



Ann Arbor Energy Challenge



Save Energy & Reduce your Carbon Footprint



Thank you for taking the Ann Arbor Energy Challenge!

Whether it's flipping a light switch, doing a load of laundry, or driving to the grocery store, our actions have consequences in terms of the energy they use. In many small ways, we all contribute to the problem of global warming — just as we all have the potential to help reduce it. The Energy Challenge asks you to do your part by reducing your monthly carbon footprint by 5% for one month.

For the average two-person Ann Arbor household, 5% is about 170 lbs. of carbon dioxide (CO₂) each month. Although cutting your household's greenhouse gas emissions by this amount alone won't solve global warming, your efforts *are* part of the solution. We hope you'll use the Energy Challenge as an opportunity to identify a few energy-conserving behaviors that you could maintain for the long term.

If every household in Ann Arbor reduced its annual greenhouse gas emissions by 5%, we'd avoid 95.8 million pounds of CO₂, equivalent to taking 8,311 cars off the road for a year. By continuing to reduce emissions an additional 5% each year, we could offset the annual emissions of 37,600 cars in five year's time.

Positive Change for the Planet — And You!

Reducing greenhouse gas emissions isn't the only reason to use less energy. Whether you're concerned about improving your health, providing a better environment for your family, or increasing your financial security, the strategies in this booklet can help. **We encourage you to consider the Energy Challenge an opportunity not only to reduce your household's global warming impact, but also to satisfy other goals you may have.**

In the end, the path to low-carbon living is about finding what works for you. We hope the Energy Challenge proves to be a rewarding experience and thank you again for taking part in this community effort.

A refresher on global warming...

The coal that produces our electricity, the natural gas that heats our homes, and the gasoline that fuels our cars all release greenhouse gases like carbon dioxide when burned. These gases act as a blanket, trapping heat in the earth's atmosphere. While this warming effect is necessary to keep our planet livable, our global greenhouse gas emissions have far exceeded acceptable levels.

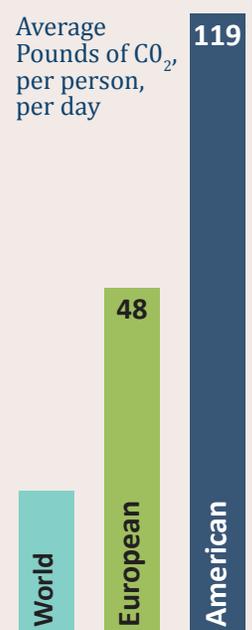
In Michigan, we've already seen signs of global warming: higher average annual temperatures, more frequent, severe rainstorms, and decreased ice cover on the Great Lakes. Over time, these changes are expected to alter the growing seasons of crops, encourage the spread of disease-carrying insects, change wildlife habitat and migration patterns, and even decrease our winter tourism.

We can help reduce these potential impacts by increasing the energy efficiency of our homes and vehicles, switching to renewable energy sources, and conserving energy where possible.

What is a carbon footprint?

Your carbon footprint is a measure of the amount of greenhouse gases your daily activities produce in a year. It's typically measured in pounds or tons of carbon dioxide (CO₂), the most prevalent greenhouse gas. The chart shows how the typical American's footprint compares to a European's and to the world average.

To help stabilize the climate and avoid dangerous global warming, we each need to reduce our carbon footprint by 2% per year.



How To Get Started

Set Your Goal

The goal of the Energy Challenge is to reduce your household's greenhouse gas emissions by at least 5%. What does 5% amount to? For the average Ann Arbor household – with an annual carbon footprint of 40,700 lbs. of CO₂ per year – 5% is about **170 lbs. of CO₂ per month**. This is a conservative estimate and is based on household energy use, car travel, and trash. If you're up for a greater challenge, **you're welcome to set a more ambitious goal**.

Review this Booklet & Make a Plan

To help you meet your goal, this booklet suggests a variety of low-cost, energy-saving actions related to transportation, household energy use, and food consumption. The last section presents “next steps” – actions that may require a greater investment of time or money, but that payoff in the long-term by increasing the efficiency of your home.

At the end of each section, you'll find a chart that summarizes the potential impact of each activity in pounds of carbon dioxide. You can pick a few behaviors and stick with them, or you can try new activities each week. Either way, try to make a few changes that you think you can maintain.

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You may find you're already doing some of the activities in this booklet – if so, great! The Energy Challenge asks you to further reduce your footprint by 5%. This means increasing your current efforts or looking for a few new ways to conserve energy.

Are you a carbon bigfoot?

If you're curious to see a more accurate estimate of your household's footprint, visit the Berkeley CoolClimate Calculator, <http://coolclimate.berkeley.edu/>

This calculator takes into account additional factors like air travel and your consumption of goods and services, so expect to have a larger footprint. (Multiply your result by 2205 to convert from metric tons to pounds.)

To use these results for the Energy Challenge, multiply your footprint in metric tons by 9 to determine your 5% goal in pounds.



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Questions?

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Transportation

One third of the average American's carbon footprint comes from travel. *Every mile of driving adds almost 1lb. of CO₂ to the atmosphere.* Fortunately, there are many options for reducing the impact of your travels. Nearly half of the trips we make in our cars are less than 3 miles long – a distance that can easily be accomplished with more climate-friendly options such as carpooling, walking, biking, or taking a bus. Even when those options may not be feasible, we can reduce our impact by changing the way we drive and maximizing our cars' potential gas mileage. The less gasoline we burn, the less global warming pollution we produce.

