



# Sustainability Strategic Plan for The City of University City, Missouri

September 12, 2011

Developed by the University City  
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## Executive Summary

The City of University City was incorporated by Edward Gardner Lewis in 1906. Starting with his "City Beautiful" plan and continuing today, University City is known for its "Tree City" status. The City is responsible for maintaining its many parks, green spaces, boulevard medians, river channels, public lots, islands and roadsides, which together total 289 acres. The city is predominately residential, with a small amount of commercial, retail and industrial areas.

The University City Green Practices Committee was established over two years ago under the direction of City Manager Julie Feier and Mayor Joe Adams (see attached report in Appendix). Committee members represent the three wards in University City and meet monthly. The following Sustainability Strategic (Draft) Plan is an outgrowth of the ICLEI (Local Governments for Sustainability) matrix. The Draft Plan focuses primarily on Municipal Goals and Action Items, with information also provided for Residential and Commercial segments. The Draft Plan will be added to and revised quarterly with input from City Council.

The Sustainability Strategic (Draft) Plan is divided into seven areas with the key concepts described below:

- **Ecosystems/ Habitat** – Use local expertise to evaluate and restore habitats and provide environmental education.
- **Water/ Stormwater** – Concentrate on the River Des Peres with its three branches that flow through University City. Address issues with stormwater runoff and flooding; develop strategies to decrease potable water use.
- **Air Quality/ Transportation** – Discuss strategies to improve air quality and reduce carbon dioxide (CO<sub>2</sub>) emissions from vehicles.
- **Waste/ Resource Conservation** – Implement action steps to reduce City, commercial and residential waste, as well as improve recycling and composting practices and participation.
- **Land Use/ Open Space/ Parks** – Use comprehensive planning and zoning ordinances along with design standards to enhance and improve land use and open space in University City.
- **Energy** – Reduce energy use and use energy efficient vehicles and renewable energy; create strategies to reduce the carbon footprint for the City and residential areas.
- **Green Buildings** – Incorporate a green building code for the City, use rating systems such as LEED and Energy Star, and improve sustainable operations and maintenance of existing buildings.

Each section contains a Summary as well as specific Goals and associated Action Items to be addressed by the City in accordance with Resolution 2009-

18, "Resolution of the City of University City for Community Sustainability". The Resolution (see pages 5-6) contained five "first steps" approved by City Council, which are summarized below along with status updates.

1. Greenhouse Gas Emissions Inventory
  - Underway, funded by an \$8,000 Department of Energy grant
2. Energy audits of City facilities
  - To be added to City budget; estimated fee is between \$20,000-\$25,000
3. Sustainable design guidelines and expected return on investment for projects
  - No cost; this is a policy decision
4. Street lighting analysis
  - Underway, funded by a \$140,000 Department of Energy grant
5. Revise Building and Zoning codes to align with green practices
  - In process; recommend that University City review the International Green Construction Code and other model "green" codes

Once University City has measured its baseline in terms of its Greenhouse Gas Emissions and carbon footprint, the City can begin to make changes and then measure its success.

## Introduction

There is overwhelming scientific evidence that shows that the manner in which human society is currently living is unsustainable. We are significantly changing our climate; we are exacerbating many human and environmental health issues; we are rapidly depleting non-renewable resources; we are driving species to extinction; and we are jeopardizing the planet for future generations. In response to this, there has been a global paradigm shift underway for more than a decade to respond to and correct the human course to live sustainably.

These issues are the most critical facing humans; they directly challenge survival and life on this planet. While these challenges and many of the solutions are global in nature, our success will start with and rely on collective efforts and successes at local, regional, and national levels. Therefore, the motto *Think Globally, Act Locally* cannot be overstated and is more apropos now than ever.

Thus, the University City Green Practices Committee was formed to develop a comprehensive strategic plan to recommend ways the city become sustainable at the municipal, residential and commercial levels. The Committee is led by University City residents whose professional training, expertise, and experience lie in the areas we address. The Committee will draw upon their knowledge; experts in the local and regional community; and current research on new techniques and methods to make us more sustainable in the way we live and operate.

The Committee recommends that the City Council vigorously support this effort with a clear mandate regarding municipal operations to serve as an example to citizens, business owners and other local governments. If University City is successful, others will join, thereby collectively making the real impact our region needs in this precarious time.

### Mission:

*The mission of the Green Practices Committee of University City is to encourage sustainable practices and programs that improve the health and quality of life of our community; restore and protect our natural resources; and strengthen our economy. It is widely recognized that there are local and global issues that threaten our ability to “meet the needs of the present without compromising the ability of future generations to meet their own needs”<sup>1</sup>. Therefore it is imperative that we become sustainable, as individuals, as a community, and as a City.*

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<sup>1</sup> Bruntland Commission Report, *Our Common Future*, Oxford University Press, 1987.

### Vision:

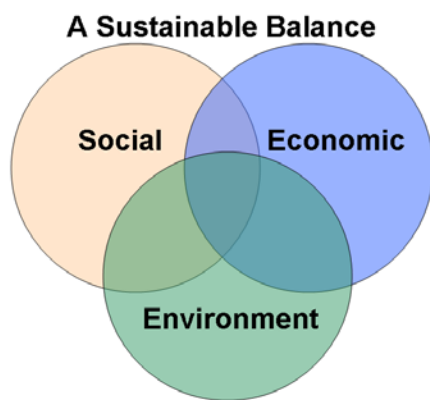
*Our vision for University City is to have a fully engaged community – city government, citizens, students, business owners, and patrons that integrate sustainability into every decision made, every action taken.*

### **Values:**

*Our values are three-fold.*

- *We believe there is a connection between economic, environmental and social well-being.*
- *We believe we must be stewards of our community; therefore, this compels us to use our knowledge to enhance the quality of life of future generations.*
- *We believe that local behavior and global development are linked: this requires that we think globally, as we act locally.*

### **The Framework:**



To align our efforts with the ICLEI (Local Governments for Sustainability) planning framework, called the STAR Community Index, the Green Practices Committee has divided the subject areas into a three-dimensional matrix. The Committee will fulfill its mission by improving our performance across the **triple bottom line of sustainability: Environment, Economy and Society.**

### **Immediate Steps**

Recognizing that the City of University City has been working for years to become a sustainable community, the Green Practices Committee asks the City Council to formally adopt the Mission, Vision, Values, and Framework set forth above to institutionalize sustainability as a city imperative that informs all its decisions, actions, activities, purchases and community outreach. As a first step, the City Council passed the following Resolution 2009-18 on September 21, 2009.

**Resolution 2009 - 18**

**Resolution of the City of University City for Community Sustainability**

**WHEREAS**, there is abundant scientific evidence that the manner in which human society is currently living is unsustainable; we are jeopardizing the lives of future generations because we are significantly changing our climate; we are exacerbating many human and environmental health problems; we are rapidly depleting our non-renewable resources; and we are driving species to extinction; and

**WHEREAS**, these challenges are global in nature, but our success in finding their solutions will start with and rely on collective, collaborative local efforts; and

**WHEREAS**, the City of University City recognized this key challenge when it became a signatory to the U.S. Conference of Mayors Climate Action Agreement and committed to significant greenhouse gas emissions reductions by 2012; and

**WHEREAS**, since the City of University City signed the Action Agreement there is evidence that global climate change is accelerating; and

**WHEREAS**, the Green Practices Committee of the City of University City was formed to develop a comprehensive strategic plan that will guide the city to become sustainable at the municipal, residential, institutional and commercial levels; and

**WHEREAS**, it is the mission of the Green Practices Committee to encourage sustainable practices and programs that improve the health and quality of life of our community; protect and restore its natural resources, and strengthen our economy; and

**WHEREAS**, it is the Green Practices Committee's vision to have a fully engaged community that integrates sustainability into every decision made, and every action taken by city government, citizens, employees, business owners, students, and patrons; and

**WHEREAS**, University City aspires to be the leader in community sustainability;

**NOW THEREFORE**, be it resolved that the City Council of University City, by this Resolution, hereby reaffirms our commitment to the community and the world that sustainability is a primary factor that will inform our decisions, actions, activities, purchases and community outreach; and

**BE IT FURTHER RESOLVED** that the City shall adopt a Community Sustainability Plan as soon as practicable; and

**BE IT FURTHER RESOLVED** that in order to develop that Community Sustainability Plan City Council acknowledges that there are necessary first steps and therefore commits to the community that within one year the City shall:

