



# Kitchen Ventilation

**Lesson** To achieve adequate kitchen ventilation, attention to duct design and sealing is required.

**Goal** Achieve 100 cfm over the kitchen stove venting directly to the outside.

**What Happened** At Viking Terrace, preconstruction assessment of kitchen ventilation consisted of turning on kitchen fans and feeling with a hand to verify that they created air flow. As they all did, they were assumed to be fully functional, and no plans were made to improve the ventilation. The volume of air flow was not specifically tested, so it was unexpected that installing 160 cfm fans moved only 80 cfm when tested (tested fans ranged from 20 percent of the rated value up to 94 percent, with an average of 50 percent). This result was due to poor duct quality, which is exacerbated to original design decisions, such as locating the kitchens far from the exterior of the building, and having separate ductwork for each unit.

**Recommendations** Draft specifications remembering that kitchen vent hoods tend to perform below their listed cfm rating.

During design, there are a number of ways to increase the likelihood that the target movement rate is reached. First, kitchen placement affects the simplicity or difficulty achieving this—a location near an exterior wall minimizes the distance from the vent hood to the exterior and increases the likelihood of success. Second, design the ducting to make as few turns as possible, as with each turn some of the fan power is lost. In renovation projects where existing ductwork may be reused, test the duct work to ensure that it is in good condition and capable of the pressurization necessary to vent the hood to the exterior. Third, while four-inch diameter ducts are typical for this type of ducting, six-inch ducts allow air to flow more easily. Use larger diameter ducts than usual. Fourth, use smooth, sealed ducts (see “Lessons Learned—Ducts”). Finally, after careful thought about design, identify appropriately sized equipment.

**Take Away** Creating adequate kitchen ventilation can be challenging, but is possible with careful planning, design, and testing.

*For more information on related topics, see related Lessons Learned fact sheets: Ductwork, Duct Design, Duct Sealing, and Pressure Balancing Between Rooms.*

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**Relevant Green Communities Criteria:**

**7.5 b, c Exhaust Fans**



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**LESSONS LEARNED Minnesota Green Communities Demonstration Projects**

This publication is part of a series of lessons learned originating from Minnesota Green Communities demonstration projects. The Minnesota Green Communities initiative is currently the largest green building program in Minnesota, with 497 units completed, 908 under construction, and another 1,645 under development. Eight demonstration projects were funded through the Minnesota Green Communities program. The initiative is completing building performance testing on the demonstration projects, and has gathered lessons learned in several areas.

The Lessons Learned series includes the following publications: Integrated Design, Multifamily Green Rehabilitation, Construction Training and Monitoring, Ductwork, Duct Design, Duct Sealing, Kitchen Ventilation, Radon Testing and Mitigation, Pressure Balancing Between Rooms, Water Efficiency, and Cost Increase Triggers in Plans and Specifications. **All publications can be found online at [www.mngreencommunities.org](http://www.mngreencommunities.org).**

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