Save Money With Less Hood

Shorten your cook line and reduce your ventilation costs

When looking at kitchen ventilation, there are two primary cost factors. The first is the upfront purchase and installation costs of the exhaust system itself. The second is the ongoing energy consumption of that system – including exhaust, makeup air, and conditioning. Let's take a closer look at each.

Upfront Costs

Sophisticated hood systems can cost more than $1,000 per linear foot. If you include the cost of ductwork, exhaust and makeup air fans, as well as other construction costs like wall flashing and flooring, most professional kitchen designers will use a number closer to $1,500 - $2,000 per linear foot. Minimizing the footprint of the ventilation system with good design can have a significant savings on your initial investment.

Ongoing Energy Consumption

Don Fisher wrote an excellent article for the ASHRAE Journal[1] to help operators evaluate the ongoing energy costs associated with the ventilation of conditioned air. We would encourage you to read the full article, but we'd like to highlight a few points and share how they relate to choosing equipment.

Calculating energy consumption is complicated, as the climate, season, hours of operation, local utility costs, and thermostat settings all play a role. In his research, Fisher looked at multiple operations and a variety of conditions to attempt to account for this variability. The math gets pretty technical, but the conclusion is that each CFM of exhaust costs about $1 on an annual basis. In other words, a reduction of 500 CFM ends up saving about $500.

Consider the following chart, which lists minimum exhaust rates per linear foot for different types of hoods. Most common gas-fired cooking equipment is categorized as either medium or heavy duty. Wall mounted canopy hoods are the most common hoods installed in restaurants.

	IMC Minimum Exhaust Flow Rate for Unlisted Hoods (cfm per linear foot of hood)			
Type of Hood	**Light Duty Equipment**	**Medium Duty Equipment**	**Heavy Duty Equipment**	**Extra-Heavy Duty Equipment**
Wall-mounted Canopy	200	300	400	550
Single Island Canopy	400	500	600	700
Double Island Canopy	250	300	400	550
Eye Brow	250	250	not allowed	not allowed
Backshelf	250	300	400	not allowed
Passover	250	300	400	not allowed

What does this mean? For every foot of medium duty hood you can eliminate, you'll see a savings of $300 per year – every year. For a heavy duty hood, the savings would be $400. Moving between duty ratings can have an impact too – if you replace a gas underfired broiler (heavy duty) with a gas griddle (medium duty), you would see savings of $100 per foot.

[1]Donald Fisher, P.E., Predicting Energy Consumption *[of Kitchen Ventilation Systems.* **Published:** ASHRAE Journal, June 2003. https://fishnick.com/publications/ventilation/energy_consumption.pdf.

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How much money can be saved by reducing 1 linear foot of hood?

A Case Study

A brief case study really brings to light how much ventilation cost can be saved with good design choices and efficient equipment. Consider two restaurants – Burger A and Burger B.

Burger A uses a 5 foot underfired broiler to cook hamburgers. This is a heavy duty piece of equipment that will need to be served by a 6 foot hood exhausting 400 CFM per linear foot.

Initial cost for this hood would be $9,000 - $12,000 (based on $1,500 - $2,000 per linear foot).

Ongoing energy cost for this hood would be $2,400 per year (based on 6 feet of hood at 400 cfm / foot and $1.00 per CFM per year).

Burger B selected a more expensive, but more efficient gas griddle. This 3 foot griddle can cook just as many burgers as Burger A, but is only 3 feet in width. This is a medium duty piece of equipment that will need to be served by a 4 foot hood exhausting 300 CFM per linear foot.

Initial Cost for this hood would be $6,000 - $8,000.

Ongoing energy cost for this hood would be $1,200 per year (based on 4 feet of hood at 300 cfm / foot and $1.00 per CFM per year).

	Initial Cost	Ongoing Cost
Burger A	$9,000 - $12,000	$2,400/year
Burger B	$6,000 - $8,000	$1,200/year
Savings	***$3,000 - $4,000***	***$1,200/year***

By keeping ventilation cost in mind when selecting their cooking equipment, Burger B was able to save a significant amount of money in both initial and ongoing ventilation costs. We encourage you to dig deeper and see how this could apply to your operation.

Can you choose equipment that provides better, more consistent food with greater throughput capacity, and can you do it in a smaller foot-print? How much could you save?

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