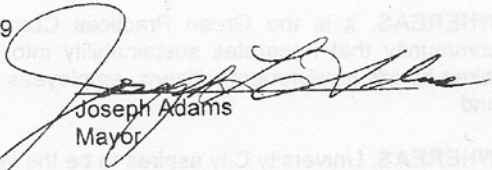
1. perform a Greenhouse Gas (GHG) Emissions Inventory (which includes the municipality, residences, institutions and businesses) with the assistance of ICLEI and set aggressive but attainable emission reduction goals for 2015, 2020 and 2025 that align with the U.S. Conference of Mayors Climate Protection Agreement; and
2. perform energy audits of all City facilities and develop an Energy Master Plan to reduce the amount of energy used in its operations;
3. define sustainable design guidelines for capital projects and the respective return on investment expectations for such projects; and
4. analyze its street lighting and develop a comprehensive approach to reduce energy use and cost; and

and within 18 months the City shall:

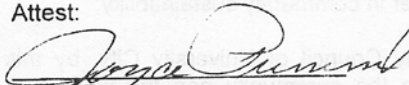
5. revise its Building and Zoning codes to align with sustainable design, construction and operating best practices; and

**BE IT FURTHER RESOLVED** that the City shall conduct community and City staff outreach and education about Green and Sustainable practices.

Adopted this 21<sup>st</sup> day of September, 2009

  
Joseph Adams  
Mayor

Attest:

  
Joyce Pumm  
City Clerk



# Sustainability Plan Matrix

## Ecosystems/ Habitat

Committee Member:

Linda Fried

The City of University City has always been proud of its “tree city” status. It maintains a large number of green spaces, including 17 parks totaling approximately 255 acres, 126 boulevard medians and a variety of river channels, lots, islands and road sides which come to at least an additional 34 acres. Maintaining and enhancing the quality of these spaces requires a “green” outlook, knowledgeable personnel, manpower and considerable expense. It also requires providing information to citizens to encourage the good use and protection of these areas.

A strategic plan to address the needs of University City’s green spaces should contain the steps listed below:

### 1. Municipal

	Goals	Actions	
1	Develop city-wide green space standards	a	Clarify the uses of each of the green spaces: i.e.: recreational (children’s playground, tennis courts, ball fields, walking/ bicycling, etc), beautification, community vegetable gardens, etc.
		b	Determine optimal conditions needed for each use.
2	Evaluate each U. City green space based on the new standards	a	Consult with local expertise – The Green Practices Commission, The Forestry Commission, The Parks Commission, The Green Center, River des Peres Watershed Coalition, MO Botanical Gardens, St. Louis Audubon Society, MO Dept. of Conservation, etc. and train U. City Parks Department personnel in the needs of each of the green spaces
		b	Use checklists to note tasks required, manpower (paid and volunteer), tools, equipment, plants, etc.
3	Provide environmental education for children and adults	a	Make environmental education available to University City government employees, school groups, Boy and Girl Scout groups, OASIS members, etc., through the Green Center, library workshops, neighborhood associations and school programs.
		b	Set up demonstration gardens for residents; include alternative for turf lawn and invasive species plants, as well as alternatives to chemical herbicides and pesticides.
4	Develop short and long term action plans to restore and	a	Raise needed funds
		b	Acquire tools

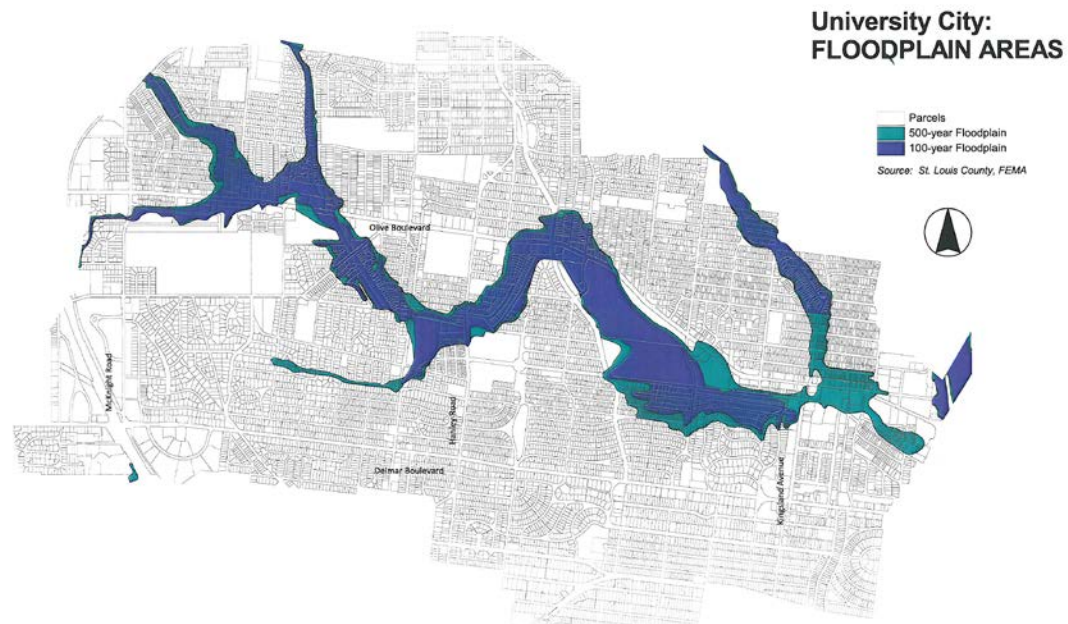
	protect each green space	c	Develop strategies for the removal of invasive species and the planting of native, non-invasive, bird and insect attracting plants
		d	Convert public land into community vegetable gardens

## Water/ Stormwater

Committee Members: Chair: Neville Rapp, PhD  
Scientific Advisor: Prof. Robert Criss, PhD, Dept of Earth and Planetary Sciences, Washington U  
Coalition for the Environment: Lorin Crandall  
Noel Wyman  
River des Peres Watershed Coalition: Eric Karch, Chair  
Dan Sherburne  
Leslie Lihou  
Susan Mintz  
Green Center, University City: Theodore M. Smith

### Water and Stormwater in University City

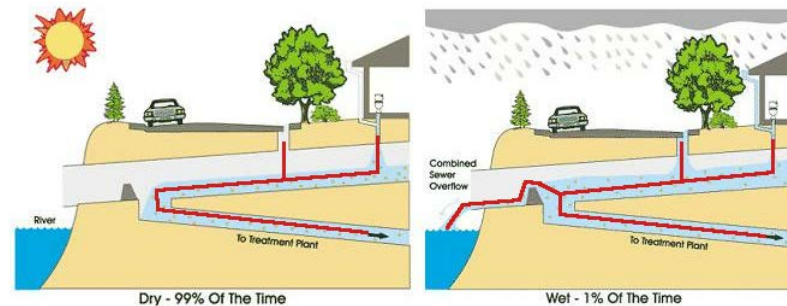
Flooding of the River des Peres, with three branches running through the city, is a major issue.



One of the most important environmental issues facing University City is its handling of water and storm water. Potable and storm water runoff from impervious surfaces can cause sewer backups into homes and businesses and even, in storm events, cause flooding along the River Des Peres. Actions and inactions by citizens of our upstream communities and by residents and businesses of University City have tremendous impact not only by increasing runoff but on water quality and energy use as well. This section of the Sustainability Plan will outline why this environmental issue is so important to our community and how the City and the Community can reduce both water usage and storm water runoff in the future to prevent sewer backups and flooding, and to replenish the groundwater system that is vital to the health of the city, the region and the earth.

