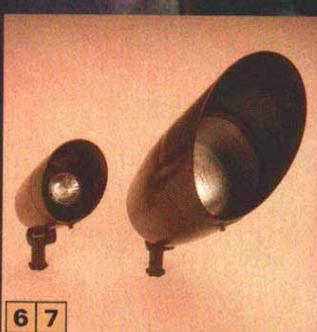
4
Opaque glass lantern with warm-colored fluorescent or incandescent lamp adds a welcoming glow to the entry.

Photo courtesy of Rejuvenation Lighting.



5
Twelve-volt, 20w halogen directional well lights illuminate the driveway for safety.

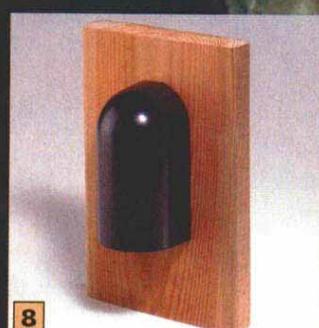
Photo courtesy of Hadco.



6 **7**
Incandescent, metal-halide or mercury-vapor bullet lights can light ornamental trees and splash pathways with dappled light.

Photos courtesy of Hadco.

A low-key approach to exterior lighting. Exterior lighting is most effective when paths, entries and landscape features are illuminated with low levels of light. If lights are too bright, the extreme contrast between dark and light makes it harder for your eyes to adjust and decreases your ability to see. Lights should be pointed down or away from viewers whenever possible. The drawing below illustrates some uses of typical fixtures; the choices of fixtures indicated are meant as examples.



8
Mounted on exterior walls, shielded sconces with warm-colored fluorescent lamps graze the walls and light the porch area.

Photo courtesy of Hadco.



9
Incandescent down lights hung from the eaves at the edge of the patio shed more light on the barbecue area and graze the brick facade of the house.

Photo courtesy of Hadco.

A quick look at exterior light bulbs

When choosing exterior fixtures, you also must choose the right bulb. Any bulb that you use should be rated for outdoor use and have a corrosion-resistant nickel or copper-coated base and hardened-glass globe (photo bottom right). The bulb's packaging should list its rating.

Many exterior residential fixtures use incandescent lamps—bulbs that have a filament. As a group, incandescents include spotlight lamps, halogen types and the common household light bulb. Incandescent lamps are easy and inexpensive to replace, but they are energy inefficient; most of the electricity is expended in heat, not light. In addition, because incandescents are short lived, they shouldn't be used in trees or other inaccessible locations. Halogen lamps are more efficient than typical incandescent lamps and last longer. For example, a 120w incandescent spotlight lamp is rated for an approximate life of 1,500 hours and has a light output of 720 lumens. A comparable 120w halogen lamp has a 2,500-hour life and an output of 880 lumens. Halogens are available in 120v and high-end 12v fixtures.

Fluorescent bulbs are increasing in popularity because they use about 75% less electricity than incandescents to produce equal amounts of light. They are also available in compact versions (photo right) that screw into incandescent fixtures and can be used in fixtures where the lamp is hidden, such as porch lights or sconces. A compact fluorescent lamp is rated for a life of 10,000 hours, as opposed to the 1,000-hour life of a 75w incandescent lamp. Fluorescents are now available with warmer-color options that are similar to incandescents, rather than emitting the expected harsh bluish light.

You can expect to pay from \$5 to \$25 for a compact fluorescent lamp.

High-intensity discharge (HID) lamps include metal-halide and mercury-vapor lamps. Metal-halide lamps produce a bright white light that works well when highlighting trees or architectural features. Mercury-vapor lamps, on the other hand, typically cast a greenish-blue light and are frequently used to enhance the color of foliage. HID lamps last three to five times longer than incandescents and usually require half as much electricity to produce twice as much light. These lamps also cost as much as \$20 for each bulb, as opposed to \$3 to \$5 for an incandescent spotlight.

All fluorescent and HID lamps need additional current transformers called ballasts, which are integral parts of the fixtures and should be rated for cold-weather performance. For local suppliers of outdoor bulbs, check in the Yellow Pages, or contact the manufacturers.—M. T. S.



