

# FOOD & THE ENVIRONMENT

## Diet in a Greenhouse World



John Dolley

The agricultural sector represents 10-29% of global greenhouse gas emissions worldwide.<sup>1,2</sup> There are several reasons for this, but the most substantial cause of food-related emissions is animal food. Energy use and emissions are substantially higher to produce a calorie of animal food than a calorie of vegetables, fruits, and grains.

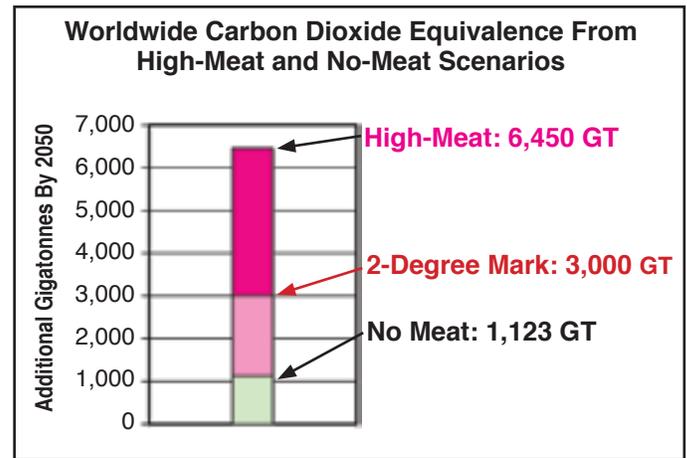
Below is a chart from one study showing this. Beef and lamb in the U.S. emit 47 times more greenhouse emissions per unit of food than fruit, and 280 times more than legumes.<sup>3</sup>

Greenhouse Emissions from Food Production	
Food	Grams CO <sub>2</sub> -Equivalent Per Kilocalorie
Beef/Lamb	5.6
Pork	1.6
Poultry	1.3
Vegetables	0.68
Eggs	0.59
Dairy	0.52
Rice	0.14
Fruits	0.10-0.14
Wheat	0.06
Legumes	0.02

The figures include methane emissions from food digestion in “ruminants” (cows, lambs). They have complex digestive systems to break down their natural diet of grasses. (Pork has much smaller digestive emissions, and poultry has none.)<sup>4</sup> The figures also include: 1) emissions from energy used in farm equipment; 2) emissions from fossil fuels used in fertilizers and pesticides; 3) releases of nitrogen oxide, a greenhouse gas emitted when nitrogen fertilizers degrade; 4) feedgrains, as livestock must eat several times their weight in grain to yield a unit of animal food.

Not included in these figures are land-use changes from clearing forests for grazing and feed grains. The cleared land releases the carbon that has been stored in it, and can no longer absorb carbon at the same rate as before.

Individual diets have a profound effect on the severity



of global warming when practiced on a global scale. The chart above shows the comparative effect between a global diet that increases meat (more per person multiplied by a greater population) and no meat. While a high-meat scenario will create enough greenhouse gases to raise global temperatures much higher than 2° C by 2050 (the maximum that many scientists believe will prevent the worst ravages from climate change), the low-meat scenario will reduce emissions to about 1/3 of this dangerous threshold.<sup>5</sup>

Other strategies, such as more renewable energy and reduced population growth, can also keep temperature change below 2° C. However, the reasons that a low-meat strategy is so effective include: 1) conversion of 22% of the world’s land currently used for animal pasture and feed grains back to forests and grassland (which absorbs more carbon); 2) elimination of fuels and chemical fertilizers needed to grow feed grains; and 3) removing animals that create greenhouse gases as part of their digestive process.

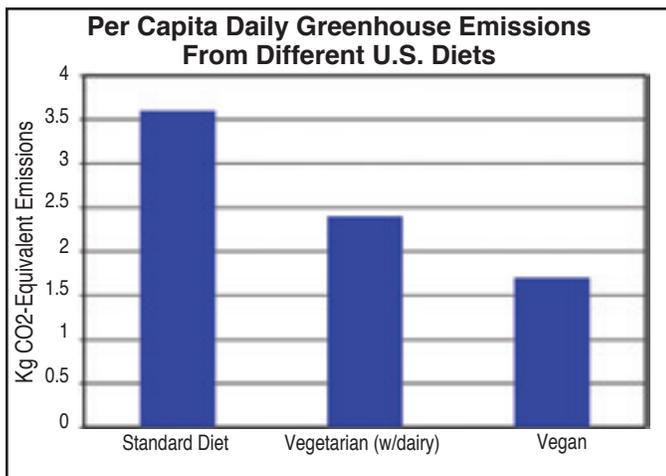
### The High-Carb American “Foodprint”

Few countries in the world have a larger carbon footprint per person than the U.S. One reason is that about 19% of domestic energy goes to produce, transport, package, and prepare food.<sup>6</sup> Several things contribute to this large foodprint.