Curb Your Car

Try leaving your car at home at least one day each week. Eliminating 10 miles of driving each week can save you \$75 in gas over the year and reduce global warming pollution by 485 lbs.

Here's How:

- **Take the AATA Bus.** Over 90% of Ann Arbor households live within a quarter mile of an AATA bus stop. Taking the bus can save you money and produces one-third less CO₂ than driving your own car.

WEB: You can find routes and schedules at www.theride.org and track the current location of your bus at <http://mobile.theride.org>. If your employer participates in the AATA's go!pass program or if you have a current University of Michigan ID, you can ride the bus for free!

- **Carpool.** Over 37,000 Ann Arbor residents drive alone to work. Sharing a ride with another person cuts your fuel costs and greenhouse gas emissions by at least half. Fewer cars on the road also means less smog and fewer air pollutants.

WEB: Michigan RideShare, www.mirideshare.org, provides free car-pool and vanpool matching services for commuters within Livingston, Macomb, Monroe, Oakland, St. Clair, Washtenaw, and Wayne Counties. Applicants are matched with others who share common neighborhoods, destinations and hours. MI Rideshare also offers a guaranteed ride home in the event of an emergency, up to six times per year.

- **Walk or bike.** Consider walking or biking for short-distance trips. In congested areas, riding a bike can actually be faster than taking a car. Even at a casual pace, a one mile trip can take only 5 minutes on a bike or 20 minutes on foot. Each mile you power by foot – instead of your car – prevents nearly 1lb. of CO₂ from being released into the atmosphere.

TIP: Make it a family affair. Walking or biking to nearby destinations can be a great way to fit in extra time with a spouse or child. Studies show that walking in nearby nature can help reduce stress and improve focus. In addition, regular physical activity helps kids control weight, build self-esteem, and even perform better in school.

WEB: When you're used to driving, places can seem farther away than they are. Enter your address at www.walkscore.com to see which stores, restaurants, and other amenities are within a mile of your home. Click the "Expand all" link (just below your walk score) to see a complete listing.

- **Telecommute.** Avoid the commute altogether! If you have the type of work that can be done from home, talk to your employer about working from home one day a week.

WEB: See <http://getdowntown.org/telecommute> for resources to help you set up this type of work arrangement.

Get More Out of Your Commute!

Cold weather and the holidays can mean putting on a few extra pounds. Fight winter weight gain by replacing some of your car trips with **walking or biking**. Besides burning calories, both types of exercise improve your cardiovascular health and help reduce your risk for health problems such as diabetes, high blood pressure, osteoporosis, and stroke.

The Centers for Disease Control and Prevention (CDC) recommend getting 150 minutes of modest physical activity each week, in as little as 10 minute increments. A one mile walk takes about 20 minutes and burns 100 calories. One mile on a bike takes about 5-7 minutes and burns 25 calories.

If your daily commute is 2 miles one way, you can burn 2000 calories per week by walking — enough to lose 2.5 pounds in one month.



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When You Do Drive – Drive Smart!

Simple changes in the way you drive can improve your gas mileage and reduce your greenhouse gas emissions.

Here's How:

- **Plan and combine errands.** Think ahead about the errands you need to run and combine trips when possible. Doing so can reduce the total number of miles you drive as well as make your car more fuel efficient. Running separate errands from a cold engine uses up to twice as much gasoline as one multi-purpose trip of the same distance.
- **Don't idle.** If you'll be parked for more than 10 seconds, turn off the car. Restarting uses less fuel than letting the car idle – and contrary to popular belief – will not damage modern engines. Even in cold weather, modern cars need no more than 30 seconds to warm up. You'll actually heat the engine twice as fast by driving rather than idling in place. For every 5 minutes your car idles, nearly 1 lb. of CO₂ is released.

TIP: It may not always be practical to turn the car off, but try to avoid idling when:

- You first get in. Don't start the engine until everyone is buckled up and ready to go.
 - You're dropping off or picking someone up.
 - You're talking on the phone while parked.
 - You're going to a bank or fast food restaurant. Park the car instead of using the drive-thru.
- **Reduce your highway driving by 5 mph.** Most cars get their best gas mileage at or near 60 mph. For every 5 mph you drive faster, your fuel efficiency declines by about 7% – equivalent to paying approximately \$0.21 more per gallon of gas. For the average American, driving over the speed limit releases an extra 348 lbs. of CO₂ into the atmosphere each year.
 - **Inflate your tires once a month.** Looks can be deceiving – half of the vehicles in the U.S. have at least one tire that is underinflated. Under normal driving conditions, your tires naturally lose 1-2 psi per month. Since underinflated tires have more contact with the road, they require more energy – and gasoline – to move and maintain speed. By inflating your tires to the recommended level each month, you can save up to 18 gallons of gas each year. The proper tire pressure for your vehicle can be found on a sticker in the driver's side door jamb or in your owner's manual. You should not use the numbers embossed on the tire.

