

# Retrofitting Recessed Lights

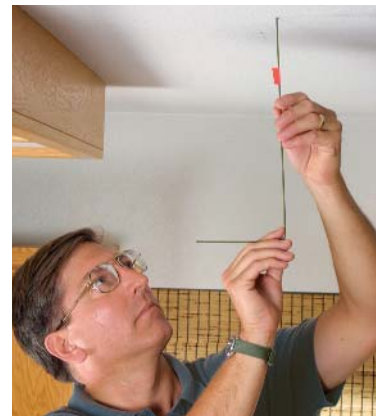
Replacing an old surface-mount fixture with recessed lights is an easy upgrade that you can customize with different trim kits

BY CLIFFORD A. POPEJOY

**T**hey're called a lot of things: can lights, downlights, high hats. Whatever you call them, there is no denying that replacing an old fixture with one or more recessed lights can modernize and brighten just about any space. Recessed lights are available for every type of ceiling, and the trim kits that go with them are available in different colors and styles (sidebar facing page). The lighting effect you create can range from functional to dramatic.

To install recessed lights, you need to make three decisions: getting the right fixtures, determining location and spacing, and figuring out how to get power to and between the lights. Once you work out these details, the installation is light work.

Recessed lights come in a variety of sizes, shapes, and lamp types. Here, I used a 6-in. fixture made to take an energy-efficient fluorescent lamp. Because this is a retrofit, I chose a remodeling fixture that is designed to be installed from below. This type of fixture



**Probe before you cut.** Bend a coat hanger to the radius of the fixture. Mark the depth of the fixture with tape. Spin the hanger as you push it into the ceiling to check for framing, ductwork, or pipes.



**Make a clean cut.** You can mark the ceiling with a template and cut the opening with a dry-wall saw. The author uses an adjustable round-hole cutter that captures the dust while drilling the hole ([www.nora-lighting.com](http://www.nora-lighting.com)).



OLD SCHOOL NEW TOOL



has retaining clips that lock into place behind the drywall to hold the fixture in the ceiling.

In this room, the recessed lights will be the main light source, so I spaced the fixtures at 4-ft. intervals (sidebar p. 61). Installing a series of recessed lights in only one joist bay is easy. But because these lights are spaced to illuminate the whole kitchen, I had to drill through joists to run wires between the lights. When I drill inside a ceiling or wall, I am careful not to hit anything but the joists. Pipes, wires, and ducts often are close to a joist, so probing inside the ceiling before drilling is a good idea.

As I'm settling on the location of the cans, I'm looking for power. In this room, I replaced an existing light fixture. I identified which circuit the light was on, cut the power, and locked out the breaker. Before using existing wiring, though, make sure the cable is marked NM-B, which signifies that the insulation is rated for modern light fixtures.

If the cable is too short or isn't rated NM-B, install a separate junction box and splice NM-B-rated cable to the existing wiring. This

**Run cable between the holes.** Use a fishing wand to pull cable between the openings. Cut the cable, leaving enough length to wire the fixture while it rests atop the ladder.



## The right lights for your ceiling and style

Remodeling fixtures are chosen for the specific ceiling they will be installed in. Trim and baffle kits are chosen for style and light quality.