The River des Peres Watershed was once forested; rainwater was absorbed into the ground, but today about 35% of the area is impermeable surfaces (roofs, driveways, etc.) and rain runs VERY quickly downhill into storm water drains, and thus into the River des Peres. This storm water is highly polluted from fertilizer, pesticide, feces from dogs and other animals, etc. And, because University City has a very old "combined sewer system" which directs both sewage and storm water to the sewage treatment plant, when there is a rain so heavy the system cannot handle the volume, the excess water, plus effluent from the sewer system, overflows directly into the River des Peres. (see figure below)

### What is a Combined Sewer Overflow?



The Metropolitan Sewer District (MSD) plans to solve this problem with huge underground storage chambers, which will be very expensive, increasing sewer rates up to 10 times the current rates, or more. An alternative solution: remove all houses from the flood plain, convert the land to a beautiful eco-urban park, and convince all in U City (employees, residents and businesses) to decrease the amount of water going "down the drain" as well as into the storm sewers, so the River des Peres

can be a lovely stream again, flowing harder after rainstorms, but not flooding any homes, and remaining still clean enough for children to play nearby. Efforts to decrease storm water runoff will include:

1. Education of all in U City to decrease water flow into sanitary sewers during rainstorms, by delaying activities such as laundry, dishwashing, showers etc. until rain stops.
2. City code changes, to allow downspouts to be disconnected from storm sewers, and to require new driveways and parking lots to be constructed of pervious materials
3. Incentives plus financial assistance (government or non-profit grants) for the installation of rain barrels, rain gardens, and "green roofs" (roofs covered by growing plants)
4. Efforts to connect with "upstream" communities so they implement similar programs to decrease the amount of storm water entering the River des Peres
5. Programs to "SAVE WATER" as using less "potable" water will decrease the amount of electricity needed to purify and deliver water, and to treat sewage, thus decreasing the amount of greenhouse gases emitted.

**1. Municipal**

	<b>Goals</b>	<b>Actions</b>	
1	Clean up the River des Peres, Improving Water Quality	a	Pass strict rules on use of municipal & private lands that abut river; redistribute mulch/leaf piles; keep stream banks clean throughout watershed; restore native habitat along river; monitor trails for damage, reduce storm water runoff (see #2)
2	Decrease storm water run off	a	Install rain barrels and rain gardens on ALL municipal properties; install "green roofs" on municipal buildings where practical; educate employees to decrease water use during rainstorms*
		b	Change city code so, where practical, downspouts do not empty into storm sewers; attach "soaker" hoses where applicable, including on city bldgs.
		c	Change city code to require permeable surfaces (driveways, trails, parking lots); replace all impermeable surfaces on city lands with permeable ones as they age
		d	Apply for grant money to finance changes; educate citizenry about financial aid available
3	Cooperate with "upstream communities" to accomplish goals 1 and 2	a	Work with MSD "co-permittees" to engage them in this effort; encourage adoption of "Model Ordinances"

4	Complete buy out of homes in 5 year flood plain; replace with park land	a	Cooperate with federal government for funding to buy all properties in the 5 year flood plain; cooperate with Trailnet, Great Rivers Greenway and St Louis County to use land for recreation and trails
5	Improve riparian corridor	a	Delineate "Flood Plain Zone" and create ordinances to outlaw storage of material and debris there
6	Decrease potable water use	a	Limit amount of lawn watering allowed. Change city code so water from downspouts, rain barrels is used to water lawns, gardens when possible
		b	Change plantings in parks to use less water; no longer finance "U City in Bloom" plantings that require watering
		c	Decrease the amount of potable water use by ___% by 20__.

## 2. Commercial/Industrial

	Goals	Actions	
1	Clean up the River des Peres, Improving Water Quality	a	Educate business owners on stream bank rules: keep waste out of river/flood plain, decrease water runoff, (see # 2), and restore native habitat
2	Decrease storm water run off	a	Set up competition for businesses with prizes/publicity for those who accomplish most to decrease storm water runoff; educate employees to use less water during rainstorms*
		b	Educate businesses on code when license issued: empty downspouts onto property, not sewers, if possible
		c	Enforce city code: permits for new parking lots, other hard surfaces, must specify "permeable surface"
		d	Encourage businesses to use grant funds for projects when available
3	Cooperate with "upstream communities" to accomplish goals 1 and 2	a	Educate business owners to encourage cooperative efforts with upstream communities/ businesses
4	Complete buy out of homes in 5 year flood plain; replace with park land	a	Ask businesses to cooperate in fund raising and planning process, then "adopt a stretch of the river" to convert to park land.
5	Improve riparian corridor	a	Educate businesses: "Flood Plain Zone" must not contain items that could wash into the river

6	Decrease potable water use	a	Encourage businesses to use landscaping that needs little water (NO lawns), use "harvested" water (rain barrels) for landscapes
		b	Educate business owners to use less water - encourage installation of systems that reduce water use
		c	Decrease the amount of potable water use by ___% by 20__.

### 3. Residential

	Goals	Actions	
1	Clean up the River des Peres, Improving Water Quality	a	Educate citizens on stream bank rules: manage yard waste, clean up trash, restore native habitat, reduce storm water runoff (see # 2)
2	Decrease storm water run off	a	Educate citizens; make "neighborhood plans" with incentive awards (ex: landscaping assistance): use less water during rainstorms*; 75% of homes to install rain barrels, 40% to install rain gardens, 5% to install green roofs
		b	For occupancy permit resident must make good faith effort to have downspouts empty on to property, not into storm sewers
		c	Enforce city code: permit for new driveway must specify "permeable surface"
		d	Encourage citizenry to use grant funds for projects when available
3	Cooperate with "upstream communities" to accomplish goals 1 and 2	a	Educate citizenry to encourage cooperative efforts with upstream communities
4	Complete buy out of homes in 5 year flood plain; replace with park land	a	Ask residents to cooperate in fund raising and planning process, then actually help with conversion to parkland (planting, whatever they can do)
5	Improve riparian corridor	a	Educate citizens: "Flood Plain Zone" must not contain items that could wash into the river
6	Decrease potable water use	a	Educate citizenry to use MO native plants rather than lawns, use "harvested" water (from rain barrels) for lawns, gardens
		b	Encourage citizens to install "grey water" systems, low flow shower heads, etc
		c	Decrease the amount of potable water use by ___% by 20__.
* Educate all (city employees, residents, businesses) to decrease flow in sanitary sewers during a rainstorm by delaying laundry, dishwashing, showers, other activities that send water into the sewers			

## Air Quality/ Transportation

Committee Members:

Petree Eastman

Donna Leach-Heimos

There is direct linkage between air quality and the triple bottom line. Reduced vehicle use decreases energy needs, improves our economy (through savings in operation of vehicles and road construction) and improves our health and therefore social well-being. And, while air quality is not confined to the boundaries of University City, in order to improve Air Quality collectively, the City and Community must act locally.

Approximately 30% of the CO<sub>2</sub> equivalent emissions emitted within the confines of University City boundaries are created through vehicle use. Use of vehicles contribute to ozone which is a gas found in the air we breathe. In forms near the ground when pollutants (nitrogen oxides and Volatile Organize Compounds "VOC") react chemically to heat and sunlight. Ozone pollution is more likely to form during warmer months, especially in St. Louis summers. Sources of VOCs come from four (4) main categories: Point Sources (large stationary sources(Power plants, chemical and major manufacturing sites); Area Sources (sources that when viewed individually do not have large enough emissions to warrant individual tracking, such as small business, gas stations, lighter fluid, painting); Mobile Sources (vehicles traveling on public roads) and Off-road or non-road mobile sources (aircraft, rail, marine vessel, construction equipment, lawn and garden equipment). For purposes of this subject area, only mobile and some non-road mobile sources (equipment use) will be addressed. Effect of electricity use in buildings will be discussed in the Energy Subject Area.

The effect of bad ozone can not only cause global warming, but is a dangerous health hazard. When inhaled, even at very low levels, ozone can cause acute respiratory problems, aggravate asthma, cause a 14 to 20% decrease in lung capacity for healthy adults, cause inflammation of lung tissue, and impair the body's immune system, making people susceptible to respiratory illnesses, including bronchitis and pneumonia. It is estimated that the health costs of air pollution is \$50 billion each year with asthma costing more than \$75 million in lost school time, work time, medicine and emergency visits in Eastern Missouri alone. Asthma prevalence has increased by more than 75% in the last 12 years and is the leading chronic illness among children. One of every 11 children under the age of 18 is living with asthma. St. Louis City and County have the highest rate of asthma hospitalizations and emergency room visits in Missouri. According to the Missouri Department of Health and Senior Services, there are 140,000 adults with asthma in the St. Louis Metro area. Some areas of St. Louis are estimated to have 15-20% of children who suffer from asthma, and up to 50% of children experience some type of asthma – like wheezing and coughing.