Take back your time

Time spent behind the wheel can make the day seem longer, especially if you have to contend with traffic or find parking. Many of the alternatives suggested here allow you to avoid this hassle – and gain a little time to yourself. **Carpooling** can give you an opportunity to rest and socialize with others. Likewise, time spent waiting for and **riding the bus** can easily be used to make an important phone call, catch up on a few pages of reading, or simply relax. **Telecommuting** has an obvious advantage: you can use your normal commuting time to sleep in, spend time with your family, or get more done.

Efficient driving is safer

It probably comes as no surprise that speeding triples your risk of being in a crash. Besides **driving the speed limit**, you can make your drive safer by keeping your **tires properly inflated**. Underinflated tires wear out faster, reduce car handling, and increase the chance of a blowout.



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Potential CO₂ Savings (lbs.)

Curb Your Car 5 miles each week	Pounds CO ₂ Saved	Per month
Take the bus	1.25	5
Carpool		
with 1 other	2.5	10
with 2 others	3.3	13
with 3 others	3.75	15
Walk/Bike	5	20
Telecommute	5	20

Drive Efficiently	Pounds CO ₂ Saved Per week	Per month
Combine errands to eliminate 5 miles of driving	5	20
Turn off car instead of idling 5 min./day	6	24
Reduce highway speed by 5 mph	7	28
Inflate tires once per month	—	29

Household Energy

Household energy use accounts for 20% of the average American's carbon footprint. From the furnace burning natural gas to the computer that draws coal-fired electricity, numerous household actions result in the release of carbon dioxide. At the same time, every switch, dial, and power cord presents an opportunity to conserve. By using what you need and eliminating waste, it's easy to save dozens, even hundreds of pounds of CO₂ every month without sacrificing comfort or convenience.

Keep the Thermostat in Check

About two-thirds of a household's energy bill goes toward heating and cooling. The following actions can cut a significant portion of your carbon footprint and your DTE bill.

Here's How:

- **Turn the heat down a few degrees & resist the urge to adjust it.**

When you're at home, try keeping the thermostat a degree or two cooler than you did last year. For every degree you lower your heat, you can save up to 3% on your heating bill and prevent over 300 lbs. of CO₂ from entering the atmosphere each winter. On particularly chilly days, look for other ways to stay comfortable before adjusting the thermostat. Consider putting on another layer of clothing or wrapping up in a blanket, and be sure to close blinds and drapes at night to help keep heat in.

- **Lower your heat 8°F or more when sleeping or away from home.**

The Department of Energy recommends setting your thermostat no higher than 68° F when at home and 60° F or less when you're sleeping or away from the house. For each 8-hour block of time that you regularly set your thermostat back 8° F, you'll avoid emitting 154 lbs. of CO₂ each month and potentially save \$67 over the course of winter. If you don't already have a programmable thermostat, consider installing one to automatically adjust the temperature at different points in the day.

MYTH-BUSTING: It's a common misconception that a furnace will have to work harder after the temperature has been turned down for a long period. In truth, it takes far less energy to reheat your home after a setback period than it does to maintain a constant, high temperature throughout the day. Just try to keep your thermostat at a constant temperature for periods of 4 hours or more.

- **Save in the summer, too!** When the weather heats up, consider relying less heavily on air conditioning. You can save 123 lbs. of CO₂ over the summer by setting the thermostat 2° F warmer than you have in the past. If your home is empty during the day, turn the A/C off.

Use Appliances Wisely

Small changes in the way you use your appliances can add up to big savings in household energy use.

Here's How:

- **Use the energy-saver settings on your dishwasher.** Dishwashers use the same amount of energy and water for every load, regardless of load size. Avoid partial loads and opt for the "energy-saver" or "light wash" setting, which uses less water and cuts the rinse cycle short. Also turn off the "heated dry" option to let your dishes dry naturally. By using both of these settings, you can save 1 lb. of CO₂ per load.

- **Choose the best cooking method.** Microwaves, toaster ovens, and crock pots are more efficient for cooking small meals than your electric or gas oven. Each saves between 1–2lbs. of CO₂ per use. If you do use the oven, consider making a double batch of food or baking several items at the same time. You can always freeze leftovers to save for later. For every hour of oven time you avoid, you save 2.5 lbs. of CO₂.

Sleep better...

Not only because of the money you'll save!

While **setting your thermostat back** is one of the most effective ways to trim your carbon footprint and your heating bill, it's also a great way to improve your sleep. Studies have shown that the optimal temperature for sleep is between 60 - 66° F. A cool room helps lower your body's internal thermostat, which in turn leads to sleepiness.



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- **Wash laundry in cold water instead of hot.** Most of the energy used to wash your clothes goes toward heating the water. Opt for cold water washes unless the load is heavily soiled, and always use a cold rinse cycle. If you have a lot of heavily soiled laundry, consider buying a special cold water detergent to get your clothes clean. Washing in cold water instead of hot or warm saves nearly 3 lbs. of CO₂ per load – an annual savings of 900 lbs. and \$78 for the typical family.
- **Dry full loads of laundry – or skip the dryer altogether.** Reduce drying time by running full loads of similar weight items (e.g., avoid mixing towels and sheets) and drying loads consecutively; doing so takes advantage of built up heat. Better yet, air dry your clothes. Each time you skip the dryer, you prevent 5 lbs. of CO₂ emissions.

TIP: To reduce wrinkles when air drying clothes, hang them as soon as the wash cycle ends. Give each item a brisk snap before hanging, then smooth out pockets and cuffs. Hang shirts upside down to avoid misshapen shoulders, or dry them directly on hangers.