**Energy and Animal Food** – Most of the world’s wealthier countries get a high percentage of their diet from animal foods. An outlier to this trend is Japan, which consumes about half the animal food per capita as the U.S. More animal protein does not necessarily equate to good health, as studies have shown diets high in animal food lead to greater incidence of non-communicable diseases such as diabetes, heart complications, and certain types of cancer.<sup>7</sup>

Diets high in animal protein consume more energy and emit more greenhouse gases. Following is a chart contrasting the greenhouse emissions in the U.S. from diets with varying degrees of animal food. Meat eaters create more than twice the emissions of a strict vegetarian.<sup>8</sup>

**Energy and Food Waste** – About 28% of all food in the U.S. is lost at the retail and consumer levels.<sup>9</sup> When emis-



sions from production of this wasted food are considered, and greenhouse gases from this waste in landfills is added, it boosts greenhouse emissions from domestic food by 35%.<sup>10</sup>

**Energy and “Food Miles”** – Food can be imported from thousands of miles away. In the U.S., it has been estimated that food travels 1,250 miles from the farm gate to the grocery store. If supply chains are considered (i.e., farm supplies), food travels 5,120 miles from farm-to-store.<sup>11</sup> Transportation from farm to grocery makes up about 7% of total energy used in the U.S. diet. Another 4% is used to transport from grocery to the final point of preparation.<sup>12</sup>

**Energy and Packaging** – About 7% of the energy used for food in the U.S. is related to packaging.<sup>13</sup> Huge quantities of raw and processed materials related to the manufacture of packaging, as well as the resources dedicated to their recycling or disposal, compound the environmental and monetary problems associated with them.

A prime example of this is an aluminum beverage can of diet soda, which requires 500 kilocalories (kcal) to produce the soda, 1,600 kcal to produce the can, but has a nutritional value of 1 kcal.<sup>14</sup>

## Five Things You Can Do to Reduce Your Food Print

**1. Reduce Animal Food Consumption** – The most energy saving (and greenhouse gas saving) personal action that everyone can take is to reduce consumption of animal food.

**2. Take Friends/Family to Vegetarian Restaurants** – Asking people to buy green power or a more efficient vehicle is a lot easier than asking these same people to change a diet they have practiced their whole life. Diet is also a matter of social and cultural norms, where people can experience pressure and even ridicule for eating (or not eating) certain kinds of food.

One good way to facilitate a switch is to take them to a restaurant that serves good vegetarian food. These people may come to find out that eating less animal food *actually tastes good*, and can be done without sacrifice. Austin vegetarian restaurants are listed later in this article. There are

many more restaurants in Austin not on this list that are “vegetarian friendly.”

**3. Reduce Food Waste** – It is tragic irony that while about 14% of U.S. citizens experienced some level of hunger or food insecurity in 2015, 28% of the country’s food is discarded as waste.

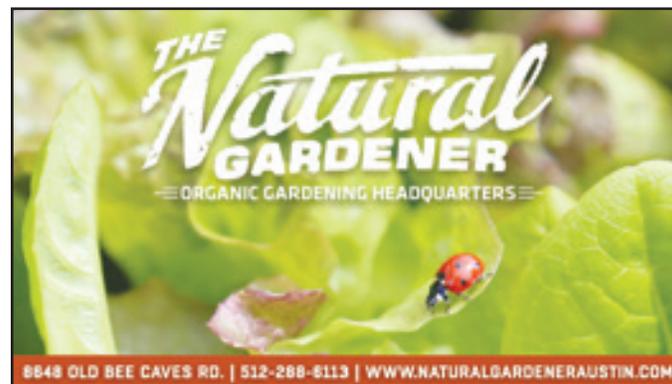
Careful meal planning and preparation could reduce a fair amount of this waste. On a larger scale, unused food from restaurants, grocery stores, and large parties can be donated to food banks and pantries for the poor.

