
LIGHTING
CHEAT
BOOK
METRO
LIGHTING

1

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Ceiling Fans

STANDARD 8 FOOT CEILINGS

Most fans are designed to fit a standard 8-foot ceiling, which puts the blades 7 feet from the floor for the best air movement and required ground clearance. *However, always check the fan height for each fan to ensure a different downrod is not needed.*

CEILINGS LESS THAN 8 FEET

Choose a snugger model to achieve the minimum 7-foot blade clearance or consider a close-to-the-ceiling downrod.

CEILINGS ABOVE 8 FEET

To maximize air movement, the fan should be hung by a downrod 8 to 9 feet from the floor. If necessary, order an accessory downrod to achieve the proper length.

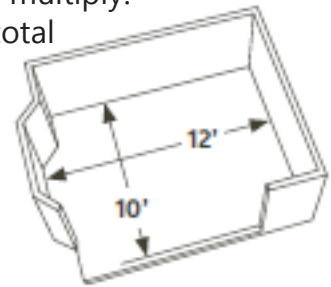
THE RIGHT FAN

To maximize performance, choose the right fan size for your room. For long or large rooms, consider using more than one fan to handle your cooling requirements. For maximum comfort, the fan should be placed as close to the center of the room as possible and blade tips should be at least 18 inches from any wall.

Choosing the Right Size Ceiling Fan

Step 1 **Determine the square footage of your room**

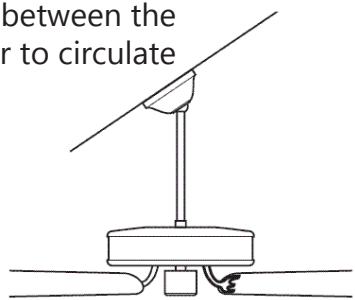
Measure the length and width of the room then multiply. For example, 12 feet long x 10 feet wide = 120 total square footage.



Step 2 **Have a tall or cathedral ceiling?**

Most ceiling fans work with an 8 or 9 foot ceiling. If your ceiling is higher, you will need a downrod. The rule of thumb is that fans should have a minimum of 7 feet of clearance between the bottom of the fan blades and the floor in order to circulate air efficiently.

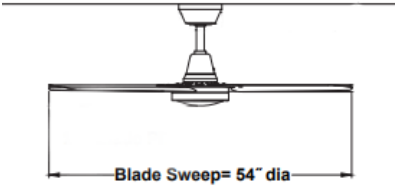
*****Note:**
If the ceiling is sloped, make sure to choose a compatible fan or add a sloped ceiling kit! Remember to find out what degree the sloped ceiling is!



Choosing the Right Size Ceiling Fan

Step 3 **Determine the size fan you need**

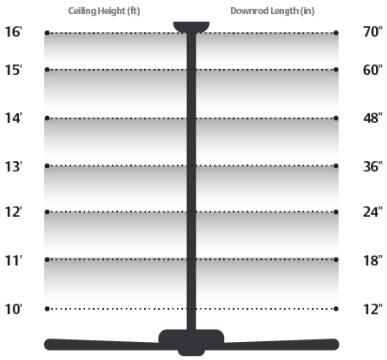
Blade sweep is the distance from the tip of fan blade to fan blade. All vendors have different guidelines to determine the appropriate blade sweep for a room size. Use the chart and your discretion to determine the appropriate size for your customer.



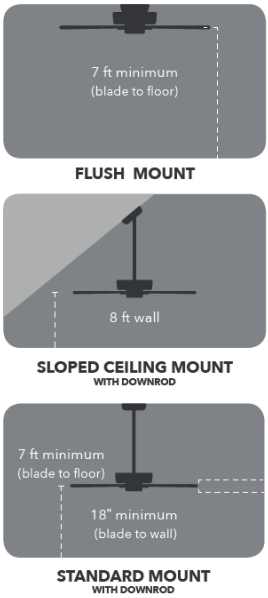
Step 4 **Determine the downrod length**

The downrod length guidelines also vary from vendor to vendor. Be sure to take into account all variables when choosing a downrod.

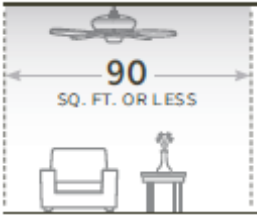
DOWNROD LENGTH TO CEILING



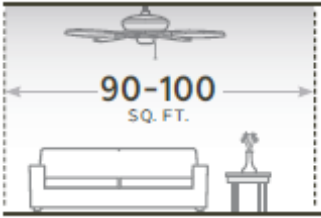
INSTALLATION MOUNTING CHART



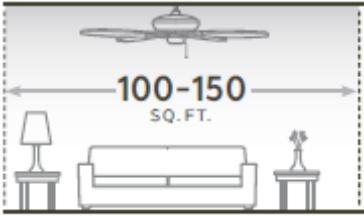
Room Size & Blade Sweep



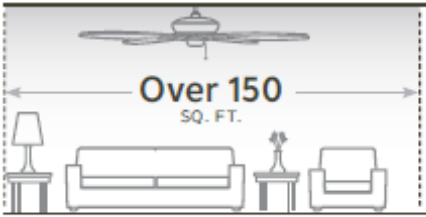
ROOM SIZE	ROOM TYPE	BLADE SWEEP
90 square feet or less	· Small bedroom or office · Galley kitchen · Outdoor applications	15" to 42"



ROOM SIZE	ROOM TYPE	BLADE SWEEP
90 to 100 square feet	· Over a kitchen table · Large walk-in closet · Small screened-in porch · Laundry room · Outdoor applications	44" to 48"



ROOM SIZE	ROOM TYPE	BLADE SWEEP
100 to 150 square feet	· Bedroom · Larger kitchen · Formal dining room · Outdoor applications	50" to 54"



ROOM SIZE	ROOM TYPE	BLADE SWEEP
Over 150 square feet	· Great room · Large outdoor patio · Master suite · Outdoor applications	56" to 96" or multiple fans

Choosing the Right Ceiling Fan

Step 5 **Indoor & Outdoor Location Rating**

Damp-Rated ceiling fans are engineered for high humidity areas, but should not be exposed to direct weather.

Wet-Rated ceiling fans are made for direct exposure to the sun, rain and extreme weather.

Step 6 **Extra Energy Savings**

Nowadays, many fans carry a DC, or Eco Motor. These motors use less than half the energy consumption than other fans, adding to the savings and value of a ceiling fan.

