

# Knoxville Citizen's Guide to Sustainability



**THE PURPOSE** of this guide is to share sustainable and energy efficient best practices with residents in east Tennessee, and to encourage each individual to take sustainability into their own hands. It presents general environmental, economic, and social issues in basic terms and provides steps that individuals can take to ensure resources are available to future generations.

**THE CITY OF KNOXVILLE's** energy and sustainability initiative is helping define a new paradigm for Knoxville's development: one that reduces energy consumption while enhancing the quality and competitiveness of our community. In Knoxville, sustainability is about offering more and better choices for citizens to live, work, and play in the heart of the city. It is about reusing existing infrastructure, sending less waste to landfill, and building a transportation network that supports walking, biking, public transit, and alternative fuels and vehicles. It is about minimizing the costs of operating office buildings while maximizing the health and productivity of their occupants, increasing the availability of clean, renewable energy and creating new jobs. Sustainability is good public policy, responsible resource stewardship, and making the choices necessary to protect the best of Knoxville and our region for future generations. (*Knoxville's Energy Inventory: Government and Community Analysis and Strategic Plans*, 2009)

**THE ENERGY AND SUSTAINABILITY TASK FORCE** was created in 2007 and submitted recommendations in 2010. Fifteen members comprised of government, industry, business, and non-profit leaders. The Task Force met regularly to develop recommendations for policies and programs that would reduce energy consumption, cost, and emissions, and increase Knoxville's overall sustainability. By focusing on sustainability, the Task Force strengthened Knoxville's long-term ability to withstand rising fossil fuel prices, mitigate air pollution, and seize the economic development opportunities afforded by the transition to clean energy technologies. They also helped make Knoxville a regional leader in the worldwide effort to reduce greenhouse gas emissions and reduce the potential consequences of global climate change. Task Force efforts produced Knoxville's baseline emission inventory, helped capture the thirteen-year energy performance contract, and developed content for Knoxville's first Energy & Sustainability Work Plan. An Advisory Board will convene to oversee execution of the plan. (*Knoxville's Energy Inventory: Government and Community Analysis and Strategic Plans*, 2009)



# INTRODUCTION: SUSTAINABILITY

*Knoxville Citizen's Guide to Sustainability*



**WHAT IS SUSTAINABILITY?** Sustainability is commonly defined as meeting society's present needs without compromising the ability of future generations to meet their own needs. There are different aspects and different definitions of sustainability. Public policy views sustainability as the fulfillment of economic, social, and security needs both now and in the future while protecting natural resources and quality of the environment. Businesses tend to view sustainability as increasing long term shareholder and social value while reducing resource use and negative environmental impacts. At a personal level, sustainability can be defined as protecting the environment for the present and future generations. (US EPA)

**WHY IS SUSTAINABILITY IMPORTANT?** Sustainability is important to help protect our environment, conserve our resources, reduce our impact on natural systems, and leave future generations with plentiful resources.

Sustainability is seen as a long term goal that is becoming a new way of living and doing business. Practicing sustainability is living responsibly as it can substantially reduce what we spend and even be profitable in some cases. It teaches accountability, promotes community values, and gives people a way to plug in and preserve where they live.

Regardless of varying personal views on environmental issues, conserving resources and saving energy makes sense on a basic financial level. Municipalities all over the world have been shifting focus to their urban environments in an effort to prosper more efficiently. The City of Knoxville is learning from them and developing some unique strategies.

**HOW CAN YOU HELP?** Use this guide to help reduce the resources you use. It covers a wide range of topics and offers a wide range of options of steps to take to help save money while being responsible with what we have. If you still want more information after reading this guide, contact the organizations listed. There are many available resources online as well, like the City of Knoxville Office of Energy and Sustainability website (<http://www.ci.knoxville.tn.us/sustainability/default.asp>) and the US Environmental Protection Agency (EPA) website (<http://www.epa.gov/>). New resources are created and published online often, so information is easy to find. If everyone does a little bit to help sustainability, we can improve our living conditions, our health, and the health of our community.



# INTRODUCTION: CARBON FOOTPRINT

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**WHAT IS A CARBON FOOTPRINT?** A carbon footprint is a measure of the impact our activities have on the environment. The measurement calculates the amount of greenhouse gases produced in our daily lives through different activities like burning fossil fuels for energy, material use, transportation, and water use. Results of a carbon footprint calculation usually show that a typical first world individual is consuming more than one person's need for resources. It is a good tool to figure out where cutting back in our lives would be helpful in preserving our natural resources.

**WHY IS MY CARBON FOOTPRINT IMPORTANT?** A carbon footprint is important because it provides a relative number to compare to other people's and other countries' way of living. It standardizes living choices and can help show if you are using more or less than the average person in terms of fossil fuels and energy. Calculating your carbon footprint can also highlight areas where you are creating more greenhouse gas emissions than normal. Once you have figured this out, it can help you find ways to reduce your output.

**HOW CAN YOU HELP?** There are many respectable carbon footprint calculators online (such as [www.carbonfootprint.com](http://www.carbonfootprint.com)). Find one and calculate your footprint by providing honest answers. It's confidential and the results will help you visualize impacts that your lifestyle choices may have on the environment.

After you calculate your footprint, evaluating your answers to the questions can help you find ways to reduce your impact or improve the results. By adopting small changes in your daily habits, you can lower your carbon footprint.



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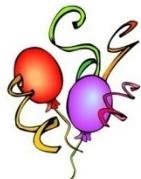
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# WATER QUALITY & CONSERVATION

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**CLEAN WATER** Our daily actions can directly and indirectly impact the health of our watershed and our water supply. For example, dripping car oils, fertilizers, soaps, road salts, and other chemicals can pollute runoff from impervious surfaces and find their way into our local rivers. Every gallon of water we put down the drain adds to the amount of water that must be treated, cleaned, and recycled before reuse.

**WHY IS PRESERVING OUR WATER SUPPLY IMPORTANT?** In Tennessee, common causes of pollution in rivers and streams are mud (sediment/silt), land development, viruses and bacteria, and nitrogen and phosphorus (nutrients). These pollutants generally come from agricultural runoff, sewage and storm water discharge, and construction and development runoff. Runoff containing these pollutants drains directly into our rivers, streams and our drinking water supply. As more of these pollutants enter our rivers and streams, damage occurs in fragile ecosystems, flooding increases and it becomes more expensive to clean our drinking water.

**WHY IS CONSERVING WATER IMPORTANT?** The amount of available water on Earth is finite; we will never have any more or any less than we do now. Therefore, it is important that we conserve our use of it and prevent it from becoming too scarce or difficult to clean.

## TERMS

<b>Catchment</b>	The area which collects water from streams, melting ice, and precipitation
<b>Conservation</b>	Planned protection and management of a natural resource
<b>Gray water</b>	Household wastewater that does not contain serious contaminants
<b>Preservation</b>	Maintaining a natural resource free from harm
<b>Runoff</b>	The portion of precipitation on land that ultimately reaches streams often with dissolved or suspended material or pollutants
<b>Watershed</b>	A region or area bounded peripherally by a particular divide and draining ultimately to a body of water



## WATER QUALITY HOTLINE

Call this number to anonymously report illegal dumping in creeks, streams, catch basins, or any area draining into streams or sewer systems.

**865-215-4147**



# WATER QUALITY & CONSERVATION

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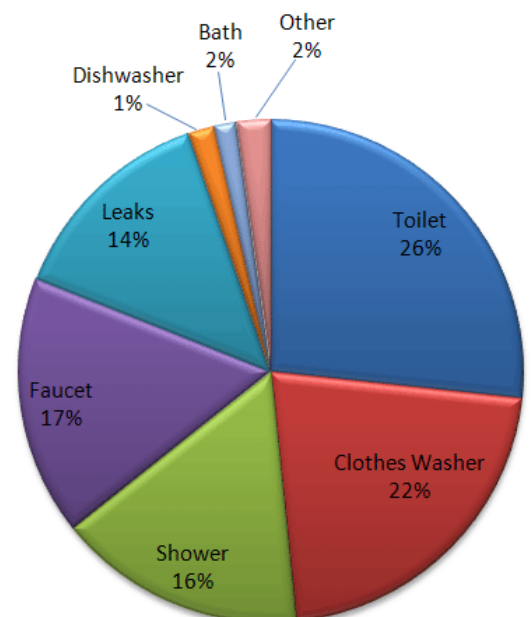
**HOW CAN YOU HELP?** There are small changes you can make in your life at home to conserve and preserve water.