St. Louisans make more than 6 million vehicle trips each day. Of these trips, 5 million are single-occupancy vehicles. In the Government Sector, based on our Employee Commute Survey in 2005, *insert results here – Average Annual Commute,*



**Weekly Commute and Daily Commute, Mode of Transportation, Changes EEs would consider**

One person in a carpool instead of a car can save the environment 9.1 pounds of harmful emissions per year. The average commuter can save about \$1500 per year by sharing the ride instead of driving alone to work. A single lane of highway can accommodate 2,250 people per hour in cars, but a bus can accommodate 9000 people per hour. Two MetroLink tracks have the same capacity of 16 lanes of highway. At rush hour a bus removes 40 cars from the highway, an a full MetroLink train removes a 125 cars. In 2003, the Texas Transportation Institute annual mobile study found that St. Louis-area motorists spent a combined 40 million hours in traffic, wasted 26 million gallons of fuel and doled out \$675 million because of traffic congestion.

Operation of a gas-powered lawn mower for one hour is equal to driving a new car between 200 and 300 miles in terms of air pollution. If every household post-pones their gas-powered lawn gardening on RED Air Quality Index days, we would prevent 25 tons of toxic air pollutants from entering the atmosphere each day.

**Metrics:**

- Reduce direct (Scope 1 and 3) usage CO2 emissions use by 10% by 2015 and a total 20% from 2005 levels by 2020
- Reduce fossil fuel consumption by City Fleet and Equipment by 10% by 2015
- Reduce employee VMT by 20% by 2015
- Increase employee use of alternative modes of transportation by 20% by 2015
- Reduce overall community VMT by 10% by 2015

Cross reference to **Transportation and Mobility and Parks, Land Use and Open Space**

Scope 2 Emissions to be discussed in **Green Building and Energy**

**Potential Green House Gas Reduction**

In 2005 in the Government Sector, 7386 metric tons of CO2 were emitted into the atmosphere through City vehicle use (FLEET), equipment and Employee Commute this accounts for 27.7% of the City's CO2 emissions.

**Insert here VMTs**

**Insert here metric for equipment use**

In 2005 the Community Sector, 165,764 tonnes of CO2 equivalents were emitted into the atmosphere through vehicle use within the confines of the city limits. This accounts for 31.6% of the community's CO2 emissions.

**Insert here VMTs**

<b>1. <u>Municipal</u></b>		
	<b>Goals</b>	<b>Actions</b>
1	Improve Air Quality (AQ) and Reduce Carbon Emissions Produced by Vehicle Use	<p>a Institute a City-wide campaign to encourage alternative forms of transportation</p> <p>b Institute a rider finders program for employee commute; match employees who live in the same vicinity and encourage carpooling.</p> <p>c Identify for employees alternative transportation modes available.</p> <p>d Offer pre-tax Metro incentives or provide subsidy to encourage use of public transportation [Metro's Partial Expense Reduction for Commuters Program (PERC)].</p> <p>e Obtain commitment from employees to use alternative mode of transportation at least one day per week</p> <p>f Institute a "guaranteed ride home" program.</p> <p>g Increase number of carpool parking spaces at City facilities and enforce parking violations.</p> <p>h Enhance employee break room to encourage employees to brown bag their lunch.</p> <p>i Encourage employees to begin Ten Toes Express by Citizens for Modern Transit.</p> <p>j Work with St. Louis County to install bike lanes on all major St. Louis County arterials, including Delmar, Hanley, Midland, Big Bend, and North and South.</p> <p>k Send email blast to employees when poor air quality is expected the next day to encourage use of alternative modes of transportation.</p> <p>l Replace all city vehicles with vehicles that use alternative fuel sources (hybrid, compressed natural gas, electric).</p> <p>m Require employees to fuel City vehicles early in the morning before 10 am or in the evening after 7 pm.</p> <p>n Educate employees on the best time fuel their vehicles.</p> <p>o Where possible, compress employee work schedule to a four day week; Close City Hall on Fridays.</p> <p>p Where possible, offer flex time that allows employees to work shifts that are before or after rush hour.</p> <p>q Where possible permit telecommuting by employees.</p> <p>r Replace all gas powered vehicles with equipment that uses alternative fuel.</p> <p>s Increase number of trees planted by the City to insure that the number of trees planted exceed the number of trees lost</p> <p>t Enact ordinance to regulate tree removal and replacement on all properties</p>

		u	Plant on City property native plants known for CO2 sequestration, such as switch grass wherever possible.
		v	Reduce grass that needs to be mowed on City property with native planting that absorb CO2 and reduce stormwater run off.
		w	Avoid using gas-powered lawn mowers and other gas powered equipment on poor air quality days.
		x	Convert gas powered tools with electric, propane or solar powered tools where practicable.
2	Reduce Air Quality pollutants in buildings	a	Measure air quality in all city buildings and set target for improved air quality
		b	Form Environmental Procurement Program to include all department to examine and create inventory of all tangible products/materials used by the City to conduct its business
		c	Perform cost benefit analysis on all products/materials used for operations of City government and absent the lack of a green alternative ban products/materials that negatively impact air quality
		d	Examine and retrofit all filtration systems to insure the highest quality air

## 2. Commercial/Industrial

	Goals	Actions	
1	Improve Air Quality (AQ) and Reduce Carbon Emissions Produced by Vehicle Use	a	Encourage businesses to implement a Clean Air Campaign and encourage use of alternative forms of transportation
		b	Install in City Website an air quality index email blast function to alert residents of expected poor air quality days
		c	Educate and encourage business owners to eliminate use of gas powered lawn mowers and leaf blowers
		d	Encourage use of alternative forms of transportation
		e	Work with School District to reduce idling by school buses
		f	Encourage School District to institute a "Walk to School Campaign"
		g	Install bike racks in commercial centers of the city including the Loop; along Olive; Kingsland/Vernon; North and South/Delmar
		h	Ban drive-thru feature in all new commercial establishments
		i	Require all parking lots to have trees planted in the medians as part of the zoning code
		j	Promote anti-idling at all commercial establishments that have drive thru feature
		k	Encourage ownership of plug-in electric vehicles, as they become available and in use, by providing charging stations in parking lots

2	Reduce Air Quality pollutants in buildings	a	Educate businesses about materials and products that degrade air quality
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### 3. Residential

	Goals	Actions	
1	Improve Air Quality (AQ) and Reduce Carbon Emissions Produced by Vehicle Use	a	Institute a community-wide campaign to encourage alternative forms of transportation
		b	Install in City Website/ air quality index email blast function to alert residents of expected poor air quality days
		c	Extend Washington University/Metro shuttle service into 20% more neighborhoods in University City
		d	Create App for PDAs for on-time/real time Metro-link and Bus stops
		e	Educate residents on ways to reduce direct CO2 emissions
		f	Educate and encourage residents to eliminate use of gas powered lawn mowers and leaf blowers
		g	Work with local hardware and equipment dealers to offer rebates or discounts on mowers and leaf blowers, including trade-ins
		h	Encourage use of alternative forms of transportation
		i	Enact anti-idling ordinance
		j	Educate the public on best times to pump gasoline
		k	Allow residents (and contractors) to obtain over the counter permits electronically
		l	Educate citizens on best times to fuel personal vehicles
		m	Encourage ownership of plug-in electric vehicles, as they become available and in use, by providing charging stations in parking lots
2	Reduce Air Quality pollutants in buildings	a	Educate residents about materials and products that degrade air quality
		b	Require EPA -approved wood stoves or fireplaces
		c	Promote tree plantings around homes to reduce energy usage in the summer

## Waste/ Resource Conservation

Committee Members:

Hilary Davidson, Lynnette Hicks

From a municipal perspective, University City is already doing much to reduce waste and recycle. The city was one of the first statewide to implement a single stream recycling program for residents, which has encouraged residents to recycle through the ease and convenience of single stream recycling.

At a municipal level the city is also striving to reduce waste; in 2009 the city implemented a new copying and printing policy, in which departments were encouraged to print double-sided and to reduce waste. While municipal government has made great strides, more needs to be done. This plan encourages the use of waste audits to better track the amount of garbage generated by the city government and to determine the effectiveness of new green policies.

