

Thanksgiving dinner's carbon footprint: A state-by-state comparison

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Credit: Carnegie Mellon University

The environmental impact of your Thanksgiving dinner depends on where the meal is prepared.

Carnegie Mellon University researchers calculated the carbon footprint of a typical Thanksgiving feast—roasted turkey stuffed with sausage and apples, green bean casserole and pumpkin pie—for each state. The team

based their calculations on the way the meal is cooked (gas versus electric range), the specific state's predominant power source and how the food is produced in each area.

They found that dinners cooked in Maine and Vermont, states that rely mostly on renewable energy, emit the lowest amounts of carbon dioxide, a greenhouse gas that is tied to climate change. States that use coal power, such as Wyoming, West Virginia and Kentucky, have the highest [carbon dioxide emissions](#).

"Food production—how the food is grown or raised—and meal preparation—how the food is cooked—both contribute to the carbon footprint. We broke our dinner down into its separate dishes, and then broke those down into the individual ingredients. For each ingredient, we tracked its carbon emissions from 'farm-to-fork.' Production and preparation both contribute about 50 pounds of carbon dioxide, but it varies from state to state and house to house," said Paul Fischbeck, professor of social and decisions sciences in the Dietrich College of Humanities and Social Sciences.

Further examination showed high variability among similar stove types in different states. For example, cooking a 16-pound turkey in an electric oven in coal-dependent Wyoming emits 32 pounds of carbon dioxide. In Maine, cooking the same turkey in the same oven but with electricity generated primarily from [renewable energy](#) releases less than three pounds of carbon dioxide.

Generally, using gas ranges to cook leaves a smaller footprint than electric ranges, but the team found that does not hold true for 11 states whose primary sources for electricity are renewables and nuclear power.

Traveling to celebrate Thanksgiving only worsens the problem.

"Bringing relatives into town can easily double the carbon footprint of the meal," said Orchi Banerjee, a sophomore majoring in decision science. "American cars emit close to a pound of [carbon dioxide](#) per mile traveled. If your guests collectively drive more than 180 miles round trip, it may help the environment if they stayed home and cooked their own meal."

Flying is a completely different story. Four people who fly 600 miles round trip have a carbon footprint ten times that of an average prepared Thanksgiving meal, before they even sit down at the table.

Fischbeck noted that this does not mean he thinks everyone should stay at home or shouldn't enjoy a home-cooked meal.

"It is important to keep things in perspective. Yes, the carbon footprint of Thanksgiving is larger than an average meal, but compared to all the environmental lifestyle decisions that American family could make, these are very, very small potatoes," advised Fischbeck.

"So, eat in moderation, spend time with your friends and family and travel safely, but whatever you do, don't replace your turkey with roast beef. That could easily double the footprint of your feast," Fischbeck said.

See below for a detailed breakdown for the [carbon footprint](#) for each state's Thanksgiving dinner or [view the pdf](#).

STATE-BY-STATE COMPARISON OF THANKSGIVING DINNER'S CARBON FOOTPRINT

	Meal Footprint (lbs CO2)	% Electricity from Carbon-free Sources	Smaller Carbon Footprint with Gas Cooking
Alabama	35.9	36%	Yes
Alaska	41.2	28%	Yes
Arizona	37.8	38%	Yes
Arkansas	42.3	34%	Yes
California	22.2	40%	Yes
Colorado	59.0	18%	Yes
Connecticut	18.7	51%	No
Delaware	42.8	2%	Yes
Florida	40.1	15%	Yes
Georgia	38.1	32%	Yes
Hawaii	59.7	17%	Yes
Idaho	9.2	75%	No
Illinois	34.2	56%	Yes
Indiana	71.4	6%	Yes
Iowa	45.9	43%	Yes
Kansas	47.0	43%	Yes
Kentucky	77.1	5%	Yes
Louisiana	40.1	18%	Yes
Maine	12.7	69%	No
Maryland	38.4	49%	Yes
Massachusetts	32.7	25%	Yes
Michigan	47.3	34%	Yes
Minnesota	41.1	44%	Yes
Mississippi	33.8	20%	Yes
Missouri	68.0	16%	Yes
Montana	48.1	42%	Yes
Nebraska	51.4	38%	Yes
Nevada	32.3	19%	Yes
New Hampshire	15.2	64%	No
New Jersey	20.7	47%	No
New Mexico	64.1	9%	Yes
New York	19.1	56%	No
North Carolina	36.8	40%	Yes
North Dakota	63.7	23%	Yes
Ohio	59.1	16%	Yes
Oklahoma	44.0	22%	Yes
Oregon	13.2	68%	Yes
Pennsylvania	35.7	42%	Yes
Rhode Island	36.8	3%	Yes
South Carolina	26.8	59%	Yes
South Dakota	16.3	76%	No
Tennessee	39.0	47%	Yes
Texas	42.5	19%	Yes
Utah	70.5	5%	Yes
Vermont	0.2	100%	Yes
Virginia	32.4	39%	Yes
Washington	8.1	83%	No
West Virginia	80.1	4%	Yes
Wisconsin	54.7	23%	Yes

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Provided by Carnegie Mellon University

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