- 💧 **Adjust sprinklers** so only your lawn is watered and not the house, sidewalk, or street.
- 💧 **Shorten your shower** by a minute or two and you'll save up to 150 gallons per month.
- 💧 Put food coloring in your toilet tank. If it seeps into the toilet bowl without flushing, you have a leak. Fixing it can save up to 1,000 gallons a month.
- 💧 **Install aerators on your faucets.** They release less water but with the same amount of pressure as normal faucet flow.
- 💧 Try to **avoid synthetic fertilizers and pesticides.** These chemicals run off into the sewers and our water supply when it rains.
- 💧 **Wash your car only at car-wash establishments.** Rinsing soap off your car in your driveway can cause runoff into the sewers and water supply.
- 💧 When doing the dishes, **avoid prewashing.** Skipping this step can save up to 20 gallons of heated water per day.



←Runoff illustrated. The brown water is rain that has collected particles from the grass. This runoff is full of dirt and lawn chemicals. (NRCS, 2010)

**WATER FEST** is an annual, day-long festival at Ijams Nature Center for area students that focuses on environmental and water quality education and outdoor activities. Exhibits at WaterFest teach participants about local watersheds, healthy wetland ecosystems, and aquatic life found in the Tennessee Valley. For more information, visit [www.ijams.org](http://www.ijams.org).



## Indoor Home Water Use

(Water Conservation – A Holistic Approach That Saves Water and Energy, 2008)

# WATER QUALITY & CONSERVATION

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## WHERE CAN I BUY A RAIN BARREL?

**Ft. Loudon Lake Association**—\$40 provides you with a workshop on how to install and maintain barrels and provides you with the barrel and accessories

**Sam's Club**—\$80 for a plain barrel

**Earth Fare**—\$80 for a plain barrel

## HOW HAS KNOXVILLE GOVERNMENT HELPED?

The City's Buildings Department adopted a supplemental section to the city building code to allow for gray water recycling. The City's Stormwater Department works every day to ensure construction areas are not polluting. (Knoxville's Energy Inventory: Government and Community Analysis and Strategic Plans, 2009)



Beaver Creek, Knoxville, TN  
(Knox County Stormwater Management)

## WHO TO CONTACT?

**City of Knoxville Stormwater Management** | <http://www.ci.knoxville.tn.us/engineering/>

A resource for information on storm sewer systems and a water quality hotline to report illegal dumping into creeks, streams, or other waterways and sewer systems.

**EPA's Water Pollution Site** | <http://water.epa.gov/polwaste/nps/>

Offers information on water pollution and how to help the problem.

**Fort Loudoun Lake Association** | <http://www.fllake.org/> | (865) 523-3800

A group dedicated to keep the water in Fort Loudoun Lake clean for everyone to enjoy.

**Knox County Green Team** | <http://www.knoxcounty.org/greenteam/index.php>

A division of Knox County which seeks to improve or maintain the health of Knox County water resources.

**Knox Greenways Coalition** | <http://knoxgreenwayscoalition.org/>

Provides resources on parks and paths that follow and maintain natural waterways. There are currently over 41 miles of greenways provided and maintained by the City of Knoxville.

**Knox Water Quality Forum** | <http://www.waterqualityforum.org/>

A group focused on education and outreach concerning local waterways and water quality. They provide information on the Adopt-A-Stream program and offer rain barrel workshop classes.

**Tennessee Clean Water Network** | <http://www.tcwn.org/> | (865) 522-7007

An organization dedicated to building grassroots support and educating the public on water quality issues.

# ENERGY CONSERVATION

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**SAVING ENERGY** Currently, coal is a major resource for energy production in this region. Coal is a natural, finite resource. When burned, it can release harmful toxins into the air. To prolong our resources and reduce air pollution, it is important we find energy alternatives to coal.

As the world population grows and new technology is created, more people are becoming dependent on using large amounts of electricity. Sometimes, power outages result because the demand for power is greater than the supply. By limiting your energy use, you can save hundreds of dollars on your electricity bills annually while helping reduce energy demand and air pollution.

**WHAT IS ENERGY CONSERVATION?** Energy conservation is the act of reducing energy use through either less time spent using electricity or through more energy efficient means.

**WHY IS ENERGY CONSERVATION IMPORTANT?** Demanding, or using, less energy will lessen the amount produced. Because many methods of energy production pollute, reducing consumption will help prevent pollution and (it will save you up to hundreds of dollars on electricity bills each year). Conserving energy is a way to help the environment and help your wallet at the same time.

Energy conservation is also important because it teaches others that energy is not unlimited and reminds us that a lot of work goes into producing electricity. Discussing how energy can be saved can also lead to developing alternative energy infrastructure.

**WHAT IS ALTERNATIVE ENERGY?** Alternative energy typically refers to energy sources which are renewable and have little to no harmful environmental effects. The most common types of alternative energies are: solar, wind, biomass, hydroelectric, geothermal, and nuclear.

## TERMS

<b>CFL</b>	Compact fluorescent light bulb. A light bulb that works differently than the typical incandescent bulb, using much less energy and producing much less heat.
<b>kWh</b>	Kilowatt hour. The basic unit of energy which measures amount of power over time
<b>LEED</b>	A certification which encourages adoption of sustainable green building and development practices
<b>Phantom Load</b>	The energy that is still drained by plugged-in appliances when they are turned off
<b>Renewable</b>	Able to be replaced
<b>Watt</b>	The basic measurement for unit of power





# ENERGY CONSERVATION

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**HOW CAN YOU HELP?** There are small changes you can make in your life to conserve energy.

- ⚡ **Turn off the lights** when you leave the room. Use the 23 second rule: if you will be out of the room for 23 seconds or more, turn off the light.
- ⚡ **Change your light bulbs to compact fluorescent bulbs (CFLs).**
- ⚡ **Unplug appliances** when you are not using them. They draw energy even when switched off!
- ⚡ **Set your thermostat** to a few degrees cooler in the winter and a few degrees warmer in the summer to reduce HVAC use
- ⚡ Allow your laundry to **air dry** on a clothesline instead of using the dryer.
- ⚡ Let your hair **air dry** instead of using the hairdryer.
- ⚡ **Add insulation** to your walls and tighten up window and door seams.
- ⚡ **Turn off your computer monitor** when you are finished with the computer. As much as 2/3 of the energy required to run a computer is used in the monitor.
- ⚡ Contact your local power supplier and ask about **purchasing green energy credits.**
- ⚡ Replace HVAC air filters regularly.

Incandescent bulbs operate at 350°F in order to produce light while CFLs operate at 90°F to produce light. This means CFLs use much less energy to emit the same amount and quality of light.

An ENERGY STAR qualified compact fluorescent light bulb (CFL) will save about \$30 over its lifetime and pay for itself in about 6 months. It uses 75 % less energy and lasts about 10 times longer than an incandescent bulb.



## TRY THIS...

Shut the door or window on a piece of paper. If you can pull it out without tearing the paper, the seam is not sealed; energy is being wasted.

Don't be scared that CFLs have a small amount of mercury. Electricity made from burning fossil fuels is one of the biggest mercury polluters. So, switching to CFLs will help reduce mercury pollution, not add to it.

# ENERGY CONSERVATION

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**WHAT IS SOLAR AMERICA CITIES?** In March of 2008, the Department of Energy (DOE) named the City of Knoxville a partner in its Solar America Cities program. Through this partnership, Knoxville was awarded \$200,000 over a three-year period to help finance various initiatives developed to reduce barriers to local generation of solar power. In support, TVA matched this grant with \$100,000. DOE also contributed \$200,000 worth of technical assistance towards the program initiatives, and TVA and KUB both pledged additional technical and staff assistance.

The Solar America Cities program has engaged more than 180 organizations, including municipal, county, and state agencies, solar companies, universities, utilities, and non-profit organizations. These partners committed to reduce barriers to integrating into their institutions clean, safe, and reliable solar energy. The Solar America Cities program promotes photovoltaics (PV) and concentrating solar power technologies (both produce electricity) as well as solar water heating and space heating and cooling.

Successes of the program in Knoxville include Installation of a 4.68 kW solar power generation system at the new, LEED-certified downtown transit center, public workshops to educate community members on solar technologies and opportunities, and development of locally-offered high quality solar installation certification courses to strengthen the local supply market. Visit [www.solarknoxville.org](http://www.solarknoxville.org) for more information.



**SOLAR AMERICA  
CITIES** 

# ENERGY CONSERVATION: WEATHERIZATION

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**WHAT IS WEATHERIZATION?** Weatherization is the practice of modifying a building to protect its interior from the elements, to reduce energy consumption, and to optimize energy efficiency.