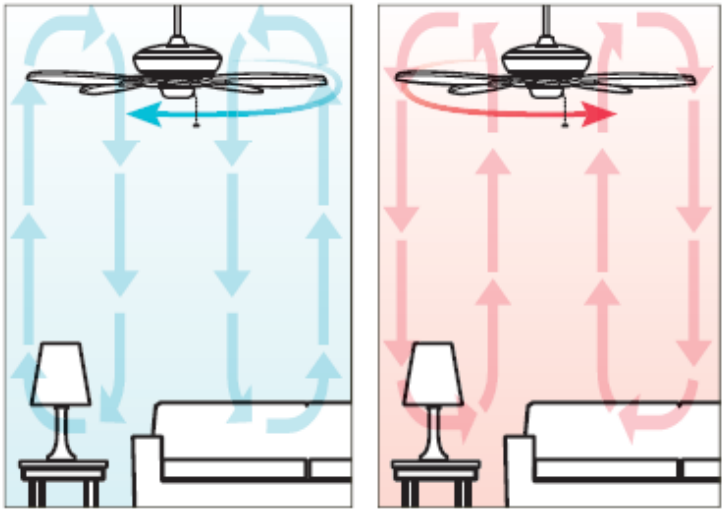
Step 7 **Don’ t forget your BLADES!**

Make sure you choose a set of blades! Many fans come with blades, but make sure to check! A lot of fans are completely customizeable and therefore require you to pick blades. Do not send your customer home without them! Make sure to check for other accessories as well - light kit, glass and wall or remote control. Make sure your finish matches too!

Fans Circulate Both Cool and Warm Air

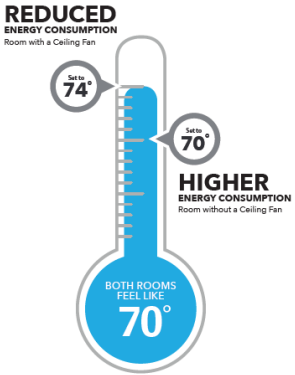
The correct blade rotation can help you adjust your thermostat +4°F during the summer and -2°F in the winter.

The cooler / warmer effect allows you to adjust your thermostat up or down and save on energy costs.



Summer

Winter



When it is hot outside, set the fan to rotate counter-clockwise. The blades will push air down - creating a breeze or cooling effect on the people in the room.

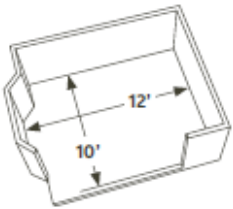
In the winter, set the fan to rotate clockwise. The blades will pull the air up and around, moving the warm air that rises to the ceiling back down to the living space.

Dining Room Chandelier

Dining Room chandeliers are the focal point of the room. If the dining room table is rectangular consider a linear chandelier. If the dining room is used for many everyday tasks consider a fixture with a downlight.

But before picking out a fixture, start with determining the size requirements for the space - this will help you narrow down your search by eliminating anything that you know will not fit.

Step 1 **Measure the Space**



Start by measuring the room. Take the length and the width of the room and add them together. For example, 12 feet long + 10 feet wide = 22 feet. Then take 22 feet and change it to inches. 22 inches is now the minimum 'general' size the chandelier should be.

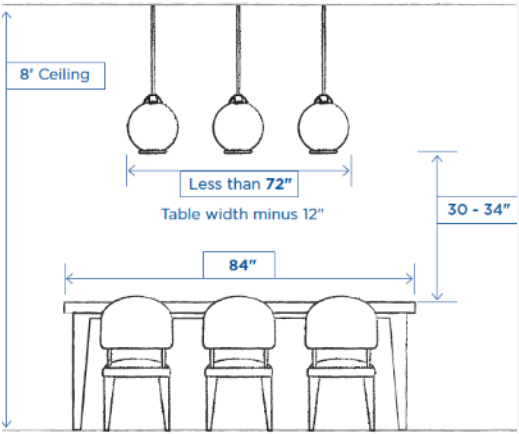
Factoring in the Dining Room Table

Step 2 **Take a Height**

Based on an 8′ ceiling, your fixture should hang between 30-34″ above the table (bottom of chandelier to table top). Some people prefer to add a wow factor by hanging a fixture low over a table.

Step 3 **This Size is Just Right**

Sometimes, the standard chandelier size guide may not work in a space. This can depend on the table in the room or many other factors. If this is the case, try starting with the width of the table and subtracting 12 inches. If it still seems off, go with a chandelier width that is 3/4 the width of the dining room table.



***Note: If your customer is unsure of how something will look make sure to inform them of our return policy and that they can order it and "try on for size" without installing to make sure it is a good fit.

Front Door Lighting

Selecting the right-sized front door lantern(s) should be based on the height of the door. This ensures the lighting look proportionate to the size of the door from 50’ away. Don’t underestimate the size!

Oversized outdoor lanterns are growing in popularity and can add to the beauty of a home, so when in doubt, always go larger.

Be careful when choosing a lantern with a long tail or scroll so the size does not make the fixture appear bulky next to the door.

One Lantern vs. Two Lanterns

Step 1 **Measure the Door**

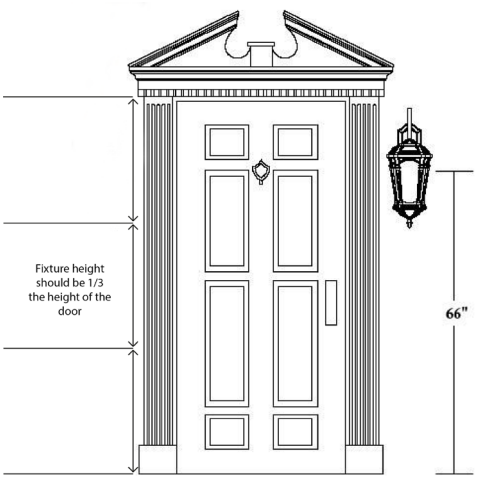
Start by measuring the height of the front door. This will determine the height of the lanterns. The lantern(s) should always be mounted 66” from the ground to the center of the fixture(s).