Furthermore, while recycling containers are free and available to the public, as of May 2010 about 70% of residents have a recycling cart and are using them by participating in the curbside collection program. For the 12 month period of March 2009 to March 2010, 15,939 tons of waste had been generated by the 11,550 participating residential, municipal and commercial solid waste accounts. About 5,252 tons of the waste was recycled (33% of total waste). We believe that, with greater public outreach, the percentage of waste being recycled could be substantially increased. Greater emphasis on composting yard waste would also substantially reduce the waste stream.

Finally, local businesses that have trash and recycling services through a private hauler have not been included in the City's waste reduction incentive. We need to audit the amount of waste being generated by participating local businesses, and then work with local businesses to ramp up recycling efforts.

### 1. Municipal

	Goals	Actions	
1	Reduce City (municipal) waste and increase recycling volume by 30% by 2015.	a	Determine and compare the volume of materials recycled for each 5 year period of 2005-2009 and 2010-2014 for municipal buildings. As of March 2010, data is not available for the volume of trash collected at municipal buildings since it is collected and included with the city wide total. Track the volume of trash collected at municipal buildings, if data is available.
		i	Confirm the volume of materials recycled in municipal buildings from 2005-2009. City staff reported that the volume of materials recycled by employees and visitors increased by approximately 14 tons during the 5 year period (11.20 tons in

			2005 to 25.70 tons in 2009).
		ii	Determine the volume of materials recycled in municipal buildings from 2010-2014.
		iii	Compare the volume of materials for each 5 year period.
		iv	From the above, determine if the City is on track to meet the goal of increasing the municipal recycling volume by 30% for the five year period and beginning 2015. Track trash volume collected at municipal buildings.
	b		Determine the policies that are in place in the municipal departments and their effectiveness
		i	Copying and Printing Policy – (Requested information from each department 8/23/2010 – received 5 out of 9 requests)
		1	Policy put in place by Administrative Regulation #27 Revised November 4, 2009
		2	Departments that responded all felt that it had a positive impact
		3	Use of paper appears to have been reduced; however, data is needed from the Finance Department on the amount of paper purchased before and after the policy was in place. The Finance Department should provide data related to the amount and costs associated with purchasing paper.
		ii	Single Stream Recycling (Requested information from each department 8/23/2010 – received 5 out of 9 requests)
		1	Recycling of paper and cardboard since 2004
		2	Single stream (paper, plastic, glass, aluminum cans, etc.) in work areas in June 2006
		3	Departments that responded felt it was a good policy and working well. Some suggested containers at desks.
		4	The increase in city recycling from 13.05 tons in 2007 to 17.88 in 2010 seems to indicate that this is working. It would be good to get data from 2005.
		iii	Environmentally Preferable Purchasing (EPP) (Requested information from each department 8/23/2010 – received 5 out of 9 requests)
		1	Initially put in place with brief notice (AR #33) in January 1994 promoting the use of recycled products
		2	The Fire Department responded with details about purchasing of various categories – office supplies since 1994, cleaning supplies, furniture, and

				equipment and machinery in June 2006. Was there a citywide policy in 2006 or just the Fire Department?
			3	There have been no waste audits done in any of the departments. It would probably be useful to have such audits performed.
2	Institute recycling in all City parks	a		Work with the Parks Department to implement a recycling program in City parks. Recycling containers are currently provided for special events in City parks.
3	Tire Recycling	a		Continue to track tire recycling volumes for city municipal vehicles.

## **2. Commercial/Industrial**

	<b>Goals</b>	<b>Actions</b>		
1	Reduce the total amount of commercial/industrial waste	a		Determine what the current amount of commercial/industrial waste is produced in University City in 2005 and 2010 if possible
			i	Public Works
			ii	Loop Business District
			iii	WU (multifamily)
			iv	School District
			v	Neighborhood Associations
			vi	Community Professionals
		b		Develop waste stream inventory and current waste disposal costs
2	Increase the percentage of recycled waste	a		Determine the amounts and types of waste currently recycled
		b		Work with each sector to voluntarily increase recycling
			i	Install recycling containers in right-of-way in business areas (e.g. The Loop)
			ii	Require recycling containers at all public events and fairs
			iii	Encourage businesses to recycle and offer PR to those who do (e.g. "We're Green, Shop Here")
		c		Work with Loop Business District to reduce litter and try to recycle litter
			i	Try voluntary requests for litter removal
			ii	Possibly pass ordinance mandating litter removal
3	Reduce waste from demolition and construction	a		Determine the amount of waste and type of waste
		b		Add construction-demolition recycling requirement to the municipal code
		c		Provide literature to permit holders about places to recycle construction materials, housing parts, and debris

### 3. Residential

	Goals	Actions	
1	Reduce overall residential waste. For the 12 month period of March 2009 to March 2010, 15,939 tons of waste had been generated by the 11,550 participating residential, municipal and commercial solid waste accounts. About 5,252 tons of the waste was recycled (33% of total waste). This total includes commercial and municipal accounts.	a	Determine and compare the volume of materials recycled for each 5 year period of 2005-2009 and 2010-2014 for participating residential accounts (not including commercial and municipal accounts)
		b	Encourage residents to reduce waste through "reuse" and environmentally sound purchasing through website and emails
		c	Increase the number of single waste bins to replace the large "anonymous" bins which seem to encourage the disposal of recyclable and compostable materials. A single bin per family with extra fee for an additional one will reduce the waste put in.
2	Increase percentage of residential waste recycled to 50% by 2015 and 80% by 2025.	a	Determine the actual total amount of waste for 2005 and 2010
		b	Determine the actual amount sent to landfills in 2005 and 2010
		c	Determine the actual amount of recycled waste in 2005 and 2010
		d	Determine the amount of yard waste collected and composted in 2005 and 2010
		e	Encourage recycling by allowing additional recycling bins at no extra charge
		f	Target education campaign where recycling is the lowest
3	Increase composting	a	Define "composting" and "organic materials" that can be composted
		b	Provide area where employees can compost
		c	Provide area on U City land where citizens can compost
		d	Host workshops on composting
		e	Research city collection of compostable materials



## Land Use/ Open Space/ Parks

Committee Members:

Jerry Breakstone

Since University City is a residential community and 93% of our land use is residential, our houses, our streets and our open spaces are the focus. The proposed 'Green' Comprehensive Plan and Zoning Ordinance will be the framework for transforming the University City physical environment into a healthier, sustainable environment. Strategies for achieving this include reducing traffic, increasing the number of trees and amount park lands, developing the River Des Peres floodplain into a multi-use linear park, and upgrading building and maintenance standards. These strategies will save energy, reduce carbon emissions, and improve property values.

### 1. Municipal

	Goals	Actions	
1	Prepare a Green Comprehensive Plan and Zoning ordinance	a	Define and prepare Performance Standards for new development and additions.
		b	Define and prepare Redevelopment Standards for 'box' type development when closed.
		c	Define and prepare Development Standards for 'box' type development.
		d	Define and prepare Maintenance Standards for existing buildings using HERS.
		e	Define and prepare Maintenance Standards for streets, parks, open spaces, and public facilities.
		f	Define and prepare a Green Occupancy Permit based on above standards.
2	Prepare Design Standards for streetscapes and parking areas	a	Define streetscapes types and prepare design standards based on existing standards, 'green' practices and models.
		b	Define parking area types and prepare design standards based on existing standards, 'green' practices and models.
3	Prepare a 'Green' Master Plan	a	Define and document all existing development.
		b	Define and document all proposed development, current and on-going.
4	Establish Planning and Zoning Dept to enforce the Comprehensive Plan and Zoning Ordinance	a	Pass an ordinance requiring all development requests be submitted to P and Z for review and approval.
		b	Define review and approval process based on 'green' practices.