The Environmental Protection Agency (EPA) and the Department of Energy (DOE), through their Energy Star program, estimate that half of the energy used in the home is from heating and cooling. Much of this energy is lost--seeping through cracks in windows and doors for instance--which wastes the energy and makes our homes less comfortable. Weatherization home improvements can make a noticeable difference to eliminate drafts, reduce your energy bill in all seasons, and will last for many years.

A large part of the process of weatherization involves sealing and caulking cracks around doors and windows and adding insulation to exterior walls.

**WHY WEATHERIZE?** By retrofitting a home with energy saving measures, weatherization can save a family money, make the home environment healthier, and conserve the Earth's resources! Here are some other reasons listed by the Piedmont Environmental Alliance (PEA) why weatherizing your home is a smart choice:

- It can reduce your yearly energy bills by 32%.
- It can improve air quality by keeping air pollutants, dust, and insects from entering the home.
- It provides a comfortable environment with smaller temperature swings.
- It can keep whistling wind, other outside noises, and rattling windows quiet.

## WHO CAN HELP YOU WEATHERIZE YOUR HOME?

### Local Utility Companies

Contact your local utility company. Refer to the contact information in the "Who to Contact?" section for KUB and TVA Energy Right program.

### Knoxville-Knox County Community Action Committee (CAC) | <http://knoxcac.org/> | (865) 546-3500

Some Knox County residents may qualify for a home energy audit courtesy of The Knoxville-Knox County Community Action Committee. Their weatherization program aims at securing long term savings for low income homeowners and renters by weatherizing their homes to reduce energy consumption, thereby reducing the home owner's utility bills.

### The City of Knoxville | <http://www.solarknoxville.org/how-to-go-solar/more-on-energy-efficiency/>

This website has a great resource page with information about finding energy auditors and how to conduct your own energy audit.



# ENERGY CONSERVATION

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## WHO TO CONTACT?

**City of Knoxville Solar Cities** | <http://www.solarknoxville.org/>

Resources on solar power basics, how to go solar, details about the Solar Tour, information for students, and contact information of local solar panel installers.

**Knoxville Utilities Board (KUB)** | <http://www.kub.org/>

General information on energy, energy savings, commitment to conservation, green power, and air quality.

**Southern Alliance for Clean Energy** | <http://www.cleanenergy.org/> | (865) 637-6055

A non-profit organization dedicated to finding solutions to energy issues and to taking action to influence legislature on clean energy.

**TVA Energy Right** | <http://www.energyright.com/index.htm>

A website with resources on how to reduce your monthly energy bill. Information on rebates for energy efficiency and how to do a home energy audit.

## SAMPLING OF LOCAL SOLAR PANEL INSTALLERS:

Energy Efficient TN	<a href="http://eetenn.com/">http://eetenn.com/</a>	(865) 947-3386
ESG Construction, LLC	<a href="http://www.engineeringservicesgroup.com">http://www.engineeringservicesgroup.com</a>	(865) 522-0393
FLS Energy – East TN Division	<a href="http://www.flsenergy.com">http://www.flsenergy.com</a>	(865) 705-4049
Green Earth Solar	<a href="http://www.greenearthsolar.net">http://www.greenearthsolar.net</a>	(865) 769-7337
Sustainable Future	<a href="http://sustainablefuture.biz/">http://sustainablefuture.biz/</a>	(865) 851-8192

**HOW HAS KNOXVILLE GOVERNMENT HELPED?** The City of Knoxville has instituted a policy which requires all computer monitors be shut down at the end of each work week. They have an energy performance contract that retrofits 99 City facilities for energy efficiency, and guarantees annual energy savings of over \$1,000,000 annually. LED Streetlights are being piloted in several locations around town.

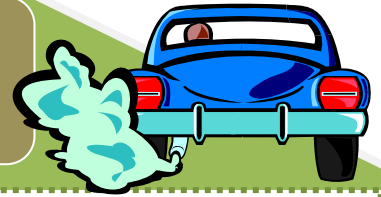
In efforts to save energy and promote solar energy the city installed a 28.5 kW solar array on the Convention Center and a 4.68 kW solar array at the downtown transit center (*pictured below, left*).

The City (in conjunction with Empowerment Zone funds, Knox Housing Partnership, and the Knoxville-Knox County Community Action Committee) has also completed construction of the first seven LEED-Gold certified affordable homes in the country in efforts to improve the energy efficiency and sustainability of low-income homes (*pictured below, right*).



# AIR QUALITY & TRANSPORTATION

Knoxville Citizen's Guide to Sustainability



**CLEAN AIR** Living with poor air quality can affect all areas of our lives. It can impact health, reduce productivity, spoil crops, damage buildings, harm animals, and damage the beauty of the surrounding area. Poor air quality is primarily a result of human influence. Driving your car, smoking cigarettes, cutting trees, burning coal, using paint with fumes – all can contribute to the poor air of a community. Some air pollution is unavoidable, but there are things you can do to help.

**AIR QUALITY IN KNOXVILLE** There are many factors leading to air quality issues in Knox County: **1)** The interstate runs directly through the county. Although the Knox County Air Quality Department lowered the speed limit from 65 to 55, they cannot enforce many emissions standards on large semis that pass through town because they have their own set of rules and regulations. These semis are big polluters of ozone and greenhouse gases from pipe exhaust.

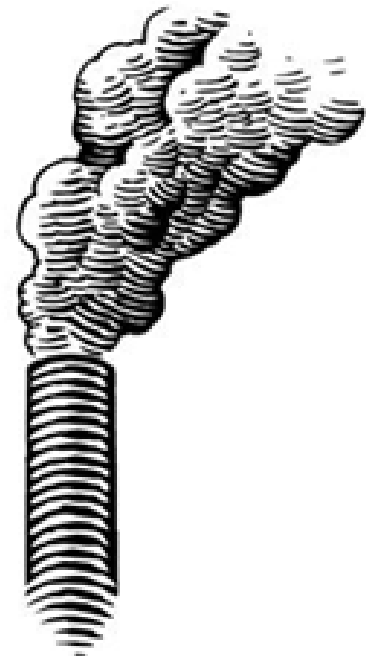
**2)** Since Knoxville is a city surrounded by rural land, a lot of traffic travels to the city frequently to access more metropolitan amenities. Because the city does not have as extensive a system of public transit as other larger metropolitan areas, more citizens opt to drive their own cars.

**3)** East Tennessee has no specific car inspection regulations, which means some operational cars should have been retired decades ago based on their emissions.

Despite these reasons for air pollution, car and energy technology has improved drastically over the past decade, and as a result, Knoxville's overall air quality has improved over the years.

## TERMS

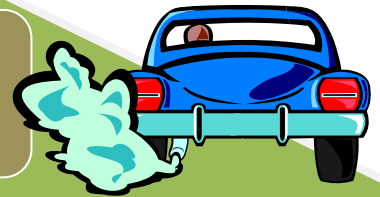
<b>Efficiency</b>	The ratio of useful energy delivered by a system to the energy supplied to it (the closer to 1 the efficiency is, the better because there is little waste for maximum energy output)
<b>Emissions</b>	Substances discharged into the air
<b>Idle (car)</b>	To run at low power; power is not used for useful work
<b>mpg</b>	"Miles per gallon." the number of miles a car can run on one gallon of gasoline. A high mpg indicates more efficient driving and a more efficient vehicle
<b>Ozone</b>	A primary component of smog created by chemical reactions between nitrogen oxides, volatile organic compounds, and sunlight
<b>Quality</b>	Degree of excellence; grade
<b>Smog</b>	A fog made heavier and darker by smoke and chemicals





# AIR QUALITY & TRANSPORTATION

*Knoxville Citizen's Guide to Sustainability*



**HOW CAN YOU HELP?** The choices we make every day about transportation and other activities can help reduce air pollution.

- 🚗 **Drive less.** Walk, bike, carpool, or use public transportation when you can.
- 🚗 **Plan errands** so that you combine trips and reduce your total driving distance.
- 🚗 Consider an **alternative fuel vehicle** when you're ready for a new car.
- 🚗 **Drive more fuel efficiently.** Avoid unnecessary acceleration and speed.
- 🚗 **Purchase renewable energy credits** so your power comes from a non-air polluting source.
- 🚗 **Avoid burning plastic or Styrofoam.** Reduce placing extra toxins in the air.

**INDOOR AIR POLLUTION** We often think of air pollution as the quality of the air outside, but often the air inside our homes can be two to five times more polluted than the air outside, which is a concern since we spend up to 90% of our time indoors. Part of the problem results from our efforts to seal off our homes and buildings to drafts and keep outdoor air from getting in. When we do that, we conserve energy and preserve indoor temperature, but we prevent the polluted indoor air from getting out!