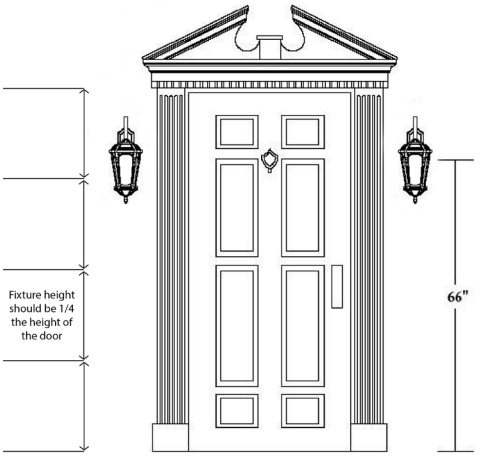
Step 2 **One Lantern Sizing**

When hanging one lantern, the lantern should measure 1/3 the height of the door.

Step 3 **Two Lantern Sizing**

When hanging two lanterns, the lanterns should measure 1/4 the height of the door.





Bath & Vanities

Vanity lighting varies greatly on the size and design of a bathroom. In most cases, both task lighting and ambient lighting should be used. However, sometimes space is a limiting factor.

Recently, sconces on either side of the sink have grown in popularity compared to traditional over the sink fixtures. Additional flair with decorative semi-flush or mini chandeliers have also become go to ambient light sources.

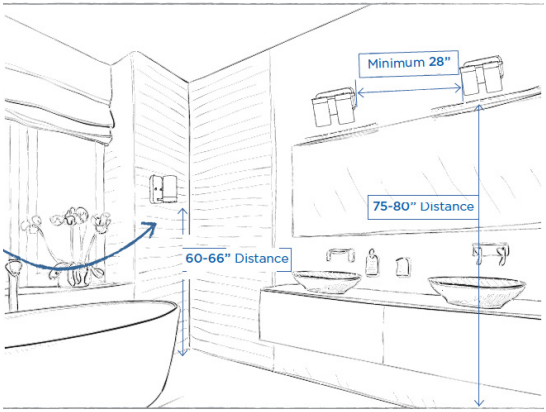
Step 1 **Evaluate the Layout**

What kind of space are you working with? If there is a single bowl, typically an overhead vanity or a sconce on either side of the mirror is best. If working with a double bowl vanity, you can use sconces on either side of each mirror. If the mirror is the full width of the vanity, a fixture above each bowl is standard.

Hanging in Style

Step 2 **Know the Basics**

Above the vanity:
Fixtures mounted above the vanity should be 75-80” above the floor and should typically be at least 24” wide.



For one bowl vanities, use one above the mirror fixture. It should be almost as wide but never wider than the mirror.

For two bowl vanities, fixtures should be mounted directly above each bowl and should be spaced a minimum of 28” apart.

Sconces:
Fixtures mounted on either side of the vanity should flank the sink creating cross-illumination which provides shadow-free lighting for the face. Sconces should be mounted at eye-level, aproximately 60-66” above the floor. To ensure shadow-free illumination, position them aproximately 28-40” apart so the beam spreads overlap.

Size Matters

Step 3 **Choose Wisely**

Every space creates different demands. Ultimately layering multiple sources of lighting creates the best useable space. You can even go against tradition and use a pendant to light a space depending on the layout and size. But typically, task and ambiance take priority before adding more decorative pieces.

Small Powder Rooms:
When there is no space to hang sconces on either side of a small powder vanity, or the customer prefers a more traditional style, mount a single fixture directly above the bowl.

Size Matters

Single Bowl Sconces:

Sconces can be mounted on the mirror wall or on adjacent walls. If they are mounted on the adjacent walls, make sure not to mount them behind the face as this can cause shadows.

***Note: Vanity fixtures can typically can be mounted facing up or down. In smaller spaces, facing up can create additional ambient illumination by bouncing the light off of the ceiling.

Size Matters

Double Vanity - Double Fixtures:
With larger bathrooms that have a single large, or two smaller mirrors, place vanity fixtures directly above each bowl.

Double Vanity - Single Fixture:
If the double vanity has one larger mirror, consider a single overhead vanity fixture. It should typically be almost as wide as the mirror itself, unless adding additional task lighting with sconces on either side of the mirror.

Layer the Light

Step 4 **Add to the Ambiance**

If the bathroom is larger, add additional ambiance lighting with a flush or semi-flush ceiling fixture, or even a chandelier in the center of the room or over a tub. You can also add reccessed task lighting in the shower or in the main bath area for better illumination, or tape lighting under the kick boards for nighttime navigation.

***Note: At least 150 watts of light should always be used to illuminate a vanity. You can always use more light and add a dimmer but it is difficult to add more light after installation.

Entryway Lighting

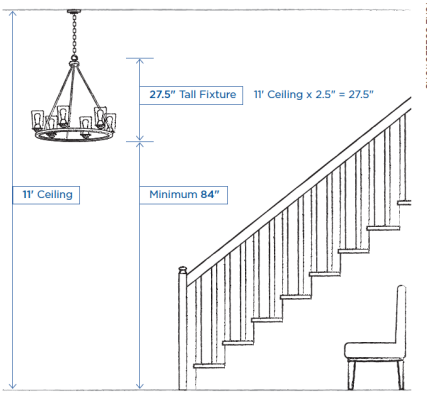
No matter the size or shape, an entryway should make a statement. It lays the foundation for a first impression of a home.

A two story foyer requires very different needs than a single story foyer or a small entryway with no foyer. Once you determine the general type of fixture based on the size of the space, you can narrow down a more specific size parameter based off the height of the ceiling.

Foyer Lighting

Step 1 **Find the Height**

The general rule of thumb for a foyer fixture is that for every foot of height in the space, you add 2.5-3" of chandelier or fixture height. For example, take an 11 foot ceiling x 2.5" = 27.5" fixture height.



Step 2 **Placement**

Consider centering a foyer light in a window above the front door so it can be clearly seen from outside. For one story entryways try an oversized semi-flush and add accent sconces to bring presence to the space.

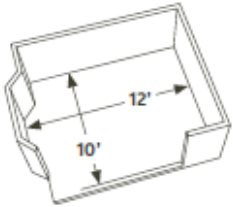
***Note: Whether it's a flushmount, semi-flush or a grande chandelier, make sure to hang the entryway fixture a minimum of 7' from the floor for door and head clearance.

Laundry & Utility Rooms

Lighting is critical in a task oriented room such as a laundry or utility room. Ambient lighting is rarely overdone and sometimes is even furnished with large cloud fixtures for even, bright light.

Generally speaking, color temperature in a laundry or utility room should be around 3000k. This will provide the best all around color.

Step 1 **Find the Square Footage**



Start by measuring the room. Take the length and the width of the room and multiply them. For example, 12 feet long x 10 feet wide = 120 sq feet.