## 2. Parks/Open Space

	Goals	Actions	
1	Establish Parks Dept as the authority for all public and private landscaping	a	Pass an ordinance requiring all landscape development plans to be submitted to the Parks Dept. for review and approval.
		b	Define review and approval process based on 'green' practices.
2	Prepare a Flood Plain Landscape Plan for the River Des Peres	a	Define the flood plain as a linear park including park activities, no build zones, landscaping, and water retention areas.
		b	Coordinate with MSD
3	Prepare an annual Tree Plan	a	Prepare an existing inventory defining age, health, and condition.
		b	Prepare a replacement plan for dead and removed trees.
		c	Prepare a new trees plan to increase the total inventory 3-5% annually.
4	Retain U City in Bloom to be responsible for all planting and landscape maintenance	a	Contract with U.C. In Bloom
		b	Define planting and maintenance responsibilities.
5	Prepare a 'grey' water plan for all public watering	a	Identify existing and potential water retention areas.
6	Add park land	a	Identify existing parks for expansion.
		b	Develop plans for new parks utilizing flood plains, vacant and underutilized land

# Energy

Committee Members;

Tim Michels

What is not understood in this country/society is that we waste a lot of energy and the money that we pay for that energy. This waste is not because we don't have options. It is a function of inertia and lack of attention to the causes of waste. As children, most of us were admonished (or worse) by our parents to turn out the lights when we leave a room. It is that simple: be conscious that we should not waste what we do not need.

Energy Efficiency Measures (EEMs) are not about sacrificing to save the planet from global warming. It is good that EEMs will help in this matter, but that alone will not solve the problem. What EEMs are about is common sense and saving money.

Most institutions/corporations/homes etc., can **invest** in reducing their energy usage by 20-25% with a payback of less than 4-5 years. For home owners, this represents a 20-25% after tax return on investment that is **guaranteed** every year. The problem is that most of us do not know that we have options and we can take control of our energy usage without changing our live style or comfort requirements.

This "Energy" section works to fashion opportunities, based on experience and existing technology, for all segments of the University City community that will help make them more energy efficient with significant financial rewards. Sacrifice will be required, but what we have to learn to sacrifice is 1) our habits of continuing to waste energy and money, a sense of powerlessness that we can do something about it and inexorably rising utility bills.

## 1. Municipal

	Goals	Actions	
1	Reduce City Building Energy Consumption 25% by 2015	a	Establish City investment criteria for energy efficiency [Rules that trigger investment]
		b	Establish City usage for all meters on all buildings for future measurement and verification
		c	Determine Energy Star Ratings for all facilities
		d	Establish street light energy usage
		e	Establish City Carbon Footprint over the next 18 months
		i	Buildings (utility meters) data
		ii	Vehicles
		iii	Traffic Signals and Street Lighting
		iv	Employee Commute
		v	Secondary (water/sewage demand)
f	Energy Audit and Master Plan for energy efficiency measures for all buildings		

		g	Develop central plant concept for City Hall complex
		h	Raise capital from private/public sources for these energy efficiency investments
		i	Missouri Revolving Energy Loan Fund
		ii	Property Assessed Clean Energy Bonds (PACE)
		iii	Ameren Biz Energy Program/Laclede Gas Program
		iv	Private Banks w/ performance guarantees
		v	Private U. City Citizen group
		i	Purchase street lights from Ameren, Reduce number of street lights. Install LED street light technology
2	Reduce City Fleet Non-renewable Energy Consumption 15% by 2015	a	Document vehicle miles traveled and fuel usage by vehicle
		b	Review procedures/policy for vehicle operation with view to reduced mileage
		c	Review present equipment for possible technology improvement upgrades
		d	Implement strategies to reduce usage
		i	Reduce actual miles driven per vehicle by 5%
		ii	Secure new technology that reduces overall consumption by 5%
		iii	Purchase electric vehicles and install charging stations at police and public works
		iv	Develop renewable fuel options to offset non-renewable fuel consumption 5%
		e	Schedule purchase of new vehicles that are more fuel efficient
3	Install 3 MWe of Wind Power to Eliminate City Carbon Footprint by 2012 [expiration of EPAct benefits]	a	Select Wind Farm Developer
		b	Negotiate "Condo" Agreement
		c	Secure Funding from private sources (Minnesota Flip)
4	Establish City Electric Power Utility by 2020	a	Study options and opportunities for renewable fuel power generation from local waste streams
		b	Join association of municipal utility companies (especially in Missouri)
		c	Commission feasibility study
		d	Work with Ameren for distribution asset transfer and distribution maintenance
		e	Work with National Co-Op bank for financing acquisitions
		f	Secure contracts for conventional power supply to Muni
		g	Site, Permit and Design conventional energy power plant
		h	Build, Commission and Operate conventional energy power plant

		i	Site, Permit and Design renewable energy power plant
		j	Build, Commission and Operate renewable energy power plant
5	Generate Income from Carbon Reduction by 2015	a	Document carbon savings and
		b	Market carbon savings on the exchanges

**2. Commercial/Industrial**

	Goals	Actions	
1	<p>Establish Core of Community Energy System (CES) for the Loop area by 2020. Extend model to Olive Business District by 2030.</p> <p>A CES uses a much more efficient central plant approach to provide energy for multiple buildings. This approach also stores electrical energy to manage peak electrical loads at lower costs. It has the ability to take existing waste streams (sewage, garbage, etc.) and process them locally into renewable energy for the CES.</p>	a	Establish working group with City Leadership to explore the development of a Community Energy System (CES)
		i	Public Works
		ii	Loop Business District
		iii	WU (multifamily)
		iv	School District
		v	Neighborhood Associations
		vi	Community Professionals
		b	Establish energy usage for all meters on all buildings in the loop CES area to establish energy baseline
		c	Develop composite utility GIS for the area
		d	Develop waste stream inventory and current waste disposal costs (possible cash flow stream for CES)
		e	Analyze waste streams for renewable energy production
		f	Develop Utility Master Plan for CES
		g	Develop central plant concept for CES area
		h	Integrate plan with City Municipal power generation (1.4 above)
		i	Raise capital from private/public sources for these energy efficiency investments
		i	Missouri Revolving Energy Loan Fund
		ii	Federal and State Grants in collaboration with WU
		iii	Property Assessed Clean Energy Bonds (PACE)
		iv	Ameren Biz Energy Program/Laclede Gas Program
		v	Private Banks w/ performance guarantees
		vi	Private U. City Citizen group
2	Reduce Loop Traffic 25% by	a	Defer to Transportation committee

	2015		
3	Establish CES area Carbon Footprint by 2013	a	Buildings (utility meters)
		b	Vehicles
		c	Traffic Signals and Street Lighting
		d	Employee Commute
		e	Goods trucked in, waste hauled away
		f	Secondary (water/sewage demand)
4	Eliminate the City Carbon footprint by 2020	a	Participate in on-going City led Wind Power Condo efforts
		b	Generate renewable energy from waste streams
5	Market		

### 3. Residential

	Goals	Actions	
1	Reduce Residential Energy Consumption 20% by 2015	a	Cooperate more fully with Community Action Agency to assist lower income households
		b	Develop community PR campaign to put U City on the local citizens map environmentally
		c	Challenge population to participate, provide education and technical support to homeowners
		d	Remodel (5) homes as examples of cost effective measures that provide 20% reduction in $\leq$ 5 year payback
		e	Remodel (5) homes as examples of cost effective measures that provide 40% reduction in $\leq$ 10 year payback
		f	Keep detailed records of performance
		g	Develop certified list of service providers at pre negotiated prices for services.
		h	Develop documentary of overall process
		i	Raise capital from private/public sources for these residential energy efficiency investments
		i	Missouri Revolving Energy Loan Fund
		ii	Grants from federal and state sources, private foundations
		iii	Property Assessed Clean Energy Bonds (PACE)
		iv	Ameren Biz Energy Program/Laclede Gas Program

		v	Private Banks w/ performance guarantees
		vi	Private U. City Citizen group
		j	Establish City operated loan pool for weatherization/HVAC upgrade programs
		k	Provide technical assistance officer for residents to pursue Ameren/Laclede programs and energy tax credits.
2	Reduce Residential Transportation Energy Consumption 15% by 2015	a	Document vehicle miles traveled and fuel usage for City residents through survey tools
		b	Provide Electric Vehicle Charging stations on City parking lots and the garage
		c	Provide community shuttle from loop to 3 metro stations and up and down Delmar and Olive
		d	Offer tax relief for electric vehicle ownership
		e	Offer free parking at meters for hybrids and electric vehicles
3	Establish Residential Carbon Footprint by 2013	a	Residences, by class, using aggregate Ameren and Laclede data
		b	Vehicles
		c	Neighborhood Street Lighting
		d	Commutes
		e	Secondary (water/sewage demand)
4	Eliminate the City Carbon footprint by 2020	a	Participate in on-going City led Wind Power Condo efforts to offset carbon emissions
		b	Generate renewable energy from waste streams





## Green Buildings

Committee Members

Lois Sechrist, Chris Gordon

The process of designing, developing, and inhabiting the built environment has a profound influence on a community's economy, environment and quality of life. In the United States, buildings account for approximately 40% of the total energy consumption and carbon dioxide emissions; 13% of water use; and 160 million tons per year of construction and demolition debris.