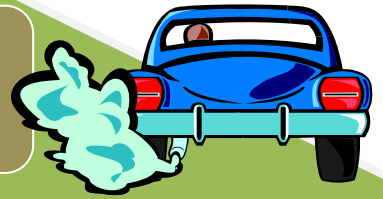
The most dangerous indoor air pollutants are carbon monoxide, cigarette smoke, and radon gas. Other factors that affect indoor air pollution include excess moisture (catalyst for mold), wood burning fireplaces, gas stovetops, and chemicals that produce odors (signs of volatile organic compounds, VOCs) like cleaning supplies, adhesives, and paints.

To help circulate fresh air into your home, on a nice day, turn off the HVAC system and open the windows to swap in new air from the outside.

**HOW HAS KNOXVILLE GOVERNMENT HELPED?** The Knox County Air Quality Department lowered the speed limits on the major highways in Knoxville from 65mph to 55mph to encourage better fuel efficiency of cars and to improve air quality conditions of the city. (Studies have shown that driving above 55mph in a car drastically reduces vehicle fuel efficiency.) The Metropolitan Planning Commission's Transportation Planning Authority hosts the Smart Trips Program, which incentivizes alternate transportation for commuting options.

# AIR QUALITY & TRANSPORTATION

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## EPA's 2011 MOST FUEL EFFICIENT VEHICLES

[www.epa.gov/greenvehicles](http://www.epa.gov/greenvehicles)

### GASOLINE ENGINE

1. Toyota Prius
2. Lexus CT 200h
3. Ford Fusion Hybrid
4. Lincoln MKZ Hybrid
5. Mercury Milan Hybrid
6. Honda Civic Hybrid
7. Honda Insight
8. Scion iQ
9. Honda CR-Z
10. Hyundai Sonata Hybrid

### MPG HWY/ CTY

51/48  
43/40  
41/36  
41/36  
41/36  
40/43  
40/43  
36/37  
35/39  
35/40

### ELECTRIC / HYDROGEN

1. Nissan LEAF
2. Smart Coupe
3. Honda FCX
4. Mercedes Benz F Cell

### MPG EQUIVALENT

Battery Electric 106/92  
Battery Electric 94/79  
Hydrogen 60/60  
Hydrogen 52/53

Knoxville ranks as #14 on the list of the most ozone-polluted cities in the country and #21 for worst particle pollution.

## WHO TO CONTACT?

**American Lung Association** | <http://www.lungusa.org/>

Provides information on lung disease and lung health, air pollution, and resources to quit smoking.

**EPA Office of Air and Radiation** | <http://www.epa.gov/oar/>

Offers information on pollution prevention and energy efficiency and how it relates to indoor and outdoor air quality.

**EPA's Indoor Air Quality Site** | <http://www.epa.gov/iaq/>

Offers information on indoor air pollution prevention.

**Knox County Health Department –Air Quality** | <http://www.knoxcounty.org/airquality/> | (865) 215-5900

The county division that monitors the air, issues health alerts, and conducts compliance and complaint investigations. They also provide technical and educational services.

**Knoxville Area Transit (KAT)** | <http://www.katbus.com/> | (865) 637-3000

Provides bus service throughout the greater Knoxville area. View their website for route schedules and maps, fares, and other general information.

# RECYCLING & WASTE REDUCTION

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**REDUCING WASTE** can help the environment, and it can help make our lives easier. If we produce less trash, we will have less to deal with. "Out of sight, out of mind" is often the mindset when disposing trash. Everything tossed away still must go somewhere, usually to a landfill. This is important because recycling saves valuable land for better uses, reduces ground water and air pollution potential, and reduces garbage truck trips. Many tend to avoid recycling for two reasons 1) they think it is inconvenient and 2) they don't know what is recyclable and what is not. By making recycling bins accessible and clearly labeled, we can make it easier for people to participate in recycling.

**WHAT ARE THE 3 R'S?** **REDUCE:** Try to curb the amount of things you use. For example, see if you can use less toilet paper or shampoo. Using a little bit less of everything can result in huge savings in the long run. It will also reduce the amount of goods you need to purchase, and it will curtail the amount of trash or recycling you have to take out. **REUSE:** Before getting rid of that empty peanut butter jar, is there a way you can reuse the container before tossing it? Maybe it would be a good container to store cooking grease. What about that shoebox? Perhaps you can use it to wrap a gift. There are many items that are thrown out or recycled every day that can be used for other purposes. Reusing is the most effective means of recycling because it doesn't require the product to be transformed into something else first. **RECYCLE:** After you have reduced your consumption and reused what you can, there still may be some items you have left over that can be either thrown in the trash or recycled. When possible, choose recycling instead of trashing.

## TERMS

<b>Convenience</b>	Ease; freedom from discomfort
<b>Decomposition</b>	The act of breaking up into parts by or as if by chemical process; rotting
<b>Dual-Stream</b>	A recycling program which requires the consumer to separate paper into one container and plastics and aluminum into another
<b>Methane</b>	A greenhouse gas released by trash in landfills
<b>Organic</b>	Derived from living organisms
<b>Post-Consumer</b>	Having been used and recycled for reuse in another consumer product (opposed to pre-consumer where the 'recycled' product contains byproducts of the manufacturing process)
<b>Single-Stream</b>	Comingled recycling. Does not require consumer to separate recycled materials into separate bins



# RECYCLING & WASTE REDUCTION

Knoxville Citizen's Guide to Sustainability



**HOW CAN YOU HELP?** Recycling and reducing waste are some of the easiest ways an individual can contribute to a community's sustainability. Reducing waste means making small choices about purchasing and reusing which can greatly impact the environment.

- ☛ **Place recycling bins next to all trashcans** so that making the choice is easy.
- ☛ **Purchase post-consumer recycled** goods when possible.
- ☛ **Rinse containers** before recycling them.
- ☛ **Know** what kinds of materials your recycling center accepts.
- ☛ **Purchase items in bulk** or in larger containers to reduce the amount of waste.
- ☛ Take your **reusable bags** to the store to use instead of getting plastic bags.
- ☛ **Take your own mug** or coffee cup to the café. Some places will even give a discount for bringing your own mug!
- ☛ **Give usable old clothes to charities**; make others into cleaning rags rather than throwing away.

**HOW CAN YOU SET UP CURBSIDE RECYCLING SERVICE?** Contact for more information:

Waste Connections | (865) 522-0078 | <http://www.wasteconnectionstn.com>

City of Knoxville | 311 | <http://www.cityofknoxville.org/householdrecycling/>

**HOW HAS KNOXVILLE GOVERNMENT HELPED?** The City of Knoxville, in partnership with Knox County, is involved in many yearly recycling activities like an electronic waste recycling event in January, Earth Fest in April, and America Recycles Day in November. Each of these events is planned through cooperation of many Knoxville community groups, and the City of Knoxville is proud to be a key player in helping these events happen. Keep an eye out for the next upcoming recycling event in Knoxville!

The City is also increasing efforts to provide recycling opportunities for Knoxville residents by instituting a curbside recycling program for residents living within the City limits. Sign up for this service now at the link listed above.

The City of Knoxville also supports a policy of green purchasing in office events to reduce waste and maximize recycled content purchased goods.

## FACTS AND FIGURES

70-80% of all household waste in Knoxville is recyclable.



# RECYCLING & WASTE REDUCTION: COMPOSTING

*Knoxville Citizen's Guide to Sustainability*



**WHAT IS COMPOST?** Compost is a mixture of residues of organic materials that have been piled, watered, and have undergone decomposition.

**WHY IS IT IMPORTANT?** Since most yard waste and food products are easily degradable under the correct conditions, placing them in a landfill unnecessarily wastes space and money. Compost also benefits soils by serving as a soil conditioner which enriches soil and improves its structure. Adding compost to your gardens can help alleviate the need to use fake chemicals and fertilizers because compost is so nutrient rich.

**HOW CAN YOU HELP?** To construct a compost pile, refer to this guide's pamphlet on Recycling & Waste Reduction.

**BEARDSLEY FARM COMPOST** Beardsley is an urban demonstration farm that works with community members and provide tools to help them grow their own food and learn about the financial and environmental benefits of home food production. All the food they grow is donated to local food pantries and others in need of fresh produce.

The compost system is a three bin system. As compost is turned, the more "done" compost is shifted over to the next compartment, so the last bin in the row usually has mostly finished compost. This system expedites the decomposition process for this busy farm.