Light Up Your Laundry

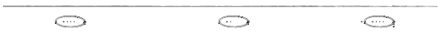
Step 1 **Work with Wattage**

Take your square footage and multiply by .75 to find the wattage needed for the space. For example, 120sqft x .75 = 90 watts. This is the minimum wattage needed to light the space.

Step 2 **Choose Fixtures & Layout**

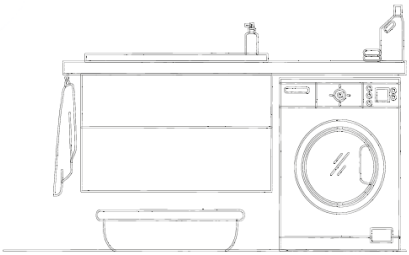
To keep it simple, use overhead lighting such as a flush, semi-flush or a cloud fixture for general ambient lighting.

Another clean and simple look is to use recessed lighting rather than ceiling mounted fixtures. They should be placed evenly to prevent shadows.



Step 3 **Opt for More**

If the room is larger or more lighting is preferred or needed, try adding to the task areas with sconces or another flushmount over a slop sink or folding table.



Kitchen Pendants

Kitchen pendants serve as both decorative and task lighting. When placing over an island, considering the size of the kitchen island, placement and quantity of pendants will vary.

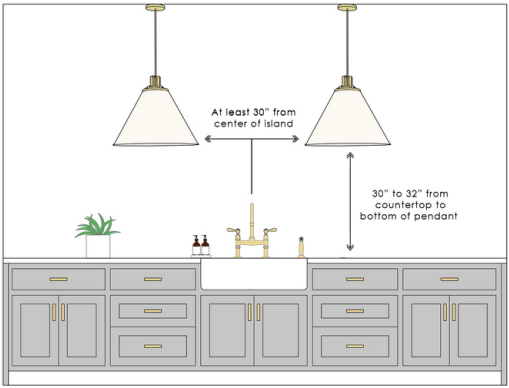
Before laying out pendants, keep in mind that they should not be hung at a height that will block the view across the kitchen. Pendants should hang roughly 30-32" above the counter top.

Pendants can be placed over a kitchen sink as well as a kitchen island to provide additional task lighting. The same height rules apply if the sink is open to the rest of the kitchen.

Two vs. Three Pendants

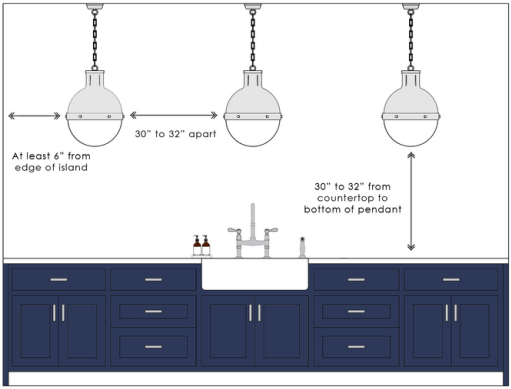
Step 1 **Two Pendants**

When hanging two pendants, they should be spaced evenly at least 30” from the center of the island.



Step 2 **Three Pendants**

When hanging three pendants, they should be spaced roughly 30-32” apart from one another, and at least 6” from the edge of the island.



Landscape Lighting

Landscape lighting is very subjective to the desired layout and effect. Many various types of fixtures produce different effects, and are typically placed based off of the landscaping.

Path & Area Lights

Typically spaced around 10’ apart to guide users, not illuminate the entire path.

Spot & In-ground Lights

Small objects typically use 1-2 lights, and larger objects such as large trees, can require up to 4 lights to properly illuminate.

Wall Wash

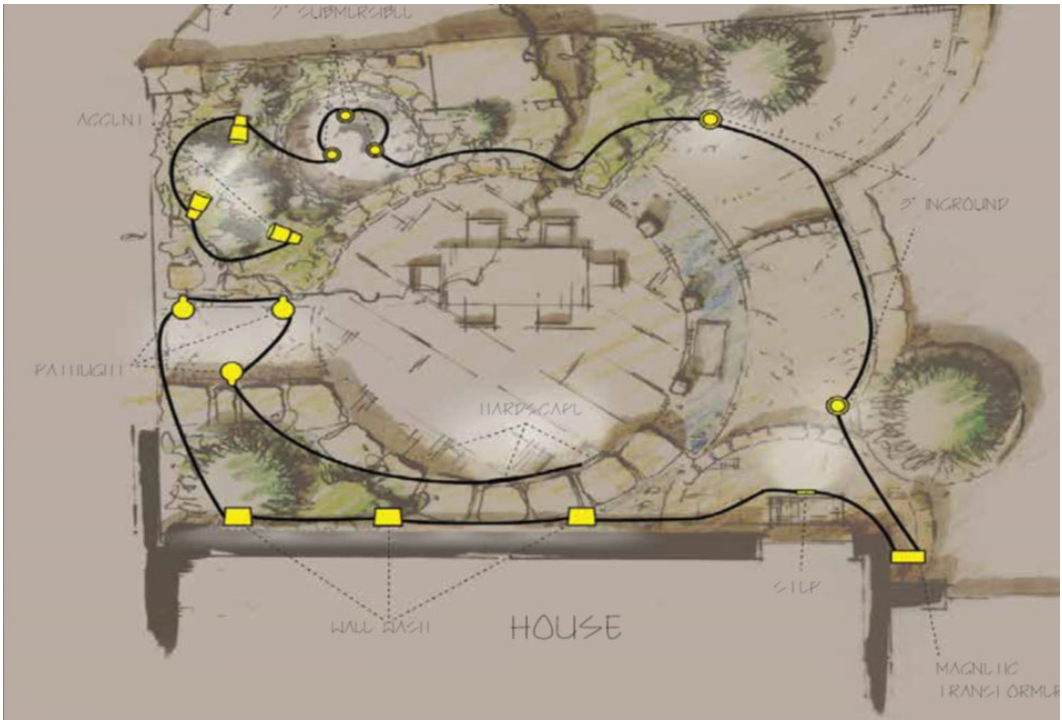
Placed 1-2’ from wall will cast even illumination. Place them approximately 6-8’ apart.

Deck & Step Lights

Illuminate entertainment areas where foot traffic is prevalent.

Based on fixture runs and the number of fixtures used, be sure to select the appropriate size transformer which will both handle existing selected fixtures and also the ability to add more in the future.

