March 2015 EnergyWiseSM Tip: Kitchen Ventilation

If you can’t stand the heat, get out of the kitchen. But if you need to cook dinner or bake a cake, this advice is probably not practical. How about getting the heat out of the kitchen instead?

In addition to creating smoke, grease and odors, cooking produces significant amounts of waste heat and water vapor. While this may not be as big of a concern in winter months, during the cooling season, your air-conditioning system will run considerably longer to remove this excess heat and humidity. The Cold Climate Housing Information Center at the University of Minnesota estimates cooking a dinner for a family of four releases nearly 20 ounces of water into the air. This amount more than doubles if a gas range is used. Proper kitchen ventilation will significantly reduce of air-conditioning energy needed to perform the same task.

Here’s what you need to know to choose a ventilation system that fits your cooktop and your space.

**Ducted vs. Unducted**

Cooking fans without ducts leading outside the home are not true ventilation systems. Rather, they are referred to as recirculating range hoods, and have a limited ability to reduce grease, smoke, heat and odors. These hoods attach to the wall above the cooktop and pull air through a filter, then recirculate it back into the room. Often, this recirculated air includes odors and gases along with humidity and heat.

Ducted systems take emissions through ductwork to be vented outside. Venting outside takes much less energy to remove heat and water vapor than relying on your air-conditioning system to do the job.

**Ups and Downs**

Updraft systems, are the favorite among kitchen-design professionals, as they install directly over the cooking surface. A hood helps gather vapors that rise naturally during the cooking process and then the exhaust fan moves them outside through a duct. Downdraft designs pull air across the cooking surface and down through a duct that leads outside the home. Unlike hoods or canopies, downdraft systems are often integrated into the surface of the cooking appliance. Since these units rise no more than 10 inches above the cooking surface, they are too short to capture vapors rising from a tall pot. Most designers prefer to reserve downdraft systems for kitchens with cathedral ceilings, where the length of the ductwork would be too great to work effectively, or in kitchen island configurations. A larger fan is required in a downdraft system because there is no hood to help capture cooking byproducts.

**Depth and Width**

A 30-inch range requires a hood or downdraft vent that is at least 30 inches wide. If space permits, wider is better. For a 30-inch range, a 36-inch hood is recommended. A hood’s depth, which is the distance it projects from the wall, is also important. “You want to make sure it hangs over at least the middle of the front burners.”
**Ventilation Efficiency**
Generally, a range hood with an exhaust fan vented to the outside (updraft) is considered the most effective system. Placement of the fan above the cooking area takes advantage of the natural rise of heated air. Note that small ducting and/or several elbows in the ducting decreases the ventilation system’s efficiency.

**Ventilation Rate**
When a cooking appliance is against a wall, ventilation is more effective. Ventilation systems for ranges and cook tops in open islands or peninsulas require larger fans. The Home Ventilating Institute recommends hoods being placed along a wall have a minimum exhaust rate of 40 cubic feet of air per minute (CFM) per lineal foot of cooktop. Ideally, 100 CFM per lineal foot should be used. Thus, for a typical 30-inch range 100 to 250 CFM is needed. Hoods above an island or peninsula (no wall) should have a minimum of 50 CFM per lineal foot while 150 CFM is recommended. This calculates to 125 to 375 CFM of a 30-inch cooktop.

Duct work can alter efficiency of a ventilation system. The longer the duct run, the more turns or angles, and the smaller the duct, the less efficient the system. A larger fan may be needed to draw enough air from the cooking area.

Remember, the most efficient thing you can do with kitchen ventilation is to turn it off after it is no longer needed. If you do not, it will continue to draw conditioned air out of your kitchen.

Your local utility and Nebraska Public Power District want to help you make the most from the energy they provide. That includes helping you comfortably create culinary creations while using your kitchen in the most efficient manner possible. For more ideas on how you can make your home or business EnergyWise℠, along with possible energy efficiency financial incentives, contact your local utility or visit [www.nppd.com](http://www.nppd.com).