The compost system serves as a demonstration to the community on how beneficial composting can be. The farm workers divert waste from local businesses to this compost system and use the nutrients to nourish the crops they grow. In landfills, organic waste is buried too quickly and cannot properly decompose, so it releases methane (a greenhouse gas) as a byproduct. If not for the composting efforts of the farm, tons of food waste would be sent to the landfill and buried every month in Knoxville.



## WHAT CAN YOU COMPOST?

**Acceptable** materials for compost: yard waste, paper, manures from farm animals, fruit and vegetable scraps, egg shells, coffee grounds.

**Not acceptable** materials for compost: meat, dairy foods, fatty foods, greasy cooked food, grains (like rice or pasta), oils, dog and cat manure, and plants with diseases.



# RECYCLING & WASTE REDUCTION: LITTER

Knoxville Citizen's Guide to Sustainability



**LITTERING** Litter gives the impression that those who live in the area do not value home and surroundings. It encourages others to litter and is an eyesore.

In addition, litter can hurt the environment. Winds and rains move litter over the land, where it often ends up in local water ways, in natural habitats, or as part of the great Pacific Garbage Patch. This patch is a huge area of the Pacific Ocean where currents converge, making a swirling gyre. Trash that originates as litter can make its way here through currents, getting stuck in the swirling water and becoming a landfill in the ocean.



**KEEP KNOXVILLE BEAUTIFUL**, a Keep America Beautiful affiliate, was formed in 1978 by Knox County, the City of Knoxville, and the Chamber of Commerce as the Greater Knoxville Beautification Board. Originally formed to help "clean up" prior to the 1982 World's Fair, KKB plunged into community efforts to clean and beautify the community through its many programs. Adopt-A-Spot, Orchids, and School Pride programs paved the way for the organization to grow and the community to work together to accomplish the great idea of individual responsibility.

For information on how you can get involved with this organization and help prevent littering in Knoxville, contact their office at (865) 521-6957.

## ADOPT-A-ROAD

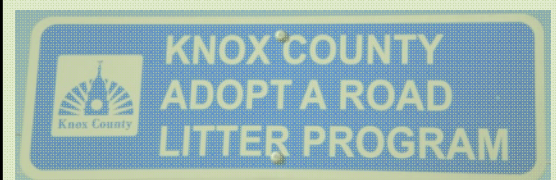
*An average mile of highway contains about 16,000 pieces of litter. Knox County has about 2,000 miles of roadway.*

The Adopt-A-Road program is a citizen-based litter prevention initiative intended to protect the health and serenity of our local roadsides and encourage upkeep of a beautiful Knoxville. Here's how you get started helping:

- 1) Gather a team and select a coordinator.
- 2) Pick a section of road to adopt.
- 3) Commit to **annually** conducting:  
**-4 roadside litter pick-ups**
- 4) Contact Adopt-A-Road.

Adopting a road is a great way to protect your local environment, give back to the community, and preserve the beauty of our city.

The application for the program is available for download at the Knox County Solid Waste Department website: [http://www.knoxcounty.org/solid\\_waste/litter.php](http://www.knoxcounty.org/solid_waste/litter.php). Once you have scheduled a clean-up, the program will provide you with gloves, bags, vests, and signs. For any further questions, contact [litter@knoxcounty.org](mailto:litter@knoxcounty.org).



# RECYCLING & WASTE REDUCTION

Knoxville Citizen's Guide to Sustainability



## WHO TO CONTACT?

**City of Knoxville Recycling** | <http://www.ci.knoxville.tn.us/solidwaste/recycle.asp> | dial 311

A resource for information on storm sewer systems and a water quality hotline to report illegal dumping into creeks, streams, or other waterways and sewer systems.

**EPA's Solid Waste Site** | <http://www.epa.gov/osw/nonhaz/municipal/>

Offers information on garbage and how to help reduce your household waste. It also provides information on landfills and other methods of waste disposal.

**Ijams Nature Preserve** | <http://www.ijams.org/> | (865) 577-4717

Ijams is a nature preserve located in South Knoxville that maintains acres of wild habitat with biking trails and opportunities for public interaction. Ijams teaches preservation and reducing impact on the environment through recycling, waste reduction, composting, gardening, and other outdoor activities.

**Keep Knoxville Beautiful (KKB)** | <http://www.keepknoxvillebeautiful.org/> | (865) 521-6957

This not-for-profit focuses on educating the public on litter prevention and waste reduction, as well as engages citizens to clean-up their neighborhoods. KKB is an affiliate of Keep America Beautiful (KAB) <http://www.kab.org/>.

**Knox County Solid Waste** | [http://www.knoxcounty.org/solid\\_waste/recycling.php](http://www.knoxcounty.org/solid_waste/recycling.php) | (865) 215-5865

A division of Knox County which oversees the recycling centers in the greater Knoxville area and provides receptacles throughout the county for many non-typical items like CFLs, auto waste, scrap metal, tires, mercury thermometers and thermostats, and more. Visit the website to find out which recycling centers accept which materials.

**Knoxville Recycling Coalition (KRC)** | <http://knoxvillerecycles.org/> | (865) 525-9694

A not-for-profit organization that provides educational materials about recycling to the public and offers a multi-material recycling service for businesses, churches, schools, and other civic groups.



A sign posted on a dumpster for recycling at a Knox County Convenience Center.

## FACTS AND FIGURES

Recycling saves you tax dollars! The City of Knoxville has to pay to haul and bury trash, but can sell recyclables for a profit. This profit can alleviate your tax burden.

# SUSTAINABLE FOOD

Knoxville Citizen's Guide to Sustainability



**HEALTHY, LOCAL FOOD** The production of food requires enormous amounts of labor, land, water, energy, and chemicals in order to make enough for the world's growing population. As a result, farmers have begun to industrialize the practice of farming, lowering quality in order to raise quantity. In summary, this high amount of farming leads to environmental harm.

If we make smart choices about what foods we buy, however, we can stimulate the economy for food grown with the environment in mind. Some of these foods are called "organic," "free range," and "local."

**WHY IS SUSTAINABLE FARMING IMPORTANT?** Practicing sustainable farming methods is important because it can help alleviate some problems we create in the environment when we industrialize farming. Some of the environmental effects of industrial farming include: greenhouse gas emissions, soil degradation, deforestation, and water pollution.

Sustainable farming is also important because it can reconnect us with nature. Food production has become so far removed from the average consumer that it is easy to forget where exactly our food comes from and the labor required to grow and harvest it. The development of agriculture was a significant landmark in human development, and it started with backyard gardens and composting.

## TERMS

<b>Compost</b>	a mixture that consists largely of decayed organic matter and is used for fertilizing and conditioning land
<b>Organic</b>	of, relating to, yielding, or involving the use of food produced with the use of feed or fertilizer of plant or animal origin without employment of chemically formulated fertilizers, growth stimulants, antibiotics, or pesticides
<b>Permaculture</b>	an agricultural system or method that seeks to integrate human activity with natural surroundings so as to create highly efficient self-sustaining ecosystems
<b>Sustainable</b>	able to endure forever; relating to using a resource so that it is not depleted or permanently damaged
<b>Synthetic</b>	produced artificially; fake
<b>Vermiculture</b>	composting with the aid of red worms in decomposing organic matter



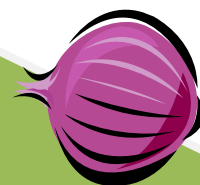
## FACTS AND FIGURES

A typical carrot travels 1,838 miles to reach your dinner table.









# SUSTAINABLE FOOD

Knoxville Citizen's Guide to Sustainability



**HOW CAN YOU HELP?** There are small changes you can make in your life and eating habits to help support sustainable agriculture.

-  **Buying fruits and vegetables in season** helps stimulate the market for seasonal food, and avoids shipping produce from hundreds of miles away.
-  Visit and support **your local farmers' market**.
-  **Plant a garden** in your yard or join a community garden.
-  **Eat less meat.** The livestock sector is responsible for 18% of greenhouse gas emissions globally. Cows emit vast amounts of methane, a greenhouse gas, into the atmosphere.
-  **Compost.** You can use composted material as a natural, nutrient rich alternative to man-made fertilizers.
-  **Join a Community Supported Agriculture (CSA) farm.** For a small fee, a local CSA will deliver a supply of their fresh produce weekly or monthly.

**HOW HAS KNOXVILLE GOVERNMENT HELPED?** The City of Knoxville, in conjunction with Knox County, formed the Knoxville-Knox County Food Policy Council (FPC) which aims to ensure nutritious food for all citizens and strengthen the local food economy.