Night Lighting



Cabinet Lighting

Cabinet lighting comes in many variations. Options like tape, strip, modular, fixture and puck lighting are excellent for task lighting. Tape lighting and pucks are typically better suited for accent lighting. In the kitchen, you can add as many elements as desired by the customer.

Under cabinets eliminate shadowing from overhead lighting providing the supplemental lighting needed for a more useable workspace.

Over cabinets, tape lighting can add an element of interest.

Types of Cabinet Lighting

Under counters can illuminate the interior of drawers when open as well as serves as an architectural edge to the counter.

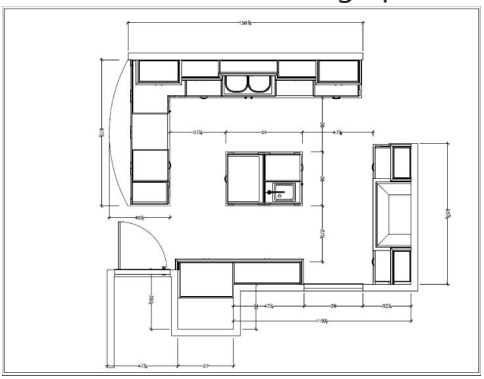
Toe Kick lighting defines the baseline edge of the cabinets. It also serves as a great nightlight, preventing accidents.

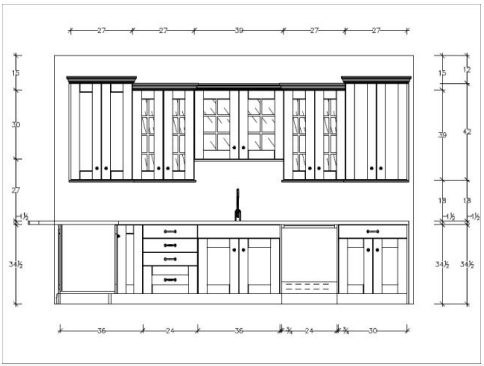
Coves and tray ceilings are often accented with tape lighting or rope lighting to highlight the details of a home. This effect often adds visual depth and raises the ceiling.

Inside glass cabinets helps highlight decorative dinnerware or eases access to supplies in darker areas.

Tape Lighting

If the customer has hired a dedicated contractor to do the installation, typically the contractor has his out particular way on installing. You may want to talk to him to find out how he wants to wire for the tape lighting. You want to minimize having to have the customer return to exchange parts.





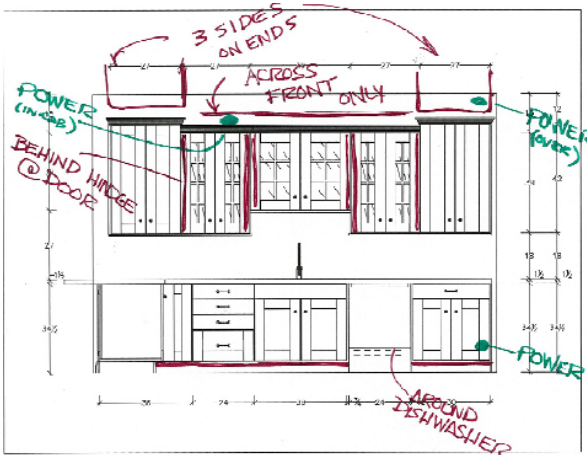
Step 1 **Evaluate**

Start with an architectural and/or an elevation plan with measurements. If the customer does not have sketches, ask them to measure.

These plans will help you figure out not only how many feet of tape you will need, but also where you plan to put the driver(s) and how many connectors and what kind will be needed.

Measure Twice, Cut Once

Decide where your customer wants to add the tape lighting and begin marking the architectural drawing. It's helpful to color code different pieces so it doesn't become confusing.



The red / pink in this diagram reflects pieces of tape. Make sure you figure at least a few extra feet of tape so they do not come up short and to account for errors.

The green in this diagram reflects where the power supplies will be located.

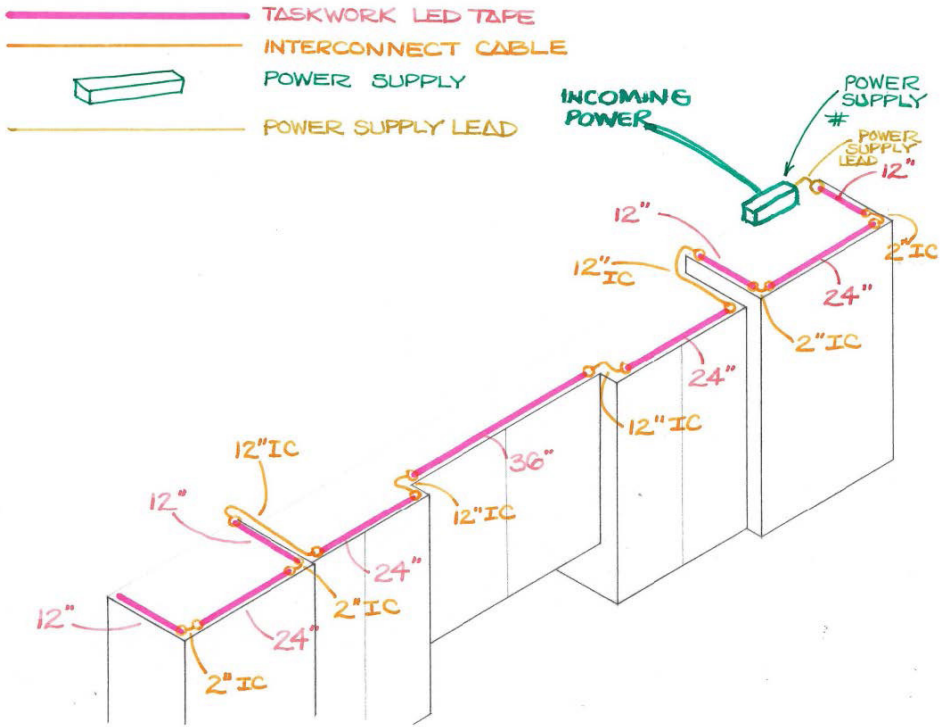
Step 2 **Measure & Calculate**

Take the total length of the tape light used and multiply by the power consuption listed in the catalog for the power supply.

For example, in this case for the above cabinet tape we figured, 12" + 24" + 12" + 24" + 36" + 24" + 12" + 24" + 12" = 180" or 15'0". We then take that and multiply. Our power supply uses 1.45watts/ft. 15'0" x 1.45w/ft = 21.75w. This means our power supply must be more than 21.75 watts.

