

Still Cooking With Gas?

We appreciate Dr. Sherman's thoughtful column on gas cooking in the May 2023 issue of *ASHRAE Journal*. While the column does cover all of the categories of impact of gas cooking, we feel he overlooks several of the negative aspects of gas cooking.

On safety, the opportunity with all-electric cooking is to make cooking even safer for not only the average user, but in professional restaurant settings where cooking burns are still common. Restaurant workers are especially vulnerable to burns from gas cooking. Induction cook stoves in particular provide added safety because they transfer heat directly to the cooking equipment instead of heating the stove surface. Standards are intended to continuously improve and drive us toward safer and more efficient technology, in the case of electric cooking.

On the decarbonization front, we feel Dr. Sherman is missing the fact that electric cooking is inherently more efficient than gas. Gas cooking is in the 30% efficient range while electric resistance cooking is 60% efficient and induction can be as high as 80% efficient. A doubling of efficiency makes all the sense in the world from both an engineering and decarbonization standpoint. He also brings up the costs of induction cooking. In a recent survey of Walmart cookware, a full set of pots that are induction ready costs in the \$50 to \$75 range. Cast iron, another great and affordable choice for cooking, is one of the best options for induction cooking. Ikea is now selling electric resistance and induction stoves that all rival the cost of similar quality gas stoves.

On ambient air quality from gas cooking, in isolation, we agree that the impacts to outdoor air pollutants of gas cooking is smaller than those from gas heating and gas water heating. However, continuing to support the natural gas supply network just for gas cooking is going to be a barrier to the abandonment of the gas infrastructure in neighborhoods and communities. This is one of the major financial benefits of the elimination of gas in homes. The gas distribution infrastructure in America is aging and will cost billions of dollars to maintain over the coming decades. If gas cooking is kept as the only gas used in a home, gas utilities will be forced to raise the cost of natural gas to stratospheric levels to cover the costs of maintaining a large gas network for small amounts of usage.

On indoor air quality (IAQ), Dr. Sherman has several good points. We agree that better hoods for capture of fumes and automatic controls of the hoods would be a great solution to the indoor air pollutants from cooking and burning methane in the kitchen. We also agree that cooks should learn to manually turn on the hood. However, we disagree that these changes would be easier and as effective as a simple change out of the stove itself. Additionally, the more widespread use of hoods will drive up space conditioning costs—heating or cooling—further driving up the cost of staying with gas. In addition, newer homes with tighter construction often do not have good airflow at the hood. While some volatile organic compounds can be generated even with electric cooking, the elimination of all harmful gases from burning gas will surely be more effective at improving IAQ and the safety of building occupants, especially more vulnerable children.

In the end, we feel electric cooking—especially induction cooking—is safer, affordable and more climate friendly than gas cooking. Chefs that have started to become familiar with induction report that it is a more precise, faster and more enjoyable cooking experience. There is a growing list of Michelin starred restaurants that use all electric cooking. We look forward to meeting Dr. Sherman at one of these restaurants for an enjoyable, decarbonized and delicious meal in the near future.

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SHERMAN RESPONDS

In their letter, Peter and Jorlyn raise useful points for individual consideration. To be clear, though, I was not making the point that everyone should choose gas cooking but rather that there was insufficient rationale for public policy to ban gas cooking.

The letter writers contend that gas cooking is substantially less safe for workers in commercial kitchens. Gas cooking appliances have been getting safer and safer over the last century, but if their contention is true, it is not a rationale to ban all gas cooking. The Occupational Health and Safety Administration is the place to raise worker safety issues.

The numbers Peter and Jorlyn cite for cooking efficiency may be correct, but only when considering site energy use; the more relevant number is source energy

(or carbon) use. Since all renewables on the grid are pretty much used, any additional load (such a switching to electric cooking) will come from non-renewable, typically natural gas, generation. When considering the transmission and distribution losses for both, gas cooking is actually slightly more efficient. Until the grid is substantially decarbonized, there is little climate change reason to switch and there are much better decarbonization options for policy makers to consider.

On the IAQ front, it is certainly true that there have been “high efficiency” homes that do not have proper range hoods installed. Those are problematic no matter what kind of cooking there is. Proper kitchen ventilation solves the problem either way and is part of ASHRAE standards. If electric cooking induced people to not use their range hoods, it would make IAQ worse, not better.

Peter and Jorlyn bring up several examples where gas cooking or infrastructure may be financially burdensome and will cause people to opt out. I agree, but that is precisely the time when we do *not* apply public policy biases such as banning a technology.

The market is perfectly capable of working through that kind of thing itself. If one expects an eventual transition to electrification, it would be smoothest if market forces ease us there rather a series of fiats.

I have no problem if the letter writers choose the all-electric route; I would be more than happy to go to dinner at a restaurant where the chef had made his own choice to use an all-electric kitchen. I would be less happy, however, if he were forced to by such a poor public policy.

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