In addition, the City helped found the Beardsley Community Farm, and the Sustainability Task Force is looking to add landscaping on public properties with indigenous species and edible fruiting plants.

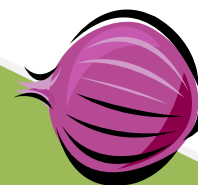


## WHAT DOES THE LABEL MEAN?

- Cage Free** Generally applies to eggs; it means that hens were able to roam and lay eggs in nests rather than stay confined in cages.
- Free Range** Usually applies to chicken; it means that the animals had access to moving around; they were not kept immobile in a cage.
- Grass-fed** Usually applies to beef; it means that the cow was fed a grass diet as cows are evolved to eat rather than corn.
- Local** Definitions vary, but typically means that the food was made and grown within a 100 mile radius of purchase location. Local does not necessarily mean "organic" or "sustainable."
- Natural** The food is unprocessed and genuine. It does not necessarily mean "organic" or "sustainable."
- Organic** Products labeled as "organic" must contain 95% organically produced ingredients.

## SUSTAINABLE FOOD

*Knoxville Citizen's Guide to Sustainability*



**BEARDSLEY FARM** is an urban demonstration farm that grows organic produce and houses bee colonies and free-range chickens. All the food the farm grows is donated to local food pantries, volunteers and others in need of fresh produce. The farm works with community members and provides tools to help them grow their own food and learn about the financial and environmental benefits of home food production.

If you are hungry for fresh, delicious vegetables or want to learn about organic gardening, you can volunteer with them in exchange for some fresh produce. You can also sign up to maintain your own plot in their community gardens.

<http://beardsleyfarm.org/>



**THREE RIVERS CO-OP** is a locally-owned, independent, natural foods grocery store serving the Knoxville community and East Tennessee for almost 30 years.

They specialize in local, organic and naturally-grown foods, including fresh produce, cheeses, fair trade coffees, chocolates, and teas, more than 200 culinary and medicinal herbs and spices, the largest bulk food selection in town, and freshly prepared deli foods. They also carry your favorite refrigerated, frozen, and packaged groceries, fresh local breads from Tellico Grains, Hogan's Bakery and The Bakery Lady, fresh local milk from Cruze Farms, local cheeses from Sweetwater Valley Farm and Locust Grove Farm, and many more healthful and delicious foods. <http://threeriversmarket.coop/>

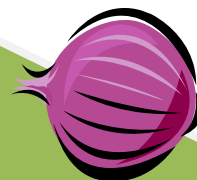
**CARE OF THE EARTH COMMUNITY FARM** is a chemical-free, family-owned vegetable farm and community supported agriculture farm (CSA) located on Rutledge Pike just outside of Knoxville. At a Community Supported Agriculture farm, members pay in advance or in seasonal installments in exchange for a pre-boxed share of vegetables that is dropped off weekly at locations in Knoxville.

Care of the Earth seeks to cherish and renew the earth by adhering to organic and certified naturally grown principles (although they are not certified); to provide an alternative for their family that allows them to center our lives at our farm; and to provide fresh, healthy, and nutritious vegetables to members of the community, a relationship with the people and place that grow those vegetables, and access to both the practical and spiritual underpinnings of our farm. <http://www.careoftheearthcommunityfarm.com/>



# SUSTAINABLE FOOD

Knoxville Citizen's Guide to Sustainability



## LOCAL FARMERS MARKETS

All markets operate mid-April through mid-November

### Market Square Farmers' Market

Wednesday 11am-2pm, Saturday 9am-2pm

Market Square, downtown Knoxville

### Knoxville Farmers' Market

Tuesday, Fri 3pm-6pm

3457 Kingston Pike, Laurel Church of Christ

### Knox County New Harvest Park Farmers' Market

Thursday, 3pm-6pm

4700 New Harvest Lane, New Harvest Park



Image provided by SUSchool

## WHO TO CONTACT?

### American Community Gardening Association | <http://www.communitygarden.org/>

A nonprofit membership organization of supporters of community greening in urban and rural communities.

### Beardsley Farm | <http://beardsleyfarm.org/> | (865) 546-8446

An urban demonstration farm that works with community members and provides tools to help them grow their own food and learn about the financial and environmental benefits of home food production.

### Care of the Earth CSA | <http://www.careoftheearthcommunityfarm.com/> | (865) 978-0561

A community supported agriculture farm in which members pay a fee to receive fresh produce every week from the farm.

### Knoxville-Knox County Food Policy Council | <http://www.ci.knoxville.tn.us/boards/food.asp>

Monitors and evaluates the performance of Knoxville's food system, in terms of costs, availability, accessibility and implications for public health/economic efficiency, public awareness of food issues, improvement of food supply and distribution network in Knoxville.

### Knoxville Permaculture Guild | <http://knoxvillepermacultureguild.ning.com/>

An online resource where citizens come together to learn, share, and apply permaculture design in their homes, yards and neighborhoods.

### Slow Food Knoxville | <http://www.slowfoodknoxville.org/>

A group that celebrates the environment and promotes slow food and local growers.

### Three Rivers Coop | <http://www.threeriversmarket.coop/> | (865) 525-2069

A locally-owned, independent, natural foods grocery store in Knoxville.

# LAND USE & LANDSCAPING

Knoxville Citizen's Guide to Sustainability



**QUALITY GROWTH** Many issues can arise during the development of land. For example, when vegetation is cleared from the land in order to be replaced with buildings, roads, and parking lots, natural habitats may be destroyed and the ability of water to soak into the ground is compromised. Most developed surfaces are impervious to water. So, water that falls on them runs off to areas down-slope where it is either funneled into a storm drain or onto nearby land where erosion and flooding may occur.

Another issue is that unnatural landscaping often introduces plants that are not native to the area. When nonnative plants are introduced, they can excessively thrive, becoming an invasive species. Examples of invasive species include honeysuckle and kudzu.

**WHAT IS PERVIOUS CONCRETE?** Pervious concrete is a specially engineered type of concrete that consists of water and cement-like materials that thickly bond aggregate particles together. The result of the thick cementing paste bonding the particles together is lots of spaces throughout the concrete. These spaces allow water to drain through it, rather than having the water be unable to penetrate and be forced into the storm sewer. With permeable concrete, water can still seep into the ground below the covered surface. This type of concrete is a potentially valuable option in order to preserve natural watersheds, reduce flooding, maintain balance in the water cycle and groundwater infiltration, and preserve the quality of the water

## TERMS

<b>Erosion</b>	The product of soil wearing away by the action of water, wind, or other weather conditions
<b>Impervious</b>	Ground covering that does not allow rainwater to soak through it and into the ground underneath. Impervious surfaces cause rain to run off of them, down slope, and inundate the storm water sewer systems.
<b>Invasive</b>	Tending to spread or invade
<b>Percolation</b>	To ooze or trickle through permeable substance
<b>Permeable</b>	Having pores or openings that permit liquids or gases to pass through
<b>Vegetation</b>	Plants, trees, shrubs, etc.



Water draining through a section of permeable pavement.  
([permeablepavement.org](http://permeablepavement.org))

# LAND USE & LANDSCAPING

Knoxville Citizen's Guide to Sustainability



**HOW CAN YOU HELP?** While many impervious surfaces are out of an individual's control, there are some things we can all do on a small scale to help alleviate the problem and to stay aware of the issue.

- When landscaping your yard or garden, **choose plants that are native** to the area. They will be the best at helping water soak into the ground. They will also help prevent invasive species from taking over.
- **Build a rain garden** to encourage water runoff to soak into the ground.
- Become familiar with **alternatives to concrete and asphalt** like pervious cement.
- **Be aware of any chemicals, oils, or products that you spill onto asphalt or concrete.** They may run straight to a storm sewer that empties in the river.
- **Get involved with a local advocacy group** to prevent land misuse. Working together on these complex issues helps everyone involved.
- **Sweep your patio and driveway** instead of using a hose. This will save water and keep debris from going down the drain.
- **Install a rain barrel** to collect storm runoff from your roof (see Water Quality & Conservation for instructions on how to make a rain barrel).

**URBAN SPRAWL** is the spreading of urban development (roads, houses, shopping centers, etc) on previously undeveloped land. As populations grow in cities, people move farther out from downtown, often creating urban sprawl. Urban sprawl is problematic because it adds a lot of impervious surface to the ground, and it continues to spread and divide communities. Driving times for commutes become longer, and as a result, air pollution increases.

Developing land farther outside of the city often leads to localized flooding and degraded water supplies as watersheds are destroyed from the influx of water from increased impervious surfaces. In addition, the construction itself can pollute the land, water, and air by increasing erosion and spilling fuels and chemicals.