TIP: Can't hang a line outside? Try hanging a line in your basement or using a folding drying rack in a well ventilated area. If you're drying indoors, expect items to take a day or two to completely dry.

Use Less Hot Water

You probably don't think about energy when you turn on the faucet or take a shower, but hot water heating accounts for 25% of a household's energy bill. It's possible to conserve water without sacrificing comfort.

Here's How:

- **Turn your water heater down and insulate it.** Most water heaters are preset to 140° F. However, 120° F is plenty hot to produce a warm shower and kill bacteria when cleaning. By turning the temperature down, you'll not only save 6-10% on your water heating costs, but reduce the risk for scalding (water at 125° F can burn children in only 2 to 3 seconds). Lowering the temperature also reduces corrosion and buildup in your water heater and pipes. If your water heater is more than ten years old, consider wrapping it in a water heater blanket. These special blankets sell for about \$15 and help reduce heat loss from the tank, saving an additional 10% in water-heating energy costs. Newer tanks come with insulation built-in.

TIP: If your water heater thermostat doesn't have numbers, turn the dial to warm or medium. To test the temperature, turn on the hot water at your sink, let it run for 3-5 minutes, then measure the temperature with a meat or candy thermometer. If you need to adjust the temperature further, wait a day before re-measuring it.

- **Don't let water run continuously while hand-washing dishes.**

If you have a tendency to let the faucet run while dishwashing, you could use more than 17 gallons of water in 8 minutes – nearly triple the amount used by a modern automatic dishwasher. Cap how much water you use by putting your drain plug to use and avoiding unnecessary rinsing.

TIP: If you have a double sink, fill one basin with warm soapy water, the other with cold rinse water, and avoid turning on the faucet as you wash. If you only have one basin, plug it and start with a minimum amount of warm soapy water. As you rinse dishes, the basin will collect rinse water and help soak other dirty dishes. Challenge yourself to keep the water level as low as possible. With these tricks you can use half the amount of hot water.

Make your clothes last longer

Washing machines and automatic dryers make laundry tasks easier, but the heat and tumbling action can take a toll on fabrics. Just think about dryer lint – all of that fuzz came from your clothing!

Cold-water washes and air drying can help maximize the life of your wardrobe.

By washing in cold water:

- Colors are less likely to fade or bleed
- Elastic retains its shape and stretch
- Fabrics won't shrink

Benefits of air drying:

- If you missed a stain, you can re-treat it; dryer heat sets stains
- Fabrics last longer. Dryer heat makes cotton brittle and susceptible to forming holes. Heat also causes synthetic materials like elastic, microfiber, and lycra to wear out faster
- Clothes are less likely to shrink or pill
- No more static cling!

Drying laundry outdoors in the sun also helps break down stains, makes whites brighter, and leaves your clothes smelling fresh.



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- **Take shorter showers.** Showers account for about a third of a household’s hot water usage. For every 2 minutes you shorten your daily shower, you save, on average, 120 gallons of water and 22.5 lbs. of CO₂ per month. Keep an old digital watch or kitchen timer in the bathroom to help you keep track of time. You can also reduce hot water usage by shutting off the shower while you soap up or shave.
- **Install a low-flow showerhead.** Showerheads made prior to 1992 can use 4 to 6 gallons of water per minute. By law all new showerheads have a maximum flow of 2.5 gallons per minute, and many models can be found that use only 1 to 1.5 gallons per minute – without a drop in water pressure. Make the switch and you’ll save about 8,000 gallons of water per person each year.

TIP: Don’t know your shower’s flow rate? Cut the top off of an old gallon jug and time how long it takes the showerhead to fill it. If it fills in less than 20 seconds, you have a model worthy of upgrading.

Look for Hidden Energy Wasters

There are many ways that small amounts of energy get wasted every day. Finding energy wasters can add up to significant energy savings over time.

Here’s How:

- **Replace your incandescent light bulbs with compact fluorescent light bulbs (CFLs).** CFLs use about one-fourth the amount of energy as regular light bulbs and last 10 times as long. If you’ve been avoiding CFLs because of the cost or quality of light, the technology and price of these bulbs have improved dramatically. With the exception of some specialty bulbs, most CFLs pay for themselves within a year. Each bulb lowers your annual energy bill by \$5-10 and reduces your global warming emissions by 115 - 140 lbs. of CO₂ each year.

WEB: Need help finding the right CFL? Visit www.energystar.gov/lighting and click “Light bulbs (CFLs)” to access the Energy Star Buyer’s Guide.

- **Turn off your computer at night and use standby/sleep settings.** Most American homes have one or more computers, and many are left on all the time. Turning off your computer (and monitor) is the best way to save energy, but if you don’t want to wait for the system to reboot, set your computer to go to sleep or standby after 15 minutes of inactivity (Note: Screensavers are not the same thing as standby and do not save any energy). In standby/sleep mode, your computer uses 95% less energy than leaving it on and idle! By turning off your computer or setting it to sleep at night, you’ll save 35 lbs. of CO₂ each month on a desktop or 10 lbs. on a laptop.

TIP: Not sure how to change your computer’s power settings?

Windows: Go to Start > Control Panel > Power Options

Mac: Choose Apple > System Preferences > Energy Saver

Potential CO₂ Savings (lbs.)