Hidden in plantings, a 120v metal halide or incandescent bullet light illuminates a garden bench and the surrounding shrubs. Photo courtesy of Hadco.



A series of 12v shielded incandescent path lights illuminates the plantings and the stone path that leads to the front of the house. Photo courtesy of Hadco.



Exterior lamps come in all shapes and sizes. A variety of lamps, clockwise from top: a 100w metal halide, a 250w mercury-vapor lamp, a 15w compact fluorescent, a 120w incandescent spotlight, a 90w halogen spotlight and a 17w compact fluorescent bulb.



Incandescent fixtures recessed into the porch ceiling warm an entry. A simple arrangement of lights illuminates the doorway and eases the transition between outside and in. Photo courtesy of Phillips Lighting.

more brightly illuminated to make it safe and to allow the chef to see when the chicken's done. Recessed or surface-mounted can lights in the eaves, a light in a nearby tree or a post lantern near the grill will light the cooking area while the rest of the patio is illuminated by lights in surrounding foliage or smaller path lights around the perimeter.

Access to the patio from the interior should be lighted to a level between that of the patio and the room inside to give eyes a chance to

adjust. Look for levels between 5 footcandles and 10 footcandles.

Landscape lighting improves the view from inside as well—Picture windows and patio doors reflect the scene inside when darkness falls, prompting many to close the blinds. Windows that offer views of the garden during the day continue to do so at night with the creative illumination of landscape elements. In these cases, the exterior lighting needs to be as bright as



Lights and warmer weather can turn a patio into an extra room. Exterior lighting doesn't have to be fancy. These inexpensive Christmas-tree lights give a cozy feel to a small brick patio. Design by Stephen B. Harris. Photo by Martha Tuzson Stockton.

the interior. A dimmer switch on the interior light will help to balance the light between inside and outside.

Lighting the landscape also extends the perceived size of an outdoor space. People tend to feel more comfortable when they can see the things that are around them. Illuminating portions of the garden visible from paths and patios gives people a better idea of their surroundings, and it makes them more at ease. It also gives you the opportunity to show off the best features of your garden.

Trees and bushes with interesting branch patterns, leaf textures or shapes make good lighting subjects. Keep in mind that seasonal changes to foliage will change lighting effects. Different effects can be created by lighting the wall behind a tree, or lighting the branches and the foliage from below (top photo, p. 101), from the side or from the leaves above.

To light a large area, Sarena McComas, a lighting designer with Rowland Design Inc. in Indianapolis, Indiana, positions fixtures in one or more trees high above the lawn. This technique works best in trees with sparse foliage and branches, and lighting from below works better on fuller trees.

She also suggests varying the types of landscaping lighting in the overall design. "If you use

all one type of lighting, it's not as dramatic. Treat different areas of your yard differently," she says.

Lighting a house for security and avoiding the Sing-Sing effect—Many people want security lighting for their homes—bright lights that illuminate their property and foil potential burglars. Unfortunately, there's no proof that security lighting actually prevents crime, but lighting certain areas can make homeowners and guests feel more secure by making a residence appear occupied and by illuminating the grounds around the house sufficiently so that prowlers are visible.

Mark Schuyler, a lighting designer in Charlottesville, Virginia, believes that security lights may make it easier for thieves to do their work. When bright security lights became popular in his neighborhood, he and his neighbors noticed a sudden increase of burglaries.

Blasting the driveway or front yard with bright light can make it easier for a trespasser to hide in the dark. Because the bright light creates correspondingly dark shadows, your eyes have to work harder to adjust between the extremes of light; while your eyes are adjusting to the glare, you lose the ability to see in darker areas.

Lower light levels are often the preferable way to provide home security. Lights installed for safety or landscape illumination will provide good low-contrast light for the yard and approaches to the house. If you choose to employ bright lights in key security areas, a motion-sensor switch controlling these bright lights will turn on the light only when activated, will save energy and will not spoil the effects of your overall lighting design. Another option is to control these bright lights with interior switches so that you can turn on the lights in emergency situations, during storms to check for fallen branches or if you suspect a prowler is on your property.