Avoiding urban sprawl is a good way to live more environmentally. Living in a downtown area helps avoid sprawl by condensing living areas from being spread out to being stacked in apartment buildings. Living downtown also facilitates the ability to walk and bike to more places, reducing maintenance and fuel costs for your car.

Turkey Creek, in West Knoxville. An example of urban sprawl. This aerial view shows land that has been paved acre after acre with impervious surfaces.



-*"The Art of Placemaking" 2008*



# LAND USE & LANDSCAPING

Knoxville Citizen's Guide to Sustainability



**INVASIVE SPECIES** often cause environmental and economic harm to a community by taking over and suppressing other native species from flourishing. When invasive species take over, they reduce biodiversity and disrupt the balance of the ecosystem. Types of invasive plants include honeysuckle, kudzu, and privet.

Invasive species can choke native species, and they are extremely difficult to eradicate once established in an area. Because invasive plants can cover vast amounts of area, it is not healthy for the environment to spray the entire covering with herbicides, which often are only minimally effective anyway. So, removal efforts often include help from volunteers to manually uproot the plants. There is an interesting method for reducing kudzu, however: goats. Goats eat kudzu, and can eat it all the way to the root, helping prevent regrowth of the invasive weed. In fact, in spring of 2010, Keep Knoxville Beautiful (as part of grant funding) brought a group of fifty goats to the Knoxville area to begin eating kudzu.

## RECOMMENDED NATIVE PLANT SPECIES FOR EAST TN

[www.se-eppc.org](http://www.se-eppc.org)\*

### Trees

Black Gum (*Nyssa sylvatica*)

Pin Oak (*Quercus palustris*)

River Birch (*Betula nigra*)

### Small Trees

Flowering Dogwood (*Cornus florida*)

Serviceberry (*Amelanchier arborea*)

Witch-hazel (*Hamamelis virginiana*)

### Shrubs

Ninebark (*Physocarpus opulifolius*)

Fragrant Sumac (*Rhus aromatica*)

Virginia Willow (*Itea virginica*)

Mountain Laurel (*Kalmia latifolia*)

### Vines

Leatherflower (*Clematis vioma*)

Dutchman's Pipe (*Aristolochia macrophylla*)

Passion Flower (*Passiflora incarnata*)

\*Southeast Exotic Pest Plant Council



**IJAMS PLANT SALES** are held in April and October every year in order to help sustain East Tennessee's natural beauty by encouraging the use of native species in our own backyards. The sales provide educational opportunities to learn about sustainable gardening and why we ought to plant our gardens with native species in mind. For more information on the event, visit [www.ijams.org](http://www.ijams.org).

(photo from Ijams website)



## LAND USE & LANDSCAPING

*Knoxville Citizen's Guide to Sustainability*



**HOW KNOXVILLE GOVERNMENT HELPED?** Knoxville's focus on downtown revitalization has created many opportunities to develop land in a way that benefits the citizens, the community, and the environment. The infill of existing vacant buildings reduces the amount of newly constructed impervious surfaces and conserves resources required for new building construction. On Market Street, the pavement is designed to direct water runoff toward adjacent tree wells increasing water infiltration into the soil and reducing the amount of water required by the City to maintain tree health. In south Knoxville, construction on Blount Avenue included "treatment planters" which are large tree wells containing constructed soil intended to improve water infiltration. The City Tree Board helps select vegetation appropriate for east Tennessee and capable of surviving in specific municipal locations. The department of Public Service uses the Tree Board's guidance to plant and maintain the trees, shrubs, and flowers found in city parks, plazas and street sides.

### WHO TO CONTACT?

**Ijams Nature Preserve** | <http://www.ijams.org/> | (865) 577-4717

Ijams is a nature preserve located in South Knoxville that maintains acres of wild habitat with biking trails and opportunities for public interaction. Ijams teaches preservation and reducing impact on the environment through recycling, waste reduction, composting, gardening, and other outdoor activities.

**Knoxville Area Transit (KAT)** | <http://www.katbus.com/> | (865) 637-3000

Provides bus service throughout the greater Knoxville area. View their website for route schedules and maps, fares, and other general information.

**Knoxville Botanical Gardens and Arboretum** | <http://www.knoxgarden.org/> | (865) 862-8717

The Knoxville Botanical Gardens and Arboretum's mission is to preserve and restore the acres of land on which it sits and serve as a demonstration to the community on native plant species and preservation. They provide a designated "green space" for public enjoyment and educational opportunities for children and adults.

**Smart Growth America** | <http://www.smartgrowthamerica.org> | (202) 207-3355

A coalition of national, state and local organizations working to improve the ways we plan and build the towns, cities and metro areas we call home.



# GREEN PURCHASING

Knoxville Citizen's Guide to Sustainability



**WHY IS SHOPPING SUSTAINABLY IMPORTANT?** When we purchase an item at the store, it can be easy to forget about or be oblivious to all of the resources and energy that were required to make that item appear in the store for our convenience. For example, to create a dollar's worth of new paper requires about six gallons of water.

If we purchase our goods with sustainability in mind, we can make more of a difference in our wallets and in the goods produced for market. By purchasing sustainable items, we help drive up the demand for environmentally conscious products. Increasing the demand will increase the availability of these products on the market, and will decrease the costs to individual consumers.

**IDENTIFY GREEN PRODUCTS** There are many environmentally sound products on the market today, and there are certain labels to help identify them. Here are a few of the markings you might find (a selection from the City of Knoxville's Green Purchasing Guide):



Design for the Environment allows manufacturers to put the DfE label on household and commercial products, such as cleaners and detergents, that meet stringent criteria for human and environmental health.



EcoLogo™ is a Type I eco-label, that compares products/ services with others in the same category, develops rigorous and scientifically relevant criteria that reflect the entire lifecycle of the product, and awards the EcoLogo to those that are verified by an independent third party as complying with the criteria.



ENERGY STAR is the trusted, government-backed symbol for energy efficiency helping us all save money and protect the environment through energy-efficient products and practices.



EPEAT is a system that helps purchasers evaluate, compare and select electronic products based on their environmental attributes. The system currently covers desktop and laptop computers, thin clients, workstations and computer monitors.



The Fair Trade Certified™ Label guarantees consumers that strict economic, social and environmental criteria were met in the production and trade of an agricultural product.



Green Seal is an independent, non-profit organization that uses science-based standards and the power of the marketplace to create a more sustainable world.



Mobius is the internationally recognized recycling symbol. Each one of the 3 arrows represents an aspect of a successful recycling program: collection, remanufacturing/reprocessing into a new product, and finally purchase by the consumer. This symbol has many meanings, sometimes it denotes that an item is recyclable, while other times it means the product is made from recycled content.



WaterSense is an EPA-sponsored partnership program that seeks to protect the future of our nation's water supply by promoting water efficiency and enhancing the market for water-efficient products, programs, and practices.

## GREEN PURCHASING

*Knoxville Citizen's Guide to Sustainability*



**HOW CAN YOU HELP?** It is impractical to avoid purchasing anything; but there are things consumers can do to help lessen their impact on the environment.

- 🛒 **Bring a reusable bag.** Keep one in your car and when you go into a store, you can take the bag with you.
- 🛒 If you forget your reusable bag and your purchase is small enough to carry, **ask for no bag.**
- 🛒 **Map your errands.** Plan doing your errands with as little driving as possible.
- 🛒 **Purchase recycled goods.**
- 🛒 **Shop at thrift stores;** buying an item for reuse is the best way to recycle!
- 🛒 When cleaning out your house, **donate your old items** to the Salvation Army, GoodWill, Knoxville Area Rescue Ministries, or any other local thrift store. Someone may be able to reuse your discarded items!
- 🛒 **Only buy something if you really need it.** The more demand there is, the more we use resources to produce more. Buy purchasing when you only need to, you can help reduce the demand for products.
- 🛒 **Buy items that you can envision reusing** for a different purpose when the original purpose is spent.

# SUSTAINABLE EVENTS

Knoxville Citizen's Guide to Sustainability



**SUSTAINABLE COMMUNITY** We often spend so much time thinking about our personal situations and habits that we forget about special events and special circumstances. Big parties, conferences, and other events can be huge polluters in terms of waste production, energy use, and guests' consumption. Consider the typical office party – each usually involves disposable plates, silverware, and napkins for everyone. Most attendees probably drove their own vehicle to the party, and will use multiple plates and napkins and throw them away immediately after use. By planning an event in a sustainable mindset, you can help reduce an otherwise negative impact on the local environment.