	Pounds CO ₂ Saved			Pounds CO ₂ Saved	
Lower Heat	Per day	Per month	Use Appliances Wisely	Per load	Per month
One degree for entire day	2	56	Use energy-saving & air-dry settings on dishwasher	1	18
8 degrees for 8 hours	5.5	154	Wash laundry in cold water	3	18 - 96
			Air dry laundry	5	30-160
Use less A/C	Per week	Per month*		Per use	Per month*
Set A/C 2° F higher	10	41	Eliminate an hour of baking in the oven by using a:		
Keep windows shut when:			Toaster oven	1	varies by use
window A/C is on	2	9	Crockpot	1.5	varies by use
central A/C is on	6	22	Microwave	2	varies by use
Use fans instead of:			Or cooking multiple items in the oven at the same time	2.5	varies by use
window A/C	4	16			
central A/C	11	44			

* Varies depending on household use.

MYTH BUSTING: Computer technology has advanced considerably in the last two decades. Contrary to popular belief, turning your computer on and off several times a day will not make it wear out faster. Restarting the computer also takes less energy than keeping it running.

- **Keep your fireplace damper closed.** Fireplaces are charming features in many homes, but they can also be a major culprit for cold air leaks. Be sure to fully close the damper after a fire has burned out.
- **Pull the plug or use a power strip.** Many electronic devices are energy vampires, sucking a small amount of power even when they're "off." The typical home has around 40 of these devices. Common culprits include computers, microwaves, programmable coffee makers, televisions, VCRs, DVD players, stereos, video game systems, printers, and cell phone chargers. Unplug the electronics you don't use regularly, and plug the rest into an easily accessible power strip that can be turned off. By making a concerted effort to reduce vampire power (also called standby or phantom power), you can trim up to 32 lbs. of CO₂ per month and a couple of dollars off your electric bill.

TIP: To determine whether something is an energy vampire, look to see if it has a charger, remote control, LED lights, digital display, clock, or memory system.

TIP: It may be impractical to unplug electronics that need to be reprogrammed each time you restore power. But consider unplugging equipment that you don't use as frequently – perhaps a VCR that you use once or twice a year or an extra T.V. in a guest bedroom. Likewise, evaluate whether you really use the clock on your microwave or coffee maker. These devices often use more energy to power the clock than they do for their primary purpose.

WEB: To learn more about vampire energy and the types of devices that use it, see <http://standby.lbl.gov/standby.html>.

- **Switch to LED holiday lights.** Once the holidays roll around, consider LED lights. LEDs last much longer and use half the energy or less – plus, you'll avoid losing the entire strand when one of the incandescent bulbs goes dead.

Unplug and Unwind

Remembering to **turn things off and unplug them** can seem inconvenient, especially given the number of gadgets in our lives. But by taking that small action — and making it a little more difficult to turn something back on — we may actually be doing ourselves a favor.

Americans are spending an increasing amount of time watching television, surfing the Internet, and visiting online social networking sites. This trend has been linked to a decline in time spent with family and is particularly concerning for children, who may choose to be "plugged in" over being physically active outdoors.

The small hassle of reconnecting power cords or waiting for the computer to boot up maybe just the nudge we need to encourage some time away from the screen.



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Use Less Hot Water	Pounds CO ₂ Saved	
	Per day	Per month
Lower hot water heater 10° F	—	9.5
Lower hot water heater 20° F	—	19
Insulate water heater	—	32
	Per shower	Per month
Shorten shower by 2 minutes	0.75	21
Install low-flow showerhead	3.75	105
	Per load	Per month*
Hand wash dishes efficiently	1.5	45

Hidden Energy Wasters	Pounds CO ₂ Saved	
	Per week	Per month*
Replace one frequently used incandescent bulb with CFL	2.5	10
Turn off laptop each night (or set to standby)	2.5	10
Turn off desktop computer each night (or set to standby)	9	36
Close fireplace damper	6	23
Unplug electronics or use power strips to reduce vampire energy	8	32
Use LED holiday lights	12	47

Food

Next to personal transportation, your dietary choices are one of the most significant ways to impact your carbon footprint. It's not just the energy that it takes to cook a meal, but also the resources used to grow, harvest, and transport the ingredients. There are a number of ways to reduce your carbon "foodprint," including buying locally grown food, avoiding waste, and reducing consumption of resource-intensive food such as meat.

The delights of the Farmers Market... More than just food

Since the days when street cars circled downtown, the Ann Arbor Farmers Market has been a place where people break from the grind and savor the bounty of local farms. Michigan is the second-leading state in agricultural diversity, which means you can choose from scores of fruit and vegetables, many of which you won't find in grocery stores.

All of the produce is fresh, often picked from the vine or dug from the soil that very morning. Because of this 24-hr turn around, farmers select crop varieties for their flavor, as opposed to their transportability. In contrast, much of what you'll find in the supermarket arrives from California or even another continent and, consequently, may have lost some of its nutritional quality and flavor.

But the farmers market isn't just for produce – you'll find eggs, cheeses, meat, herbs, grains, jams, and breads to satisfy many of your culinary needs. It's never been easier to **incorporate local food into your meals**.

