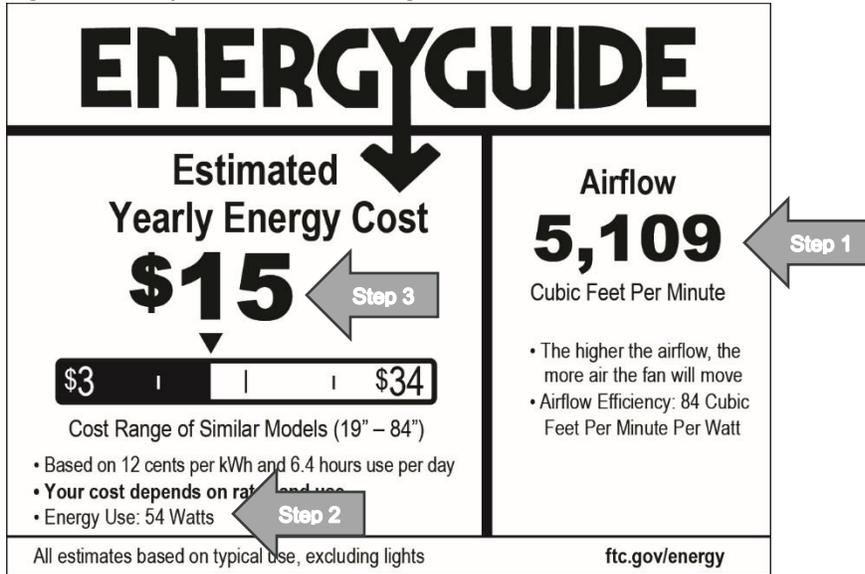


U. S. Department Of Energy  
Guidance

Methodology Of Calculating Values As Required By The FTC EnergyGuide Based On Measurements Taken In Accordance With Appendix U To Subpart B Of 10 CFR Part 430—Uniform Test Method For Measuring The Energy Consumption Of Ceiling Fans

Figure 1: Sample Label 17 - Ceiling Fan



**Step 1.** Manufacturers should use the airflow measurements from testing, conducted in accordance with the DOE ceiling fan test procedure at 10 CFR part 430, subpart B, Appendix U and 10 CFR 429.11 (which specifies a sample of at least two ceiling fans), in the following equation to calculate the weighted-average airflow,  $CFM_{ave}$ , on the FTC EnergyGuide label (Step 1 in Figure 1):

$$CFM_{ave} = \frac{CFM_{Low} \times OH_{Low} + CFM_{High} \times OH_{High}}{OH_{Low} + OH_{High}}$$

Where:

- $CFM_{Low}$  = mean of sample of measured airflow, in cubic feet per minute (CFM), at low fan speed,
- $CFM_{High}$  = mean of sample of measured airflow, in cubic feet per minute (CFM), at high fan speed,
- $OH_{Low}$  = average daily operating hours at low fan speed, from Table 3 of Appendix U to Subpart B of 10 CFR Part 430, and
- $OH_{High}$  = average daily operating hours at high fan speed, from Table 3 of Appendix U to Subpart B of 10 CFR Part 430.

Note:

- Section 3.3 of Appendix U to Subpart B of 10 CFR Part 430 sets forth the procedures for measuring airflow at low and high speed.
- Table 3 to Appendix U to Subpart B of 10 CFR Part 430 provides the average daily operating hours corresponding to high and low speed for low-speed, small-diameter (LSSD) ceiling fans.
- $OH_{Low}$  and  $OH_{High}$  add up to the 6.4 hours of use per day specified by the FTC EnergyGuide label.
- $CFM_{ave}$  should be rounded to the nearest whole number.

**Step 2.** Manufacturers should use the power consumption measurements from the test in the following equation to calculate the weighted-average power consumption,  $W_{ave}$ , to use as the “Energy Use” value on the FTC EnergyGuide label (Step 2 in Figure 1):

$$W_{ave} = \frac{W_{Low} \times OH_{Low} + W_{High} \times OH_{High} + W_{Sb} \times OH_{Sb}}{OH_{Low} + OH_{High}}$$

Where:

- $W_{Low}$  = mean of sample of measured power consumption, in watts, at low fan speed,
- $W_{High}$  = mean of sample of measured power consumption, in watts, at high fan speed,
- $W_{Sb}$  = mean of sample of measured power consumption, in watts, in standby mode,
- $OH_{Low}$  = average daily operating hours at low fan speed, from Table 3 of Appendix U to Subpart B of 10 CFR Part 430,
- $OH_{High}$  = average daily operating hours at high fan speed, from Table 3 of Appendix U to Subpart B of 10 CFR Part 430, and
- $OH_{Sb}$  = average daily operating hours in standby mode, from Table 3 of Appendix U to Subpart B of 10 CFR Part 430.

Note:

- Section 3.3 of Appendix U to Subpart B of 10 CFR Part 430 sets forth the procedures for measuring the power consumption at the high and low speed settings, as well as in standby mode (if applicable).
- Table 3 to Appendix U to Subpart B of 10 CFR Part 430 provides the time spent in standby mode for those LSSD fans with standby mode power consumption.
- If a ceiling fan does not have any standby power consumption,  $W_{Sb} = 0$ .
- $W_{ave}$  should be rounded to the nearest whole number.

**Example Weighted-Average Power Calculation:** The table below contains the relevant operating hours information for all LSSD ceiling fans and mean power data for an example LSSD ceiling fan. An example weighted-average power calculation is provided for the case when the ceiling fan does have standby mode power consumption and when the ceiling fan does not have standby mode power consumption.

**Table 1. Test sample**

Setting	Example Mean Power (W)	Average Daily Operating Hours (OH) From Table 3 to Appendix U to Subpart B of 10 CFR Part 430
High	73.5	3.4
Low	13.1	3.0
Standby	0.7 with standby, 0.0 without	17.6

**Weighted-Average Power with Standby = 47 watts**  
**Weighted-Average Power without Standby = 45 watts**

**Step 3.** Manufacturers should calculate the “Estimated Yearly Energy Cost” (*EYEC*) on the FTC EnergyGuide label (Step 3 in Figure 1) using the following equation:

$$EYEC = \frac{W_{Low} \times OH_{Low} + W_{High} \times OH_{High} + W_{Sb} \times OH_{Sb}}{1000} \times 365 \times 0.12$$

Where:

The variable designations are the same as in Step 2.

Note:

- \$0.12/kWh is the cost of energy specified for the FTC EnergyGuide label (16 CFR 305.13).
- *EYEC* should be rounded to the nearest whole number.

**Example Estimated Yearly Energy Cost Calculation:** Using the same ceiling fan example mean power data provided in Table 1, the resulting annual energy costs are as follows:

**Annual Energy Cost with Standby = \$13**  
**Annual Energy Cost without Standby = \$13**