Sustainable design for the built environment challenges local officials, planners, developers and architects to examine the connections between their buildings, the environment, and their communities. The goal is to integrate local ecology into design and construction, and improve operations and maintenance practices. <sup>1</sup>

Refer to the US Green Building Council website for detailed information on green building practices, "Why Build Green" and green building rating systems. <sup>2</sup>

Local governments control and shape the built environment with a regulatory system that includes codes and ordinances. Communities trying to encourage sustainable design may find that their existing regulatory system presents barriers to developers wanting to use sustainable design and green building technologies and techniques.

The International Code Council (ICC), American Institute of Architects (AIA), American Society for Testing and Materials International (ASTM), International, American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), US Green Building Council (USGBC), and the Illuminating Engineering Society of North America (IES) have announced the launch of the International Green Construction Code (IGCC), which will provide the building industry with language that both broadens and strengthens building codes in a way that will accelerate the construction of high performance green buildings.

Cross Reference: ***Air Quality/ Transportation; Energy; Water/ Stormwater*** sections of the Strategic Plan

### 1. Municipal

	Goals	Actions
1	Provide incentives and motivators to promote sustainable building	a Consider requiring a green rating system such as LEED for new construction and major renovation projects in buildings owned and operated by University City

	practices in University City		
2	Evaluate local codes to remove barriers to sustainable building practices	a	Use the EPA Sustainable Design and Green Building Toolkit for Local Governments "Assessment Tool" to identify local codes and ordinances that are a barrier to green design practices
3	Adopt a green building code in University City	a	Review and adopt the ICC International Green Construction Code (IGCC) for new construction as well as alterations and additions to existing buildings owned and operated by University City
		b	Research other cities and green organizations for model green building codes
		c	Apply for EECBG funding to revise codes
4	Qualify all City buildings as Energy Star certified	a	Register all buildings with Energy Star Portfolio Manager
5	Encourage sustainable design in the public and private schools	a	As school buildings are renovated and new schools built, encourage projects to obtain LEED certification
		b	Enact ordinance requiring minimum level of LEED certification for new school buildings and major renovations
		c	Form liaison with University City School District and US Green Building Council's Green Schools Committee
6	All employees of the City Planning and Zoning Department to be LEED Accredited Professional or Green Associate	a	Provide reimbursement for exam preparation course, exam fee, continuing education fees and credential maintenance fees as part of continuing education and professional certification budget

## **2. Commercial/Industrial**

	<b>Goals</b>	<b>Actions</b>	
1	Provide incentives and motivators to promote sustainable building practices in University City	a	Investigate incentives that could be offered to developers and builders to promote green practices
		b	Consider requiring a green rating system such as LEED for new construction and major renovation projects in commercial and institutional buildings in University City
2	Evaluate local codes to remove barriers to	a	Use the EPA Sustainable Design and Green Building Toolkit for Local Governments "Assessment Tool" to identify local codes and ordinances that are a barrier to green

	sustainable building practices		design practices
3	Adopt a green building code in University City	a	Review and adopt the ICC International Green Construction Code (IGCC) for new construction as well as alterations and additions to existing buildings in University City

### 3. Residential

	Goals	Actions	
1	Provide incentives and motivators to promote sustainable building practices in University City	a	Investigate incentives that could be offered to homeowners to promote green practices
		b	Consider requiring a green rating system such as LEED for Homes or NAHB for new home construction in University City
		c	Make available City or County owned lots at no cost and offer tax incentives (for example, property tax abatement for 8-10 years) for high density green homes (multi-family or small lot square footage homes)
		d	Work with area lenders to produce materials on green mortgages
2	Evaluate local codes to remove barriers to sustainable building practices	a	Use the EPA Sustainable Design and Green Building Toolkit for Local Governments "Assessment Tool" to identify local codes and ordinances that are a barrier to green design practices
3	Adopt a green building code in University City	a	Review and adopt the environmental performance for residential buildings regulated by the ICC 700 National Green Building Standard

## Glossary

**AIA:** American Institute of Architects

**ASHRAE:** American Society of Heating, Refrigerating and Air-Conditioning Engineers

**ASTM:** American Society for Testing and Materials International

**Carbon Emissions:** Carbon dioxide (CO<sub>2</sub>) that enters the atmosphere as a result of human activity, especially the burning of carbon-based fuels.

**Carbon Footprint:** A way of expressing the amount of carbon dioxide (CO<sub>2</sub>) emitted as a result of a person's day-to-day life. For a business or a government, it is the CO<sub>2</sub> emitted as a result of its operations. Carbon footprints are usually expressed in tonnes of CO<sub>2</sub> emitted per year.

**Combined Sewer System:** A system in which both sewage/waste water and storm water are conveyed together in the same pipe to a treatment plant system. During a heavy rain (> ½ inch) the volume may be too much for the system, and the combined flow is discharged directly to local streams. In University City, it overflows into the River des Peres.

**Compost:** Organic materials derived from plant and animal matter that have been decomposed largely through aerobic decomposition. The process of **composting** is simple and practiced by individuals in their homes, farmers on their land, and industrially by cities and factories. Compost is often rich in nutrients, and is used in gardens, landscaping, horticulture and agriculture. The compost itself is beneficial for the land in many ways, including as a soil conditioner, a fertilizer, addition of vital nutrients, and as a natural pesticide for soil. In ecosystems, compost is useful for erosion control, land and stream reclamation, wetland construction, and as landfill cover.

**Construction and demolition debris recycling:** Recycling materials discarded from building or demolition projects. Construction and demolition debris are generally considered to be not water soluble and non-hazardous in nature, including steel, glass, brick, concrete, asphalt material, pipe, gypsum wallboard, and lumber. Construction and demolition debris also includes rocks, soils, tree remains, trees, and other vegetative matter which normally results from land clearing or land development operations for a construction project; as well as clean cardboard, paper, plastic, wood, and metal scraps from a construction project. These materials can be diverted from landfills and recycled.

**Ecosystem:** Stable, though not necessarily permanent, community of plants that have developed interrelationships with each other and with native wildlife to form a distinct, self-sustaining system. A few examples of ecosystems are tallgrass prairie, boreal forest, estuary, and oak savannah.

## Glossary (continued)

**Eco-urban Park:** An environmentally sustainable city park, with native plant species, bird habitat, etc. that does not contribute to the degradation of the environment, but instead fosters increased biodiversity, promoting an environment healthy for native wildlife and for people.

**Energy Audit:** A comprehensive assessment of a company's or building's energy use throughout its operations. An energy audit will identify the most cost-effective opportunities for energy savings.

**Energy Star:** A joint program of the US Environmental Protection Agency (EPA) and the US Department of Energy (DOE). Provides a rating system for energy efficient appliances; also a program for energy efficiency in construction projects.

**EPA:** US Environmental Protection Agency

**Flood Plain:** Flat or nearly flat land adjacent to a river that experiences occasional or periodic flooding

**Fossil Fuels:** Natural resources, such as coal, oil and natural gas, containing hydrocarbons. These fuels are formed in the Earth over millions of years and produce carbon dioxide when burnt. The popularity of these fuels is due largely to their low cost. Fossil fuels are considered non-renewable.

**Green Comprehensive Plan and Zoning Ordinance:** Land use, zoning, and development plans and standards for improving the environment and reducing energy usage.

**Greenhouse Gas Inventory:** A list of the sources of an organization's sources of GHG emissions, and their quantities. The process requires defining organizational boundaries, and identifying and measuring all sources of emissions.

**Green Master Plan:** A complete color-coded map showing all existing and proposed development, buildings, streets, open space, and vegetation organized for improving the environment and reducing energy usage.

**Green Roof:** The roof of a building that is partially or completely covered with vegetation and a growing medium, planted over a waterproof membrane. Green roofs absorb rainwater, preventing it from flowing into the storm sewers and/or local rivers.

**Greenway:** A long, narrow piece of land, often used for recreation/pedestrian/bicycle traffic. "Green" emphasizes vegetation (over asphalt), in the form of native or community gardens as well as park-style landscaping with trees and shrubs.