For many people, the freshness and the flavor alone make the farmers market worth the trip, but there's a deeper pleasure to be found in the experience. You're likely to bump into people you know, and you can converse directly with local growers about life on the farm, gardening tips, or mouth-watering ways to serve up what's in season. With every dollar you spend, you're contributing to a vibrant local economy that supports farming families and the land they till and protect. When it comes to food, going local is truly a return to our roots.



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What You Eat Matters

By making different food choices, most people can significantly reduce their impact on global warming.

Here's How:

- **Buy locally grown food.** The average meal travels between 1,200 to 1,500 miles from the producer to your plate. Aside from arriving short on flavor, high mileage foods also take a serious toll on the climate. After harvest or processing, they're loaded into an assortment of energy-guzzling transports – freight trains and ships, semi-trucks, and even airplanes. Buying food from local farmers saves transportation-related emissions and puts money in your local economy. If local offerings are sparse, try to pick in-season food that traveled the shortest distance. Many produce labels will indicate the state or country of origin.

TIP: You can find the greatest selection of local food at the Ann Arbor Farmers Market

Location: 315 Detroit St. in Kerrytown.

Hours: May – Dec., Wednesday & Saturday, 7 AM to 3 PM
Jan. – Apr., Saturday Only, 8 AM to 3 PM

WEB: For recipes to help you make the most out of seasonal foods, visit www.harvesteating.com. Not sure what's in season? See <http://www.fieldtoplate.com/downloads/MichiganProduceAvailability.pdf> for a listing of local foods in Michigan by month.

- **Buy organic.** The chemical fertilizers and pesticides used to produce conventional, non-organic foods are produced with considerable amounts of fossil fuels. Organically produced foods avoid this extra carbon price tag. In addition, organic farming practices increase the biodiversity of the soil, reduce erosion, and even absorb CO₂ from the atmosphere. You can also feel good knowing that your food is free of artificial chemicals and preservatives.

TIP: If you're uncertain whether something is organic, check the label. Product stickers that start with a 9 indicate organic; conventional produce usually starts with a 4. If you're buying boxed or prepared foods, look for the green and white USDA organic label.

- **Have a regular meatless meal.** You don't have to become a vegetarian! Even eliminating one meat-based entree per week can have a significant impact. Raising livestock requires an enormous amount of resources. For example, producing one pound of beef requires seven pounds of grain, which in turn requires 2,500 gallons of water for irrigation plus fertilizers and pesticides. Grazing animals such as cows, sheep, and pigs also release methane. One pound of this greenhouse gas has the same impact as 25 lbs. of carbon dioxide. For each meat-based meal you eliminate, you cut on average, 6 lbs. of CO₂ from your footprint. If you specifically eliminate beef, the savings are even greater. Each pound of beef your forgo saves 22 lbs. of CO₂ from entering the atmosphere.

Avoid Waste Before & After Dinner

Shopping for and disposing of food also impacts global warming. However, carefully planning ahead can further reduce your "foodprint."

Here's How:

- **BYOB – Bring Your Own Bag.** The global warming impact of using a single disposable bag is small. But each year Americans use over 100 billion plastic bags and 10 billion paper bags. The typical shopper uses 9 bags per week, at a cost of 6 lbs. of CO₂ per month. The next time a cashier gives you the choice of paper or plastic, take pride in providing your own reusable bag instead. Reusable bags hold up better and can even earn you some cash. Many grocery stores provide a cash rebate – up to 10 cents per bag, every time you check out.
- **Compost Your Food Scraps.** When you toss banana peels, coffee grounds, and other organic matter into the trash, they end up in landfill where it produces methane, a greenhouse gas 25 times more harmful than CO₂. Instead, consider returning your food scraps to the earth. You'll save up to 7 lbs of CO₂ each week, halve the number of times you have to take out the trash, and generate a nutrient-rich medium for gardening. A number of commercial compost bins are available or you can start a pile in a corner of the backyard.

WEB: For practical advice on starting and managing your own compost pile, visit www.compostguide.com or www.howtocompost.org.

TIP: Leave the dirty work to the City! If you have a rolling compost cart, you can place your uncooked fruit and vegetable scraps with other yard waste. You can even compost uncoated paper plates, cups, and napkins. This curbside compost service is available from April through early December. Please note – food-related materials can only accepted in city-designated compost carts, as paper bags can attract wildlife or create unsafe conditions when wet. For more details or to order a compost cart, contact the city's Customer Service Center at 220 E. Huron, (734) 994-7336 during weekday business hours.

Potential CO₂ Savings (lbs.)

Change what you Eat	Pounds CO ₂ Saved Per meal	One meal Per week Per month
Eat a meal with 50% local ingredients	0.5	2
Eat a meal with 50% organic ingredients	0.5	2
Replace a chicken, fish, or egg-based entree with a vegetarian one	6	24
Replace a beef entree with chicken, fish, or eggs	16	64
Replace a beef entree with a vegetarian one	22	88

Avoid Waste	Pounds CO ₂ Saved Per week	Per month
Bring your own bag	1.5	6
Compost kitchen scraps	7	28

Next Steps

If you enjoy making the carbon-cutting changes discussed in this booklet, consider taking it to the next level. There are a number of one-time actions you can take to vastly reduce the energy consumption of your home, from tuning up your house to installing more efficient appliances. The advantage of these steps is that once you do them, you're done! The energy and carbon savings remain from then onward. Below are a number of measures that require varying upfront investments but that pay-off in the long-run.