**WHAT IS A ZERO-WASTE EVENT?** A zero-waste event is one in which the goal is to produce no trash. All discarded items that result from the event are either recyclable or compostable. Anything else the guests take home with them great way to help reduce the waste left over at the event. When guests take their trash with them, it becomes more of a conscious responsibility that they need to take care of their trash and the amount of it.

**HOW TO PLAN AND IMPLEMENT A ZERO-WASTE EVENT?** Below is a list of steps to follow to help plan your zero-waste event. (Courtesy of Keep Knoxville Beautiful)

- 🚧 Establish a waste-free event committee or coordinator.
- 🚧 Collect information about solid waste recycling, composting, and other disposal options in your area.
- 🚧 Establish your goals (waste free, reduce wasted, or litter free).
- 🚧 Contact Solid Waste or recycling experts in your area.
- 🚧 Communicate materials policy to all exhibitors, vendors, and attendees.
- 🚧 Design the waste separation system for the event.
- 🚧 Obtain collection containers for the event (try not to have garbage cans available).
- 🚧 Recruit volunteers to work before, during, and after the event on waste control.
- 🚧 Educate attendees on the goals of the event.
- 🚧 Monitor waste production and disposal during the event.

## TERMS

<b>Compostable</b>	Able to be converted to decayed organic matter
<b>Convenience</b>	Ease; freedom from discomfort
<b>Disposable</b>	Designed to be used once then thrown away
<b>Zero-Waste</b>	An event that aims to succeed without any trash; the only waste is either compostable or recyclable



© Eco-Cycle 2007

**It isn't a great event  
unless it's Zero Waste!**

## SUSTAINABLE EVENTS

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**HOW CAN YOU HELP?** By bridging our daily green habits to one-time events, it can be easy to make parties more sustainable. Here are some simple examples of how to green your next event:

- 🚩 Bring your own: cup, utensils, dishes.
- 🚩 Use reusable dishes.
- 🚩 Send e-vites instead of paper invitations.
- 🚩 Advertise zero-waste, only provide recycling bins.
- 🚩 Purchase paper goods made from post-consumer recycled materials.
- 🚩 Serve organic and local foods.
- 🚩 Choose a site accessible by public transportation, or if a smaller deal, arrange carpooling for guests.
- 🚩 Use plants that are in pots and can be planted in the ground after use.
- 🚩 Announce to your guests your goals for a zero waste event.

**EARTH FEST** is an annual celebration of Earth Day in Knoxville that has had a major impact on the community by promoting environmental awareness and opportunities for individuals to reduce their environmental footprint on East Tennessee. Over the past eleven years, this event has grown from a couple of thousand attendees in Concord Cove Park to being one of the premier

environmental festivals in the Southeast at the World's Fair Park. Now, the event has expanded even more to Pellissippi State Community College. Earth Fest is a zero-waste event that aims to teach about sustainable practices as well as serve as an example of a sustainable event. It is hosted and sponsored by a number of community organizations that all support the mission of keeping the East Tennessee environment clean and healthy.

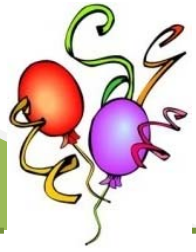


## FACTS AND FIGURES

At the 2010 Earth Fest event (Knoxville's Earth Day Celebration), about 880 lbs of materials were either recycled or composted. The event only produced 6.5 lbs of trash.

# SUSTAINABLE EVENTS

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## WHO TO CONTACT?

**Beardsley Farm** | <http://beardsleyfarm.org/> | (865) 546-8446

An urban demonstration farm that works with community members and provides tools to help them grow their own food and learn about the financial and environmental benefits of home food production.

**Keep Knoxville Beautiful (KKB)** | <http://www.keepknoxvillebeautiful.org/> | (865) 521-6957

This not-for-profit focuses on educating the public on litter prevention and waste reduction, as well as engages citizens to clean-up their neighborhoods. KKB is an affiliate of Keep America Beautiful (KAB) <http://www.kab.org/>. They offer support in planning and implementing waste-free events.

**Knoxville Recycling Coalition (KRC)** | <http://knoxvillerecycles.org/> | (865) 525-9694

A not-for-profit organization that provides educational materials about recycling to the public and offers a multi-material recycling service for businesses, churches, schools, and other civic groups.

**Slow Food Knoxville** | <http://www.slowfoodknoxville.org/>

A group that celebrates the environment and promotes slow food and local growers. Each event they host is a sustainable event.

**Zero Waste America** | <http://www.zerowasteamerica.org/>

A not-for-profit group that seeks to educate Americans on waste disposal. The website provides lots of information on waste, waste removal and disposal, and the importance of becoming waste-free.



## MOVING FORWARD: THE FUTURE OF KNOXVILLE'S SUSTAINABILITY

*Knoxville Citizen's Guide to Sustainability*



**WHAT IS NEXT?** The City of Knoxville is actively involved in improving the energy efficiency and sustainability for its employees, facilities, and citizens. The Office of Sustainability has been working to develop energy-efficient practices for the community. The original Energy and Sustainability Task Force, represented by fifteen committee members, commissioned a baseline inventory and a six-section Energy and Sustainability Work Plan for the city. The plan includes community education, city-county sustainable office practices, and recommendations for further action, and serves as a living, guiding document to the City's initiatives.

**HOW CAN YOU HELP?** Following the suggestions in this guide is a great way to start, but there is much more you can do to get engaged on a community level:

- Tell others about this guide and the information you've learned. Knowledge is power.
- Communicate with the local leaders. Let them know you are concerned about the quality of your community and the state of our environment.
- Refer back to this guide when you need to and contact the listed references for more information if you need it.
- Don't limit yourself to the information in this guide. Continue to learn more about all of these important issues!
- Get involved with the local groups listed in the guide like the Beardsley Community Farm, Ijams Nature Preserve, Keep Knoxville Beautiful, and others.



**EDUCATION** Brown Bag Green Book is a program hosted by Knox County Public Libraries that involves monthly book discussions about environmental sustainability. All programs are held on Wednesdays from 12-1pm in the East Tennessee History Center. Brown Bag Green Book offers a way for the community to educate and empower themselves to become involved in environmental issues.

This educational document is sponsored by the City of Knoxville. The idea for this guide was developed by a subcommittee as part of the Energy and Sustainability Task Force's plans to improve the sustainability and energy efficiency of the area, and was created by Ellie Elster. Ellie's time and talents were donated to the City by the Knoxville – Knox County Community Action Committee Americorp Volunteer program, 2010 - 2011.

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**ELECTRIC VEHICLE PROJECT** In 2009, the US Department of Energy contracted with ECOtality to deploy charging infrastructure in select states, including Tennessee. Knoxville elected to participate with Nashville, Memphis, and Chattanooga. The EV charging stations, which include some fast chargers and some solar powered charging stations and will connect the four cities, is being installed to support electric vehicles in our area. Data will be collected on the usage of these vehicles in order to support adoption of electric vehicles countrywide. The “big four” Tennessee cities have committed in-kind help to the project via property, parking accommodations, and electricity. The cities will also help educate about the benefits of electric cars and encourage the public to purchase these vehicles or other alternatively fueled vehicles. This project is an exciting opportunity to reduce dependence on foreign oil and to further the opportunity to diversify America's fuel source. The City of Knoxville is proud to help accommodate the study and be part of the pioneers adopting electric vehicle infrastructure.

**COMMUNITY INVOLVEMENT** Smart Trips is a program supported by Knox County that helps promote alternatives to driving alone. More than 90% of the region's residents drive alone, but carpooling, walking, bicycling, telecommuting, or taking public transit can help save money, protect air quality, and promote a sense of community. The program offers incentives like gift cards to participants and it provides an online carpool match finder for those interested in finding someone close by to carpool to work with. For more information on the program and to sign up, visit <http://www.knoxsmarttrips.org/>.



**BE RECOGNIZED** While industries and other large scale facilities can make large strides in pollution prevention when they make that a goal, the individual household has many similar opportunities to prevent pollution and make their home more environmentally friendly, more environmentally conscious, safer, and healthier. The

Tennessee Department of Environment and Conservation offers a program, called TP3 or Tennessee Pollution Prevention Partnership which helps organizations and households alike set pollution prevention goals and achieve them. There are four levels of recognition one can attain. For more information, visit <http://www.tn.gov/environment/ea/tp3/>.

These are just a sampling of programs the City supports. For more information on City initiatives, please see Knoxville's Energy & Sustainability Work Plan at [www.cityofknoxville.org/sustainability](http://www.cityofknoxville.org/sustainability)