**4. Eat Local** – Many farmers in the Austin area offer produce and food products at farmers’ markets, farm stands, and even delivered to your door. This reduces the energy food needs to travel, reduces chemical processing and storage, and often tastes better since it is literally fresh off the farm. A list of local food providers and farmers’ markets is also provided here.

**5. Reduce Packaging** – Austin has numerous grocery stores that sell in bulk without packaging. This allows repeated recycling of packaging for these items.

## Documentation

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- 3 Tilman, David & Michael Clark, “Global diets link environmental sustainability and human health,” *Nature*, Vol. 515, Nov. 27, 2014, Extended Data Table 3.
- 4 Gerber, P.J., et. al., *Tackling climate change through livestock*, Rome: U.N. Food and Agricultural Organization, 2013.
- 5 International Climate Fund, United Kingdom, [tool.globalcalculator.org](http://tool.globalcalculator.org)
- 6 Pimentel, David, “Reducing Energy Inputs in the US Food System,” *Human Ecology*, Volume 36, Number 4, August 2008, pp. 459-471.
- 7 Op. cit., Tilman, David & Michael Clark, p. 520.
- 8 Heller, Martin C. and Gregory A. Keoleian, “Greenhouse Gas Emission Estimates of U.S. Dietary Choices and Food Loss,” *Journal of Industrial Ecology*, Volume 19, Number 3, p. 395.
- 9 *Ibid.*, p. 394.
- 10 *Ibid.*, p. 396.
- 11 Weber, Christopher, and H. Scott Matthews, “Food-Miles and the Relative Climate Impacts of Food Choices in the United States,” *Environmental Science and Technology*, Vol. 42, No. 10, Web published on April 16, 2008. p. 3512.
- 12 *Ibid.*, p. 3508.
- 13 Op. cit., Pimentel, David, p. 8.
- 14 *Ibid.*, p. 9.

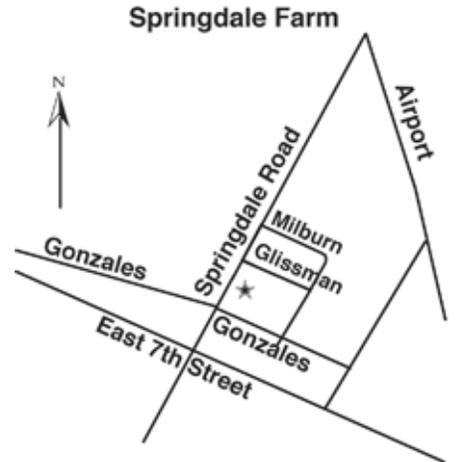
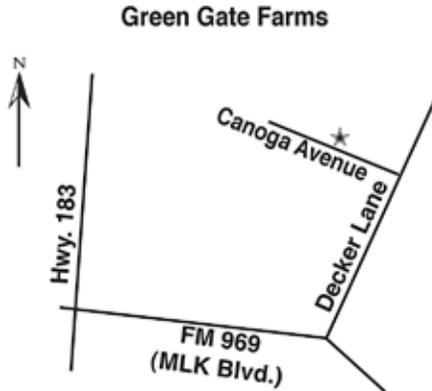


**FARM STANDS**

**Boggy Creek Farm.....** (512) 926-4650  
[www.boggycreekfarm.com](http://www.boggycreekfarm.com)  
 3414 Lyons Road, Austin  
 Time: 8 AM – 1 PM, Wed. thru Sat.  
 (August – Wed and Sat.)  
 Season: Year round  
 Products: vegetables, fruit, goat cheese, grass-fed meat, pickled & fermented food

**Green Gate Farms .....** (512) 949-9831  
[www.greengatefarms.net](http://www.greengatefarms.net)  
 8310 Canoga Ave., Austin  
 Time: 3 PM – 6 PM, Tuesday  
 10 AM – 2 PM, Friday  
 10 AM – 2 PM, Saturday  
 Season: Year round (call in winter to see what is in season)

**Springdale Farm.....** (512) 386-8899  
[www.springdalefarmaustin.com](http://www.springdalefarmaustin.com)  
 755 Springdale Rd., Austin  
 Time: 9 AM – 1 PM, Wed. and Sat.  
 Season: Year round  
 Products: vegetables, jams & jellies, eggs, citrus, herbs, soaps, candles, body butters