Keep Your Home Sealed Tight

In the winter, cold air creeps in through cracks and openings throughout your home, causing your furnace to work harder to keep living spaces warm. The following steps can help reduce wasted energy, save you money, and significantly cut your carbon footprint.

Here's How:

- **Get an energy audit.** A home energy assessment or “energy audit” is the fundamental first step in seeing where and how energy is used or wasted in your home. Don't worry, unlike the IRS, these audits, or energy assessments, are meant to save you money. A professional energy assessor provides insights into how you can tune up your house by making various improvements. In particular, an auditor can help you decide which improvements and efficiency upgrades will be most cost-effective for your home.

TIP: DTE offers rebates that can reduce the cost of the audit. Go to www.yourenergysavings.com to find out more.

WEB: A list of local auditors can be found at the City's Energy Office web site: www.a2gov.org/energy, under “Energy Action You Can Take.”

- **Caulk, weatherize, and weather-strip leaks.** Common leak locations include doors and window frames, mail chutes, electrical and gas line entrances, outdoor water spouts, dryer vents going through walls, air conditioners, vents and fans, cable TV and phone lines and other points along your siding or foundation. Sealing leaks with caulk, insulation, or weather-stripping can reduce your winter energy bill alone by 10 percent. Using an energy audit blower door test to identify leaks will significantly improve your savings.

WEB: Find more energy saving advice as well as estimated cost savings at the Department of Energy's Energy Efficiency & Renewable Energy information depot, www.energysavers.gov.

MYTH-BUSTING: Upgrading old leaky windows to efficient storm windows can certainly improve the energy efficiency of your home and in many cases is warranted. However, some installers may overstate the role of windows in the overall home energy efficiency picture, and the payback on your investment can be a long time. Also, people easily confuse the noticeable cold feeling near windows - a phenomenon called “convective looping” - with an outside draft. Again, expert assessors can help determine if you need replacements.

- **Insulate and seal leaks to the attic.** According to DTE, 25-30% energy savings for your entire home can be attained by properly insulating your attic. There are various types of insulation available, but all forms are given an R-value (resistance to heat flow) rating. A home energy audit professional can guide you to the proper level of insulation for your home. For attic insulation in Michigan, an R38 – R60 should be appropriate, or a minimum of 6 inches of quality new insulation.
- **Properly insulate walls.** Studies confirm that wall insulation is a huge energy saver. Just 20% of homes built before 1980 are considered well insulated. If your home is one of these underachievers, wall insulation may be one of the most cost-effective measures you can take. A home energy assessor can recommend whether it is necessary to blow-in insulation (should be R18 or better).

You can do it!

Not ready to hire a professional? You can take many of these next steps on your own.

DIY Energy Audit

The City of Seattle has a helpful booklet on performing your own energy audit.

Visit: <http://www.seattle.gov/light/printdocs/DoltYourselfHome.pdf>

DIY Insulation & Sealing

A good “How to” is Energy Star's DIY Guide, available at: http://www.energystar.gov/index.cfm?c=diy.diy_index



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Upgrades to the Rescue

Is it time to go out with the old and in with the new? You can only ask so much of that 20-year-old water heater in the basement or the sputtering furnace from the Eisenhower administration. Fortunately, new Energy Star replacements can make a world of difference for your wallet and the planet, too.

Here's How:

- **Upgrade your window or central A/C.** Like refrigerators and many other appliances, Energy Star air conditioners have far surpassed models from yesteryear, consuming at least 10% less energy while offering new helpful gadgets like remote controls; all the while making less noise than an old A/C unit. Air conditioners are given a Seasonal Energy Efficiency Ratio (SEER), and Energy Star models will be 14 SEER or more.
- **Upgrade to an energy efficient furnace or boiler.** Properly maintaining your furnace and regularly changing the filter can do a lot to improve energy efficiency in your home, but there comes a time when your furnace is living on borrowed time. If your gas furnace or boiler is more than 20 years old, improving to a 92% or better efficiency (AFUE) unit will be a great emissions-saver and improve the comfort of your home. If you're not sure whether it's time to upgrade, seek expert help during an energy audit. Product rebates and government tax credits are becoming commonplace – so always inquire.
- **Upgrade your water heater.** Water-heating is the second biggest energy consumer in the home after heating and cooling. Since 13 years is the typical life of a water heating tank, it might be time for an upgrade. New high-efficiency water heaters use up to 50% less energy. Or consider utilizing the free energy of the sun by switching to a solar hot water heating system.

WEB: See your home's "solar potential" online at the City's web site: www.a2gov.org. Just click on "My Property Information" and type in your address. A tool using aerial images will evaluate the shading and direction of your house to tell you whether you have good solar energy or solar heating potential.

- **Upgrade your refrigerator(s).** New refrigerators are now twice as efficient as many old models. By upgrading, you could save \$50-\$150 a year in energy costs. And if you have a really old spare fridge out in the garage, an upgrade could avoid nearly 200 pounds of carbon dioxide – this alone is over 5% of the typical Ann Arborite's monthly carbon footprint.

Recycle those old appliances!

While replacing appliances can be a great move for energy efficiency and reducing carbon emissions from your home, there is an environmental impact from disposing old appliances.