120v lighting is rugged; 12v systems are easy to install—There are two types of voltage used for landscape lighting these days, standard 120v household current and the increasingly popular 12v, or low-voltage, system. Although equal in energy use, each system has advantages. Household current is best used for larger permanent lighting applications. Because of the inherent danger of the higher voltage, 120v wiring must be routed through conduit and buried in trenches 12 in. to 18 in. deep. Installations are usually handled by a licensed electrician, an additional but necessary expense. Although lower-wattage fixtures are not available for 120v systems, the higher voltage will support larger, higher-wattage fixtures in longer runs of wiring without a drop in voltage. For safety, these circuits should be GFCI-protected.

Low-voltage systems are generally less costly, easier to install and easier to relocate than standard-voltage fixtures. These systems can use incandescent or fluorescent bulbs, depending on the type of fixture used.

Low-voltage systems use a transformer to reduce standard household current, which is then conducted to 12v fixtures. Because the lower voltage is safer, wires can be run on the ground or in a shallow trench. Drops in voltage can be a problem when wiring over distances, so it's best to use low-voltage systems in runs of 150 ft. or less and not to overload the transformer. To make sure that the transformer will supply enough power, just add the total wattages of the fixtures; the transformer rating should be 10% higher than the total sum of fixture wattages.

You can buy either kits or individual components for a 12v lighting setup. Twelve-volt fixture kits are inexpensive and readily available, costing \$30 and up at your local home center, and include low-voltage fixtures, wiring and a transformer. A larger transformer that will supply 100w, or eight fixtures of approximately 10w apiece, costs about \$100; a 200w model's price goes up to about \$160. Fixtures start in price at around \$10.

Exterior fixtures must be sturdy and suited to the job—Once you've decided which voltage system to use, you need to choose fixtures. No matter which fixtures you choose, all should be rated for outdoor use and have watertight housings that are made of corrosion-resistant materials such as copper, brass or aluminum. Plastic fixtures are less expensive but may also be less durable, and they may degrade from exposure to heat and sunlight. Cracks in plastic housings can allow water into the fixture.

There are many types of fixtures on the market. Options include type of voltage (12 or 120), aesthetics (decorative or functional), types of attachment (post, wall mounted, hanging, recessed, etc.) and type of bulb used (sidebar p. 103). Most fixtures are designed with a specific purpose in mind. For instance, bullet lights can be used in trees, near shrubs or in other locations where the fixture will be inconspicuous and where you want a fairly bright light. Sconces and wall lanterns are available in a wide variety of decorative styles, but beware of glare; these fixtures are usually mounted at eye level.

Your local home centers should offer some fixture choices, but be sure to check lighting suppliers for a more comprehensive selection. Manufacturers' catalogs can be a good source of information. Lighting designers can also help you to choose light fixtures. If you're about to spend a lot of time and money on a lighting installation, it's worth paying their fee to know

For more information on exterior lighting

The following organizations provide good information on lighting materials, design and manufacturers.

American Lighting Association
(manufacturers' listings, design information)
P. O. Box 420288
Dallas, TX 75342-0288
(800) 274-4484
www.americanlightingassoc.com

Lighting Research Center (good site for links, lighting information)
Rensselaer Polytechnic Institute
Greene Building 115
Troy, NY 12180
(518) 276-8716
www.lrc.rpi.edu

Kim Lighting (lighting manufacturer with loads of good design information)
16555 E. Gale Ave.
P. O. Box 1275
City of Industry, CA 91749
(818) 968-5666
www.kimlighting.com

The Lighting Resource (a Web site for consumers and designers alike)
John Rowe
P. O. Box 48345
Minneapolis, MN 55448-0343
www.webcom.com/~lightsrc

Nightscaping (manufacturer's site that has good design and historical information)
1705 E. Colton Ave.
Redlands, CA 92374
(800) 544-4840
www.nightscaping.com

World's Greatest Lighting Manufacturing List
www.lighting-inc.com

you're buying the right fixtures to achieve the effect you want.

Schuyler suggests trying out fixtures before you install them, dragging an extension cord across the lawn and positioning the fixtures as they will be in their final location. "You have to see what you like," he says. "It's hard to predict how lighting will appear before it's installed." □

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