Vegetarian Restaurants	Address	Phone	Web Site
Blue Cat Café	95 Navasota St.	(512) 368-3406	bluecatcafe.com
Bombay Express	13000 N. IH35 Bldg.12, Unit 216	(512) 491-5055	bombayexpressaustin.com
Bouldin Creek Café	1900 S. 1st St.	(512) 416-1601	bouldincreekcafe.com
Casa de Luz	1701 Toomey Rd.	(512) 476-2535	casadeluz.org
Citizen Eatery	5011 Burnet Rd.	(512) 792-9546	citizeneatery.com
Counter Culture	2337 E. Cesar Chavez	(512) 524-1540	countercultureaustin.com
Curry in Hurry	2121 W. Parmer Ln., Ste 114A	(512) 821-0000	curryinhurraustin.com
Madras Pavilion	9025 Research Blvd., Ste 100	(512) 719-5575	madraspavilionaustin.com
Maoz Vegetarian	4601 N. Lamar Blvd.	(512) 323-2259	maozusa.com
Mother's Cafe and Garden	4215 Duval St.	(512) 451-3994	motherscafeaustin.com
Mr. Natural - East Cesar	1901 E. Cesar Chavez	(512) 477-5228	mrnatural-austin.com
Mr. Natural - South Lamar	2414-A S. Lamar Blvd.	(512) 916-9223	mrnatural-austin.com
Suprabhat	9225 W. Parmer Ln., Unit 108	(512) 996-9499	suprabhataustin.com
Swad	9515 N. Lamar Blvd., Ste 156	(512) 997-7923	NA
The Beer Plant	3110 Windsor Rd.	(512) 524-1800	thebeerplant.com
Veggie Heaven	1611 W. 5th St.	(512) 457-1013	veggieheavenaustin.com

## COMMUNITY SUPPORTED AGRICULTURE (CSAs)

CSAs allow consumers to buy "shares" of a local farmers' produce. The farmers often deliver the food to the city, either directly to homes or drop-off points. Farms are guaranteed an income by these subscriptions, better ensuring the financial stability of local food suppliers. Some food delivery services also buy local and become virtual CSAs.

Name	Contact	Season	Products	Terms
Blessing Falls Family Farm (2) blessingfalls.com	Mark Einkauf (512) 705-9467 farm@blessingfalls.com	Spring, Summer, & Fall	vegetables, blackberries, melons, grass-fed beef, pasture-raised pork, eggs, bread	\$36/ wk/share; delivery extra \$4/ wk in N. Austin, SW Austin, parts of N. Travis and S. Williamson Cos.
City Farm Austin (2) cityfarmaustin.com	Paula Tarver (512) 655-9039 cityfarmaustin@gmail.com	Year round	Goat milk and egg shares	\$19/ mo. for 1 quart/wk. for DIY milking; \$65 for 1 quart/wk for farm milking
EIEIO's Organic Farm (2) eieiotx.com	Kathleen Mooney (512) 557-4789 eieiofarm1000@yahoo.com	Year round	Vegetables, herbs, pecans, apples, blackberries, melons, flowers, eggs, vegan pesto, mayonaise	\$30/ wk. for 10 week minimum. Pick up at farm in Wimberley.
Farm House Delivery (1,2) farmhousedelivery.com	(512) 529-8569 info@farmhousedelivery.com	Year round	vegetables, fruits, pecans, grass- fed beef, poultry, pork, bison, cheese, dairy, eggs, coffee	\$40/ wk for large order w/ free delivery (generally 1 bushel); \$28/ wk for smaller quantity
Gray Gardens (2) graygardensbuda.com	Jonas Jones (512) 395-5775 gardensgray@gmail.com	April thru August Oct. thru mid Dec.	vegetables	\$20/ wk; pick-up at Buda farm Thursday; pick-up at Barton Creek, Lakeline, and Mueller Farmers' Markets
Green Gate Farms (1) greengatefarms.net	Erin Flynn (512) 484-2746 info@greengatefarms.net	Year round	vegetables, herbs, flowers, eggs, pastured meats, honey, milk	Pickup at 8310 Canoga Ave; see Web site for terms and other pickup sites; work-for-food options
Johnson's Backyard Garden (1) johnsonsbaycardgarden.com	Ada Broussard (512) 386-5273 farm@jbgorganic.com	Year round	vegetables, fruit, herbs, flowers, melons, pecans, eggs, coffee	Deliveries Tues.-Sun.; \$22-41/ wk for minimum of 4 wks, depending on size; Neighborhood drop points, or \$3/ box for home delivery
Hairston Creek Farms (1) hairstoncreekfarm.com	Gary Rowland (512) 567-0893 info@hairstoncreekfarm.com	Year round	vegetables, herbs, berries, melons, eggs	Several payment options. Weekly/ biweekly delivery to drop-off points in Austin.
Munkebo Farm (2) munkebofarm.com	Germaine Swenson (512) 940-5228 germaine10@hotmail.com	Year round	vegetables, fruit, beef, pork, duck, duck eggs	\$30/ wk with 20-week minimum; drop-offs at Republic Square Farmers' Market Saturday
Millberg Farm (1)	Tim Miller (512) 667-0776 millbergfarm@austin.rr.com	Year round	peaches, pecans, vegetables	\$10/ week per bag; Kyle.residents only.
Skinny Lane Farm (2) skinnylanefarm.com	Becky Calloway (512) 626-0826 skinnylanefarm@gmail.com	Year round	vegetables, melons, pastured eggs, pastured pork, herbs, flowers, jams & jellies	18-week seasons for spring & summer; Drop-off points in Elgin, Manor, and Central Austin
Tecolote Farm (1) tecolotefarm.net	Katie Kraemer (512) 276-7008 tecolotefarm@gmail.com	March thru August	vegetables, melons, blackberries, strawberries, pastured pork	\$33/ wk. for 18-20 weeks. Apply on Web site.
(1) Certified Organic (2) Not Certified Organic				