### ▼ Light fixtures



**An aluminum (IC-rated) can** won't overheat in an insulated ceiling.

**A 4-in. can** is perfect for tight spaces, like a soffit over a kitchen sink.



**This angular can** works in a sloped ceiling.

**Fluorescent lamp holders** maximize energy efficiency and are suitable for any type of ceiling.



### ▼ Baffle and trim



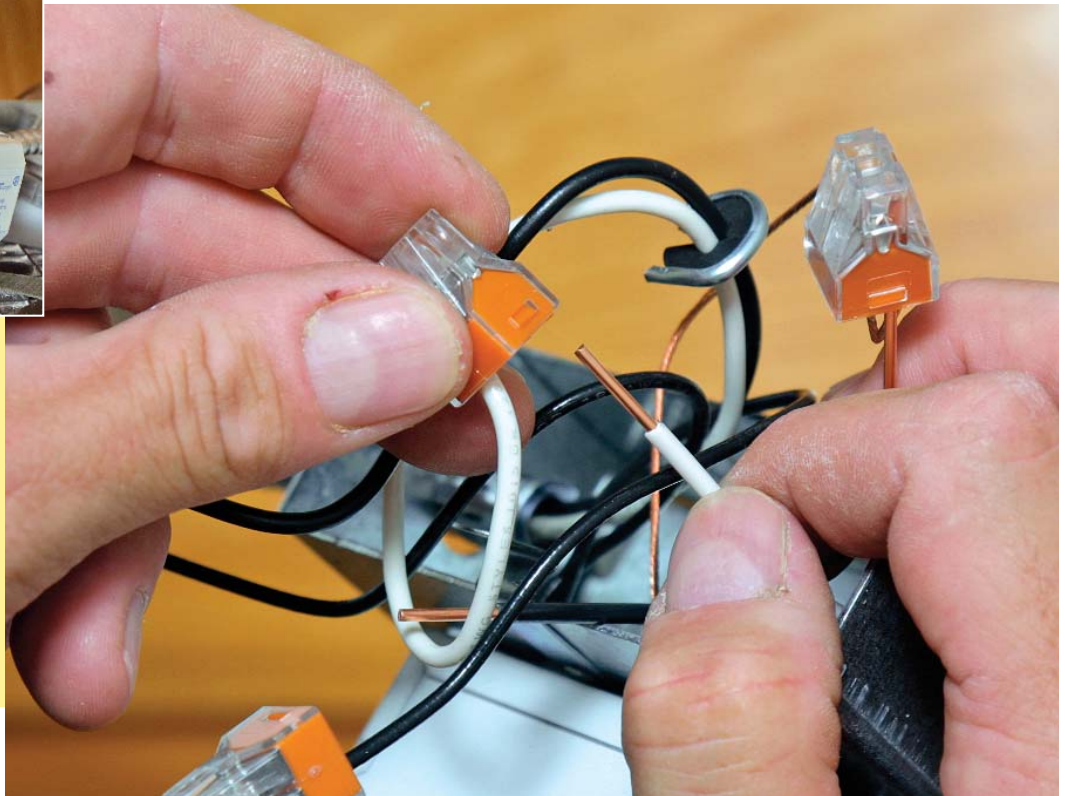
**A white trim ring** blends into most ceilings. A reflective baffle produces strong light.

**A black eyeball-style baffle** focuses a mellow light in a particular direction.





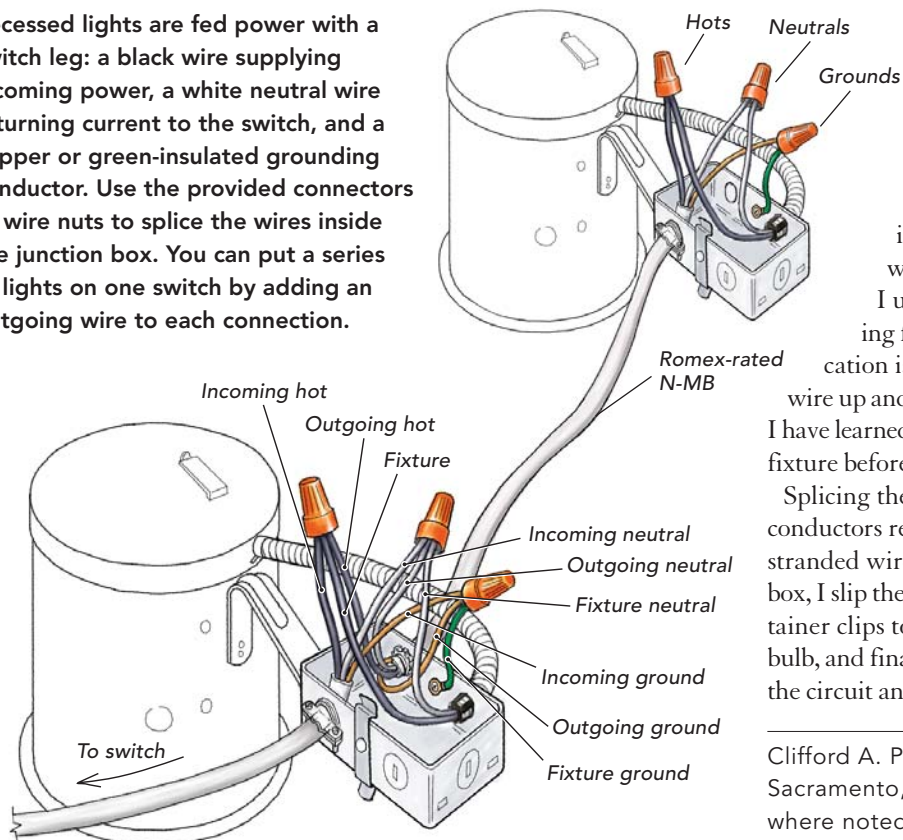
**Splice the wires inside the junction box.** With the fixture resting on the ladder, remove the junction-box cover. Pry out the opening for the incoming and outgoing wires. Use the push-in wire connectors that come with the fixture (photo right), or splice the wires with wire-nut connectors. Be careful not to damage the stranded fixture wire. Remember to replace the junction-box cover.