Tape Lighting

As previously mentioned, each brand has different available pieces from interconnect cables or 'jumpers' to transformers. For this example we are using the Kichler Taskwork LED Tape and accessories which is cutable every 4 inches.



Above Cabinet Lighting

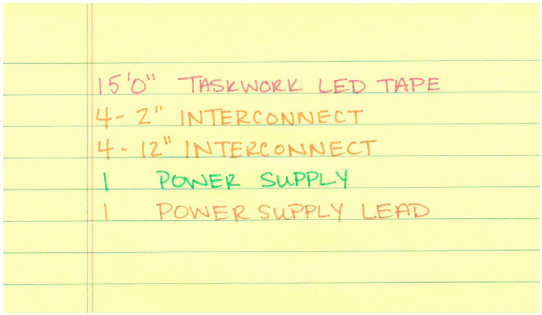
Since most customers like the ability to light each lighting source separately, we used a separate power source for the above cabinet lighting, the inside cabinet lighting and the toe kick lighting. This way, they can all be turned on independently.

Step 3a **Add accessories**

In this image, the pink illustrates the LED tape. The green indicates the incoming power and power supply.

The orange indicates the jumper cables needed to connect each standalone piece of tape. This enables all pieces to be powered from one power supply.

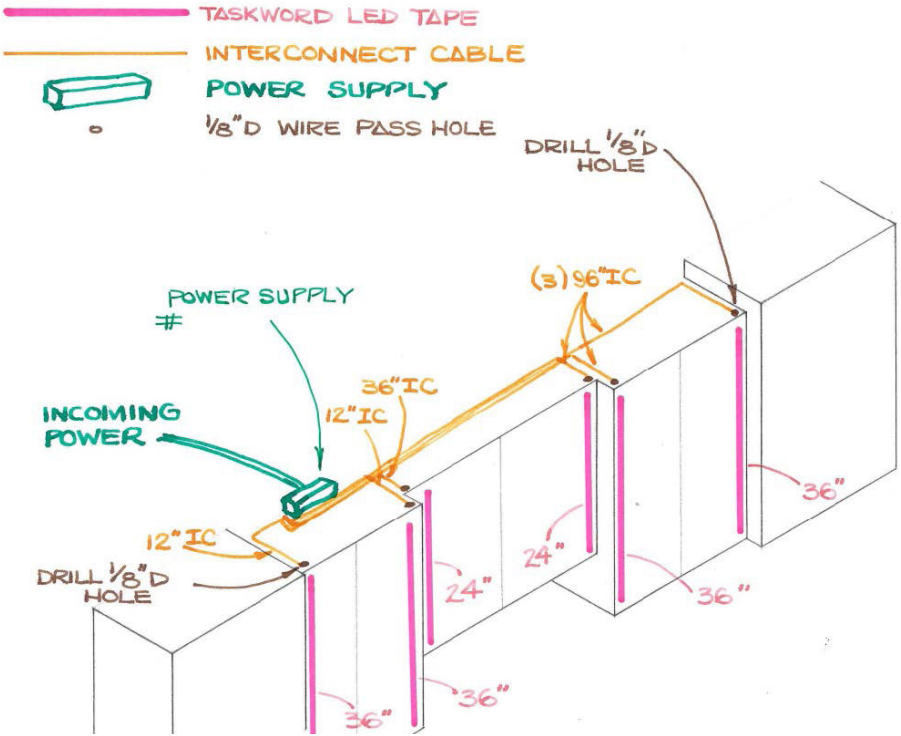
Above Cabinet
Supply List



***Note: To prevent missing parts and pieces, try listing out each part number you are using and how many of each you need. This can also be done in a quote as you work so that when you are finished you have an estimate.

Tape Lighting

Puck lights work nicely for inner glass cabinet illumination. However, since we are doing upper cabinet and toe kick tape we want a cohesive look and matching color output. To stay cost-effective, we will only be lighting the outer sides of the cabinets.



Inside Glass Cabinet Lighting

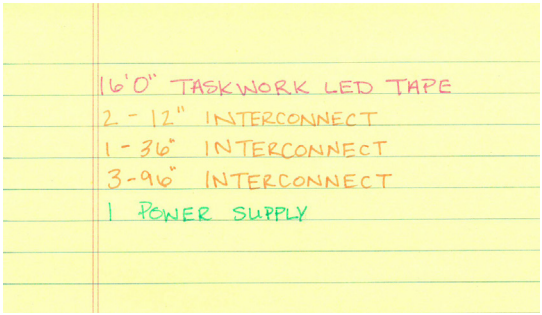
Make sure since the upper cabinet lighting also has a power supply mounted up above the cabinets to place the power supply in a different location.

Step 3b **Add accessories**

In this image, the pink illustrates the LED tape. The green indicates the incoming power and power supply.

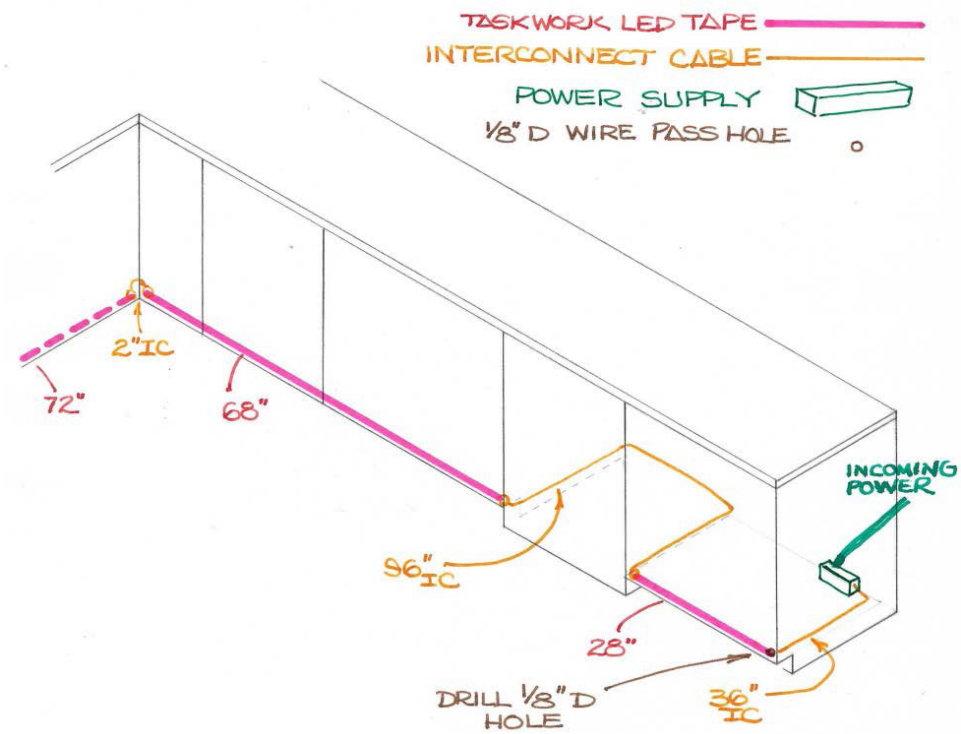
The orange indicates the jumper cables needed to connect each standalone piece of tape. This enables all pieces to be powered from one power supply.