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Resolution Gardens is a full-service landscaping company with a special focus on food. Our motto is "Grow Food -- We'll Help." We are passionate believers in the *health* benefits of home-based food growing for our bodies, the environment and our local economy. We offer raised-bed garden kits, design and construction of edible landscapes and traditional victory gardens. We also will refurbish existing gardens. We'll do *anything* to help you achieve your gardening goals. Since 2009 we've built over 800 garden projects in Greater Austin and Pittsburgh, Pennsylvania.

The city of Austin is 800,000 acres -- we see enormous potential to grow food for our community right here!

Austin Area Farmers' Markets	Contact	Location	Time & Day
<b>AUSTIN</b>			
Barton Creek Farmers' Market bartoncreekfarmersmarket.org	Salila Travers (512) 280-1976	2901 S. Capital of Texas Hwy. (In the parking lot of Barton Creek Mall next to Dillard's)	9 AM – 1 PM, Saturday
Hope Farmers' Market hopefarmersmarket.org	Greg Esparza (512) 553-1832	412 E. Comal	11 AM – 3 PM, Sunday
Texas Farmers' Market at Mueller texasfarmersmarket.org	Carla Jenkins (512) 363-5700	4209 Airport Blvd. (Browning Hangar)	10 AM – 2 PM, Sunday
Sustainable Food Center austinfarmersmarket.org	Joy Casnovsky (512) 220-1082	Republic Square (4th & Guadalupe)	9 AM – 1 PM, Saturday
Sustainable Food Center – 2nd Market		The Triangle (46th at Triangle Avenue off N. Lamar)	3 PM – 7 PM, Wednesday
Sustainable Food Center – 3rd Market		3200 Jones Rd. (Hwy. 290 West between West Gate and Brodie Lane)	9 AM – 1 PM, Saturday
Texas Farmers' Market at Lakeline texasfarmersmarket.org	Carla Jenkins (512) 363-5700	Lakeline Mall (behind Sears & Dillards)	9 AM – 1 PM, Saturday
<b>OTHER CITIES</b>			
Bastrop 1832 Farmers' Market bastrop1832farmersmarket.org	Erika Bradshaw (512) 360-4799	1302 Chestnut St.	10 AM – 2 PM, Saturday
Bee Cave – Lone Star Farmers' Market lonestarfarmersmarket.com	Richie Romero (512) 924-7503	12611 Shops Pkwy.	10 AM – 2 PM, Sunday
Buda – Downtown Buda Farmers' Market budafarmersmarket.com	Jonas Jones (512) 395-5775	Across from Garcia's Restaurant	9 AM – 1 PM, Saturday
Buda – 2nd Market		Sequoyah and Main St.	Nov. – Feb.: 3 PM – 6 PM, Tuesday Mar. – Oct.: 3 PM – 7 PM, Tuesday
Dripping Springs Farmer's Market cityofdrippingsprings.com	Laurel Robertson (512) 858-4725	The Triangle – Hwy. 290 & RR 12	3 PM – 7 PM, Wednesday
Elgin Farmers' Market Elginfarmersmarket.com	Eileen Niswander (817) 929-2789	109 Depot St.	9 AM – 1 PM, Saturday
Georgetown Market farmergeorge.market	Stephanie Nakano (956) 286-7775	Republic Square Center, 900 N. Austin	2:30 PM - 5:30 PM, Thursday
Georgetown – YourFarmer2U Farmers Market yourfarmer2u.com	Candace Coley (512) 215-4193	5th and Austin Ave. next to Monument Cafe	3 PM – 6 PM, Thursday
Manor Community Farmers' Market facebook.com/manorcommunityfarmersmarket	Rebecca Castillo (512) 563-2666	Jenny Lane SmartPark, 104 E. Rector	Normal: 4 PM – 7 PM, Wed. Dec. – March: 4 PM – 6 PM, Wed.
