CEILING FANS

The 2015 Hawaii Energy Code (HEC) requires all bedrooms and the largest space that is not used as a bedroom to have a ceiling fan or ceiling fan rough-in per Section R401.2.1 Tropical Zone and Section R404.2 Ceiling fans (Mandatory).

Choosing the Right Ceiling Fan Size

First things first: select the right size of fan for your space. Not only will your fan work as effectively and efficiently as possible, choosing the right size fan will ensure your safety and comfort as well.

Bigger rooms need bigger fans. Start by measuring the room in which the fan will be installed. The following guidelines will help you select the right size fan for your room:

<table>
<thead>
<tr>
<th>Room Dimensions</th>
<th>Suggested Fan Size</th>
<th>Suggested Rooms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 75 ft²</td>
<td>29 – 36&quot;</td>
<td>Bathroom, utility room, other small areas</td>
</tr>
<tr>
<td>76 – 144 ft²</td>
<td>36 – 42&quot;</td>
<td>Dining room, kitchen, small to medium bedroom</td>
</tr>
<tr>
<td>144 – 225 ft²</td>
<td>44&quot;</td>
<td>Family room, large bedroom, lanai</td>
</tr>
<tr>
<td>225 – 400 ft²</td>
<td>50 – 54&quot;</td>
<td>Great rooms, extra-large areas</td>
</tr>
<tr>
<td>&gt; 400 ft²</td>
<td>54 – 72&quot; or multiple fans installed</td>
<td>Great rooms, extra-large areas</td>
</tr>
</tbody>
</table>

Reference: Modified from American Lighting Association, 2003

Ceiling Fan Placement

Next, mount your ceiling fan in the appropriate place for maximum comfort, circulation, safety and aesthetics.

Ceiling Height

Ceiling fans should be placed at least 18 inches from the walls and 7 feet above the floor, at a minimum. For optimal performance, the fan should be installed 8 to 9 feet from the floor.

For optimal air flow, your fan should be 10 to 12 inches from the ceiling.

For low ceilings 8 feet in height or less, purchase a low-profile, or “hugger,” ceiling fan. Alternatively, a flush mount may be used.

For tall, sloped, or vaulted ceilings, mount your ceiling fan with an appropriate downrod to lower it to the desired 8 or 9 feet from the floor.

Does your ceiling fan have a light kit? If so, reduce the length of the downrod by 12 inches.
Fan Placement within a Room
Ceiling fans should be placed in the middle of most rooms for optimal air flow to the entire space. However, you should consider where furniture is located and where people frequently gather. In living and great rooms, center the ceiling fans directly over the seating area. In dining rooms, center the ceiling fan directly over the dining room table. Depending on the size of your kitchen, center the fan in the room or install several small fans throughout. In bedrooms, center the fan over the bed.

Ceiling Fan Components – A Few Important Considerations
The efficiency of your fan and how well it moves are also depends on how your fan is made, particularly the fan blades and motor.

Fan Blades
Blade pitch is the angle of your fan’s blades (measured in degrees) and, in conjunction with the fan motor, determines how well your fan is able to circulate air. Higher blade pitches typically move more air, which is given in cubic feet per minute, or CFM. The optimal blade pitch for a ceiling fan is between 12 and 15 degrees.

Blade number, design, and material can contribute to the amount of air movement as well. The typical ceiling fan comes standard with 4 or 5 blades; fans with more blades are usually quieter but also move less air. 4-blade and 5-blade fans achieve the ideal balance between performance and ambient noise. High-quality blades come in weighted, balanced sets to minimize wobble and additional noise. To prevent peeling and warping, blades should also be sealed from moisture by the manufacturer.

Motor
The motor is often the most important feature of your ceiling fan as it drives the fan blades. For quiet, efficient operation, select a performance grade fan with a motor that has sealed and lubricated ball bearings, heavy-duty windings, and shock-absorbent internal components.

Additional features that maximize the lifespan of a fan and ensure quiet operation include heavy-duty windings, precision engineered bearings, and shock-absorbent internal components.

Tip: Choose a fan that uses heavier materials, such as die cast metals, to house the motor. These fans generally vibrate less, provide more stability for longer downrods, and provide a good surface for high quality finishes.

Ceiling Fan Location and UL Listing
It’s important to consider location when selecting a fan, especially if the fan will be exposed to humidity or moisture. There are three UL-listing ratings for ceiling fans – indoor, damp, and wet locations. Indoor fans should be used indoor in dry spaces only. Fans with a damp-rating are good for bathrooms, laundry rooms, and other rooms that are often humid, and can also be used outdoors when protected by a porch or similar structure. Wet-rated fans can be installed in outdoor locations where they will be exposed to water.

References and Additional Resources

For more information, contact Howard Wiig at howard.c.wiig@hawaii.gov or http://energy.hawaii.gov/hawaii-energy-building-code