Inside Glass Cabinet
Supply List



Tape Lighting

Toe kick lighting is fairly simple. Keep in mind is that you do not want to run tape or jumpers across the front of appliances. Make sure to select a jumper that is long enough to run around the back of any appliances like ovens, dishwashers and refridgerators.



Toe Kick Cabinet Lighting

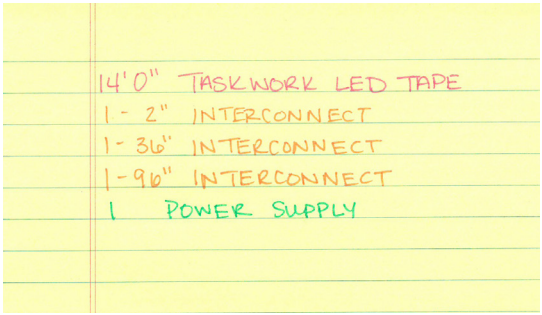
Typically the power supply for toe kick lighting is mounted in the bottom back corner of a far end of the cabinets. A small hole will be needed to pass power from the tape to the power supply.

Step 3c **Add accessories**

In this image, the pink illustrates the LED tape. The green indicates the incoming power and power supply.

The orange indicates the jumper cables needed to connect each standalone piece of tape. This enables all pieces to be powered from one power supply.

Toe Kick Cabinet
Supply List



***Note: Track for tape lighting can be extremely helpful both for installation and a consistent look. If the tape is being mounted on wood or an uneven surface track can be very useful. If it is being mounted on a resin or smooth surface, track is likely not needed.

Recessed Lighting

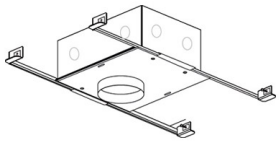
Also known as can lighting, recessed lighting is the most common form of architectural lighting. It's a multipurpose light source that can provide many lighting solutions.

A versatile light source, recessed lighting can be used both indoor and outdoor; damp and wet locations. It can be used for ambient lighting, task lighting, accent lighting and wall washes.

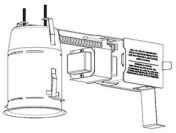
Housings

There are many different kinds of housings available. Choosing the right type for the job takes understanding of the customer's needs and the requirements for the job setting.

Step 1 **Housing Types**

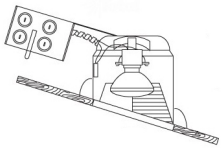


New Construction housings are made for installation prior to drywall hanging in a new home.



Remodel housings are made to work in your existing ceiling during a room remodel.

Sloped housings are made for sloped ceilings. Certain brands carry different ceiling pitch housings so attention to slope degree abilities are important.



Airtight housings minimize airflow and are energy efficient by preventing leaking air.

Step 2 **IC vs. Non-IC Rated**

IC Rated Housings are made for "Insulation contact" meaning that they allow for insulation to be right next to the can.

Non-IC Rated Housings must be installed more than 3" away from insulation.

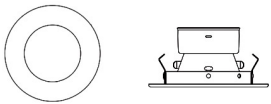
Aperatures & Trims

The housing type along with the trim combined make a complete downlight. Different combinations of aperatures and trim style can produce any desired light source.

Step 3 **Aperatures**

Aperature refers to the size of the opening, thus the size in inches when choosing a recessed downlight. 5-6" housings have been the standard for general ambient lighting for a long time. However, 3-4" housings are gaining in popularity.

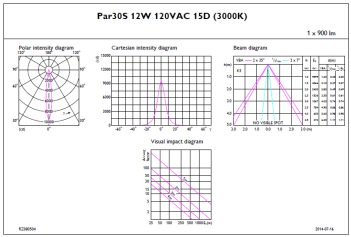
Step 4 **Trims**



Trims are defined by their function.
Gimbal or 'adjustable' trims are used to highlight a feature or object in a room.
Pinhole trims are designed with a deep-set reflector and optimal glare control for highlighting objects.
Wet-rated or 'shower' trims are deisgned to keep the fixture safe from moisture and water.
Baffle trims diffuse light and also do so differently from color to color.
Reflector or 'alzak' trims bounce light and are used in places which require an extra punch of light.

Beam Spreads

In order to properly layout recessed lighting, you must understand how each downlight you choose will throw the light down to the floor. The trim and aperature size will also affect the way the light falls.



Step 5 **Photometrics**

Any LED lamp, or retrofit trim will have some kind of photometric data which will show you the beam spread of the light source at different heights.

When for factor in the height of the ceiling and the beam spread, this will help you plan for spacing of the downlights.

Step 6 **Placement Types**

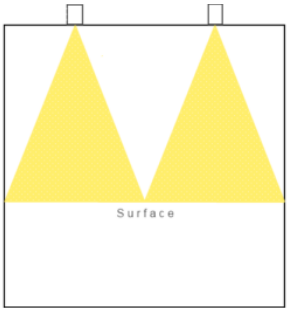
Each type of downlight has different layout formulations. Wall washes are meant to wash the wall and therefore must be a certain distance away to do so, while ambient downlights must be placed a certain distance from one another so they do not cast shadows.

Downlight Placement

A general rule of thumb for ambient lighting is to space the cans based on the height of the ceiling. You should also space them twice as wide from each other as they are from the wall.