Fortunately, DTE offers free home removal of certain appliances as part of their Appliance Recycling Program. DTE will even pay you \$40 for your old fridge and varying rebate amounts for other appliances.* DTE sees to the removal and safe disposal of 95% of toxics from the recycled appliance.

To schedule a pick-up or learn more about the recycling program you can call: 866-796-0512.

*Rates are as of November, 2010 and may be subject to change in the future.

Potential CO₂ Savings (lbs.)

Keep your Home Sealed Tight	Pounds CO ₂ Saved	
	Per week	Per month
Seal bypasses to attic	11	45
Seal air leaks	19	75
Improve attic insulation	21	84
Insulate walls	99	395

Upgrade your:	Pounds CO ₂ Saved	
	Per week	Per month
Window A/C	12	47
Central A/C	54	214
Old furnace/boiler (70% AFUE to 92% AFUE)	34	134
VERY old furnace/boiler (56% AFUE to 92% AFUE)	63	250
Water heater	8	31
Upgrade to solar hot water heater	30	120
Main refrigerator	22	88
Old spare refrigerator	39	154

Savings Summary Table

The table below summarizes all of the actions in this booklet by their potential monthly impact. All savings shown here and in previous tables are best estimates. Many factors can influence the actual amount of energy your household will save, such as the size of your home, the number of people who live there, as well the combinations of actions you take. For example, if you install an efficient water heater, you may not save as much energy by turning down the temperature.

Carbon-saving action	Pounds CO ₂ Per month
Insulate walls	395
Upgrade VERY old furnace/boiler (56% AFUE to 92% AFUE)	250
Upgrade Central A/C	214
Upgrade old spare refrigerator	154
Lower heat 8 degrees for 8 hours	154
Upgrade old furnace/boiler (70% AFUE to 92% AFUE)	134
Upgrade to solar hot water heater	120
Install low-flow showerhead	105
Air dry laundry	95
Upgrade main refrigerator	88
Replace a beef entree with a vegetarian one (1 meal/wk.)	88
Improve attic insulation	84
Seal air leaks	75
Replace a beef entree with chicken, fish, or eggs (1 meal/wk.)	64
Wash laundry in cold water	57
Lower heat one degree for a day	56
Upgrade window A/C	47
Use LED holiday lights	47
Hand wash dishes efficiently	45
Seal attic bypasses	45
Use fans instead of central A/C	44
Set A/C 2° F higher	41
Turn off desktop computer each night (or set to standby)	36
Insulate water heater	32
Unplug electronics or use power strips to reduce vampire energy	32
Upgrade water heater	31
Inflate tires once per month	29
Reduce highway speed	28
Compost kitchen scraps	28

Carbon-saving action	Pounds CO ₂ Per month
Turn off car instead of idling	24
Replace a chicken, fish, or egg-based entree with a vegetarian one (1 meal/wk.)	24
Close fireplace damper	23
Keep windows shut when central A/C is on	22
Shorten shower by 2 minutes	21
Walk/Bike (5 miles each week)	20
Telecommute (5 miles each week)	20
Combine errands to eliminate 5 miles of driving	20
Lower hot water heater 20° F	19
Use energy-saving & air-dry settings on dishwasher	18
Use fans instead of window A/C	16
Carpool with 3 others (5 miles each week)	15
Carpool with 2 others (5 miles each week)	13
Carpool with 1 other (5 miles each week)	10
Replace one frequently used incandescent bulb with CFL	10
Turn off laptop each night	10
Lower hot water heater 10° F	9.5
Keep other windows shut when window A/C is on	9
Bring your own grocery bag	6
Take the bus (5 miles each week)	5
Cook multiple items in the over at the same time	varies by use (2.5 lbs/use)
Eat a meal with 50% local ingredients (1 meal/wk.)	2
Eat a meal with 50% organic ingredients (1 meal/wk.)	2
Use microwave in place of 1 hour of baking	varies by use (2 lbs/use)
Use crockpot in place of 1 hour of baking	varies by use (1.5 lbs/use)
Use toaster oven in place of 1 hour of baking	varies by use (1 lb/use)

Additional Resources

The actions described in his booklet are just the beginning! Besides the web sites previously mentioned, there are a number of helpful books and web resources that provide additional ideas on saving energy and reducing your carbon footprint. Below is a selection of materials that were used to develop this booklet.

Books

de Rothschild, David. *The Live Earth Global Warming Survival Handbook: 77 Essential Skills to Stop Climate change – Or Live Through It*. New York, Rodale Press, Inc., 2007.

Langholz, Jeffrey and Kelly Turner. *You Can Prevent Global Warming (and Save Money!): 51 Easy ways*. Kansas City: Andrews McMeel Publishing, 2003.

Shimo-Barry, Alex and Christopher J. Maron. *The Environment Equation: 100 Factors that can Add or Subtract from Your Total Carbon Footprint*. Avon, MA: Adams Media, 2008.

Thorne Amann, Jennifer, Alex Wilson and Katie Ackerly. *Consumer Guide to Home Energy Savings*. Washington, D.C., New Society Publishers, 2007.

Web sites

www.Carbonrally.com

www.energysavers.gov

www.michaelbluejay.com/electricity (a.k.a. Mr. Electricity)

www.mnenergychallenge.org

Thank You!

For taking the Energy Challenge and helping Ann Arbor reduce its impact on global warming. We hope you will continue your efforts year-round to ensure lasting benefits for yourself and our community.