## WIRING RECESSED LIGHTS

### A LOOK INSIDE THE JUNCTION BOX

Recessed lights are fed power with a switch leg: a black wire supplying incoming power, a white neutral wire returning current to the switch, and a copper or green-insulated grounding conductor. Use the provided connectors or wire nuts to splice the wires inside the junction box. You can put a series of lights on one switch by adding an outgoing wire to each connection.



junction box has to be accessible from somewhere inside the house. If the junction box is not accessible from an attic or crawlspace, it must have a removable access panel.

Mark the circular cutouts on the ceiling using the template that comes with the recessed-light fixtures. I could cut the hole with a drywall saw, but to avoid making a mess, I use a specialty drill bit that cuts circles and has an integral dust and cutoff collector (top photo, p. 59).

The fixtures that I used on this project have push-in wire connectors that make it easy to splice the wires. If the fixture doesn't come with connectors, then I use wire nuts to splice the hot, neutral, and grounding fixture wires to their respective conductors. If the location is difficult to reach, like a tall ceiling, I temporarily wire up and test the fixtures on the ground before I install them. I have learned that it is worthwhile to take the time to find a faulty fixture before installing it in a 15-ft.-high ceiling.

Splicing the stranded fixture wire to the solid 14-ga. or 12-ga. conductors requires a bit of finesse. Be careful not to damage the stranded wires. After putting the cover on the fixture's junction box, I slip the fixture into the hole and snap open and lock the retainer clips to hold it in place. The baffle goes in next, then the bulb, and finally the trim ring. All that's left is to restore power to the circuit and flip the switch. □

Clifford A. Popejoy is an electrical contractor in Sacramento, Calif. Photos by Brian Pontolilo, except where noted.





**Slip the fixture into the hole.** Push the cable into the ceiling while you slip the fixture arm with the junction box into the hole. Straighten the housing, and push it into the ceiling. It should fit snugly.

## Customize your room with recessed cans

### Task lighting

A single recessed light can be placed directly over a work area for task lighting. Here, a recessed light provides enough extra light over the sink that the whole kitchen doesn't have to be lit up to do the dishes. This strategy also can be used in dark hallways, stairwells, and corners.



### Wall wash

A painting is easy to highlight with a recessed light. An eyeball-style baffle directs light only where you want it to shine. This also is called accent lighting.



**Set the retaining clips to lock the fixture into the ceiling.** Then install the baffle and trim kit. If the trim ring is not integral to the baffle, snap it into place to complete the installation.



### Downlighting

A series of recessed lights works great as downlighting, or a room's main light source. In general, a 6-in. fixture creates a pool of light equal to its distance from the floor. Here, 4-ft. spacing creates an even level of ambient light.



### ONLINE CONNECTION

Watch a video of the author locking out a breaker, probing the ceiling for clearance, and fishing cable at [www.finehomebuilding.com](http://www.finehomebuilding.com).