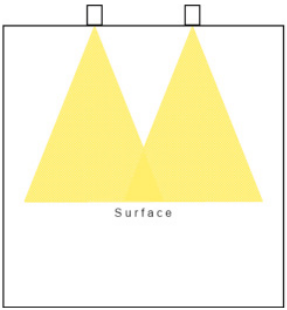
On an 8 foot ceiling, place the cans approximately 4 feet apart. To find this height, you take the height of the ceiling and divide by 2. So an 8 foot ceiling, space them 4 feet apart; a 10 foot ceiling, space them 5 feet apart.

By doing this, the beam spreads light the room evenly and does not overlap. The images below show the difference.



Correct Spacing

Beam spreads meet at the floor



Incorrect Spacing

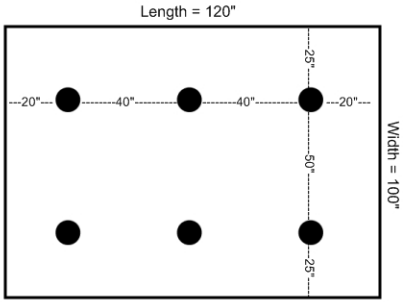
Beam spreads overlap

Ambient Downlight

Step 7 **Ambient Light Placement**

Start with a rough concept of where to place the downlights on a simple illustration with length and width measurements. To decide how to place them around objects like a ceiling fan.

When spacing the downlights, the distance between the lights should always be double what it is at the ends. For example, the width of the room illustrated below, the space on either end, 25” is half the space between the downlights, 50.”



Divide the length of the area by two to get the distance between the lights. For example, 100” / 2 = 50” between downlights.

Then divide that number by two to find how far from the wall the outer downlights should be placed. For example 50” / 2 = 25.” Then do the same for the width of the room.

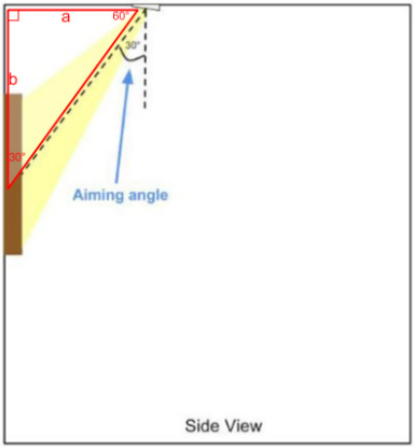
Downlight Placement

Step 8 **Accent Light Placement**

Start with a concept of where to place the accent downlights and in a rough illustration.

The idea is that the wall, ceiling and the accent light form a right triangle. This triangle is known as a 30°-60°-90° right triangle.

Since we know the angles, we need to determine the measurements which will help us solve for side a, the distance of the downlight from the wall to acheive the desired 60° angle.



First measure the distance of side b, which is the distance from the center of the focus, like a piece of art, to the ceiling.

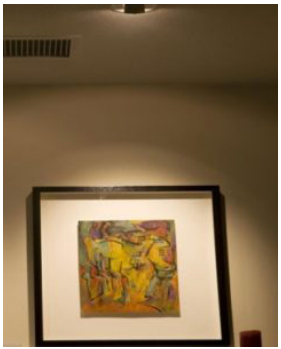
The formula to find a, or the distance from the wall to the placement of the downlight is $a = (b \times \sqrt{3}) / 3$. To make it more simple, the $\sqrt{3}$ is 1.73 so we will change the equation to $a = (b \times 1.73) / 3$

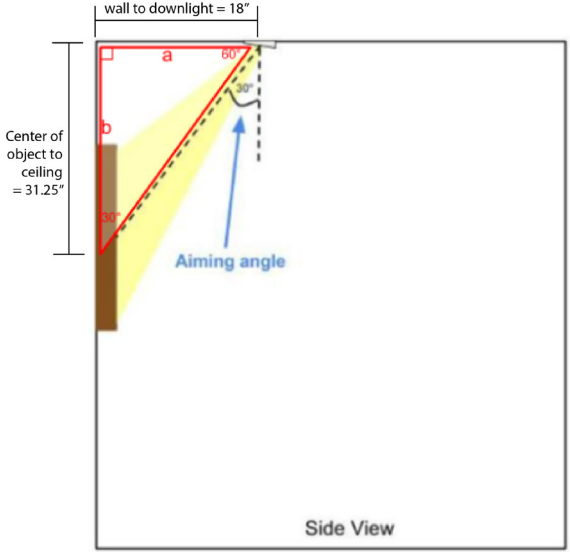
Accent Downlight

Say we measured b, and it was 31.25.” So we plug in 31.25 for b in the equation:

a = (31.25 x 1.73) / 3
a = 54.07 / 3
a = 18.03

So we need to place the downlight approximately 18” from the wall.

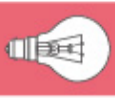




This equation is based on the idea that the perfect angle to prevent glare is 30° so we will angle the downlight to this angle. Most downlights can angle up to around 35° so this leaves a little wiggle room.

Watts to Lumens

How many lumens do you need? (120v)

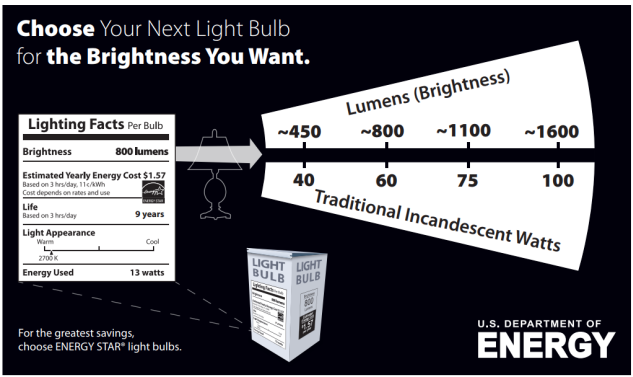
BRIGHTNESS →	250+	450+	800+	1100+	1600+
STANDARD 	25W	40W	60W	75W	100W
HALOGEN 	18W	29W	43W	53W	72W
CFL 	6W	10W	13W	18W	23W
LED 	4W	5W	10W	15W	20W

Lumens Explained

Lumens measure how much light you are getting from a bulb. More lumens means it is a brighter light. This differs from watts, which measures how much energy is used. Becuase lumens more accurately describe brightness, lumens instead of watts should always be used to judge which lamp is best for an application.

Use the chart on the opposite page to see the standard conversion of how many watts a standard incandescent light bulb convert to lumens.

LUMENS: THE NEW WAY TO SHOP FOR LIGHT



The Federal Trade Commission now requires a new product label for lightbulbs. This is to make it easier to determine what product is best for customers when shopping.