Pflugerville Pfarmers Market pflugervilletx.gov	Eddie Garcia (512) 990-6360	901 Old Austin-Hutto Rd.	May-October: 3 PM – 7 PM, Tuesday First 3 wks of Nov. & Dec.: 3 PM – 7 PM, Tuesday
Round Rock Farmers' Market farmergeorge.market	Stephanie Nakano (956) 286-7775	University Oaks Center 201 University Oaks	9 AM – 1 PM, Saturday
Sun City Market gtfma.com	Stephanie Nakano (956) 286-7775	2 Texas Dr., Sun City Event Center	9 AM – 12 PM, Tuesday
San Marcos Farmers' Market sanmarcosfarmersmarket.com	Susan Warren (512) 757-2000	312 E. Hopkins Street	3 PM – 6 PM, Tuesday
San Marcos 2nd Market		San Antonio St. between LBJ and Guadalupe Streets	9 AM – 1 PM, Saturday
Taylor Area Farmers' Market www.ci.taylor.tx.us/621/Farmers-Market	Larry Beran (512) 694-2220	Corner of 5th St. and Main	May-September: 3 PM – 6 PM, Monday & Friday
Taylor 2nd Market		H-E-B at N. Main & Carlos Parker Blvd.	3 PM – 6 PM, Wednesday
Wimberley Farmers' Market visitwimberley.com/marketdays/wimFM.shtml	Diana Bell (512) 264-1637	RR 12 and River Rd.	3 PM – 6 PM, Wednesday



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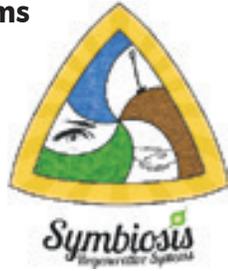
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## YardFarm

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## PREVENTING FOOD WASTE

Unspoiled food that would otherwise go to waste can be reduced by donating it to the established network of food redistributors in Central Texas. One of the premier organizations and clearinghouses for donated food in our region is the Central Texas Food Bank. This umbrella group works with about 250 church, government, and

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Central Texas Food Bank

non-profit organizations to redistribute food in the greater Central Texas area. This food bank will pick up larger quantities of food often available at restaurants, grocery stores, and leftovers from large parties and banquets.

Food can be accepted if the donations follow certain guidelines.

- The Food Bank's mobile collection system generally requires quantities of 200 pounds.
- Pick-ups are during weekdays.
- Food must be properly packaged. Perishable food means that in many cases, it must be refrigerated or frozen.
- Food already offered to the public is not accepted.
- If food is prepared, ingredient labels are preferred, but allergen labels are required.

Perishable food can also be donated at the Food Bank building, located at 6500 Metropolis (at the cross streets of Metropolis and Burleson), Austin, TX 78744, on weekdays between 8 AM to 5 PM. (Use Metropolis entrance.) For more information, the donation coordinators can be reached at (512) 684-2523, and (512) 684-2546.

While the Food Bank is one place to donate, many other food redistributors and emergency food providers are listed on the organization's Web site under the "Get Help" section ([centraltexasfoodbank.org/get-help](http://centraltexasfoodbank.org/get-help)). Many of these other organizations also pick up food donations, some of them on weekends.

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