**Grey Water System:** A system that utilizes sanitary waste water from laundry, dishwashing, and bathing. Grey water can be recycled on-site to water lawns and landscaping. It does not include water from toilets, which is designated sewage.

## Glossary (continued)

**Habitat:** An ecological or environmental area that is inhabited by a particular species of animal, plant or other type of organism.

**HERS:** Housing Energy Rating System

**ICC:** International Code Council

**IES:** Illuminating Engineering Society of North America

**IGCC:** International Green Construction Code

**Impervious:** Does not allow water to pass through

**Invasive Plants or Species:** Non-native plants which tend to spread aggressively.

**LEED:** Leadership in Energy and Environmental Design, a third-party rating system for green buildings, both new construction and existing buildings operations and maintenance.

**LEED AP:** LEED Accredited Professional; a practitioner in architecture, engineering, construction or related fields that has met USGBC criteria and passed an AP accreditation exam. **LEED Green Associate:** An individual interested in green practices that has met USGBC criteria and passed a Green Associate accreditation exam.

**Model Ordinances:** Sample ordinances (laws) to assist city government officials as they make decisions concerning growth and environmental protection

**MSD Co-permittees:** The MO Dept of Natural Resources has issued a Phase II Storm water Permit to the Metropolitan Sewer District (MSD), St Louis County and 59 county municipalities. While MSD is the coordinating authority for the separate municipal storm water/sewer systems, St Louis County and the municipalities are "copermittees"

**Native Habitat:** An area or ecosystem inhabited by species of animals and plants endemic to a particular region, or which have become naturalized.

**Native Plants:** Plants best adapted to the local climate and once established, seldom need watering, mulching, protection from frost or continuous mowing.

**Pervious:** Allowing water to pass through

**Potable Water:** Water safe for humans to drink

**Rain Barrel:** A large container designed to collect rain water from rooftops and store it for later use on lawns and gardens

## Glossary (continued)

**Rain Garden:** A planted depression that collects rainwater runoff from impervious urban areas like roofs, driveways, parking lots, and compacted lawn areas, allowing it to soak into the ground (rather than entering storm drains), decreasing erosion, water pollution, and flooding

**Renewable Energy:** Energy production based on sources of energy that do not run out, for example wind, water and solar power.

**Riparian:** Located on the bank of a river

**Sanitary Sewer:** An underground system for transporting sewage from houses or industry to sewage treatment plants

**Single-Stream Recycling:** Recycling that allows consumers to put all recyclable products into one disposal bin. Waste such as plastic, paper, glass, metal and is later sorted by machines at the main recycling center and recycled for further use as another product.

**Soaker Hose:** Hose with tiny holes allowing slow release of water so soil around plant roots gradually absorbs the water

**Streetscape:** Area centered on a street and extending from both sides of a street to the adjacent property lines including curbs, gutters, tree lawns, and sidewalks.

**Sustainable:** Living and working in ways that do not jeopardize our current and future social, environmental and economic resources. Ensuring that our children and grandchildren inherit a tomorrow that is at least as good as today, preferably better.

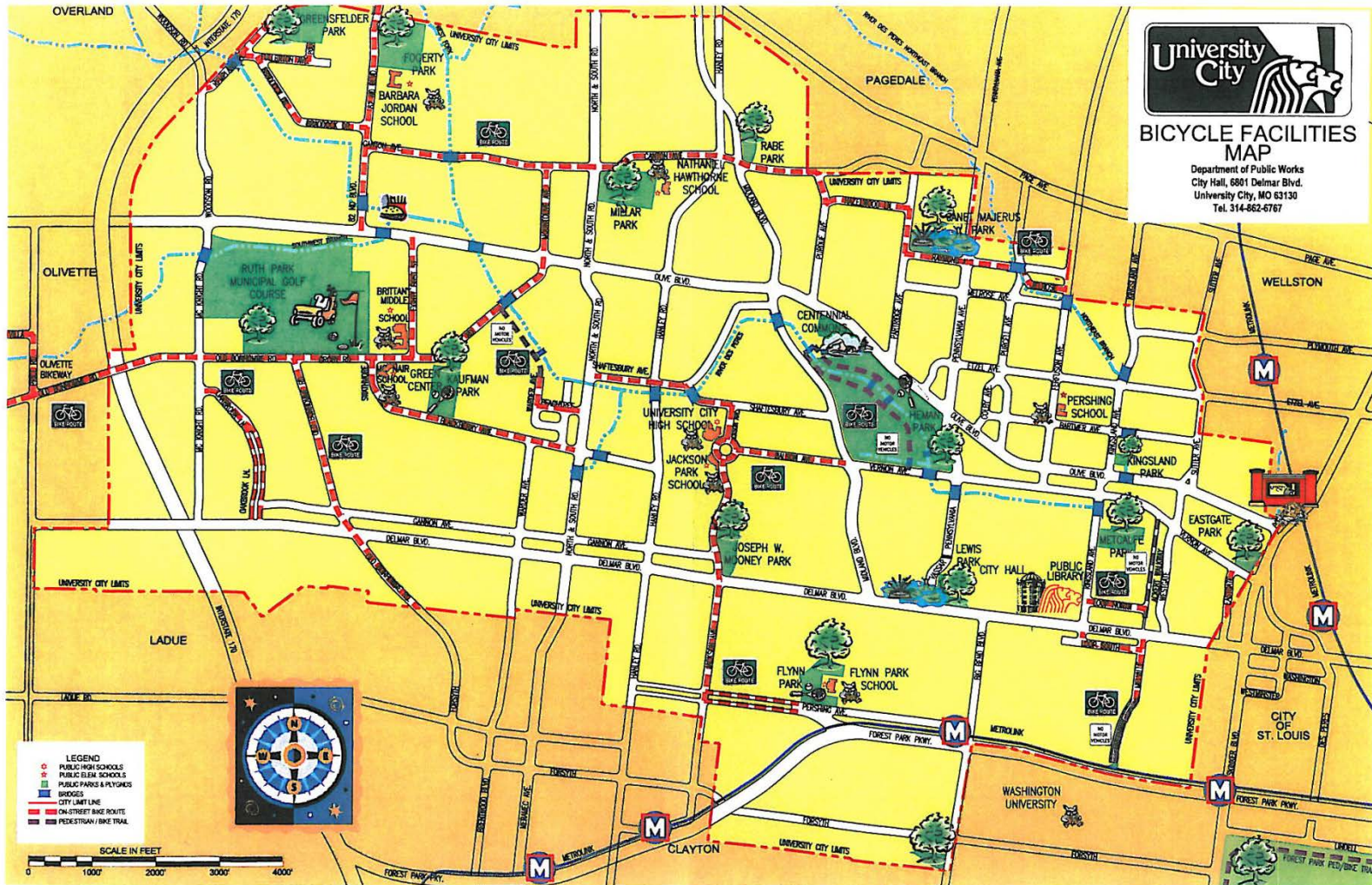
**Triple Bottom Line:** People, Planet, Profit. An accounting system that considers more than the traditional financial "bottom line". In addition to financial outcomes, a company (or government's) performance should be measured against its social and environmental responsibilities.

**USGBC:** US Green Building Council, the not-for-profit organization that administers the LEED Green Rating system as well as the LEED AP and Green Associate accreditation programs.

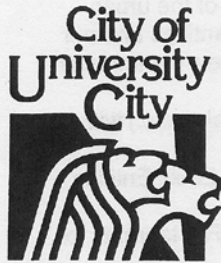
**Waste Audit:** The process of identifying types and quantities of items in the waste stream. A waste audit is a major step in planning a waste management system. It helps determine if changes need to be made in purchasing supplies and it helps encourage waste reduction and recycling in daily activities.

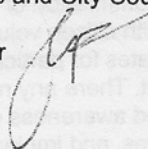
**Watershed:** An area of land that collects and drains water into a common basin; the "River Des Peres Watershed" encompasses all the land from which water drains into the River des Peres.

Appendix  
Bicycle Facilities Map







To: Honorable Mayor Adams and City Council  
From: Julie Feier, City Manager   
Date: March 7, 2008  
Subject: Green Practices Committee

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I previously shared with a list of environmental initiatives the City has undertaken since the adoption of the 2005 Climate Protection Agreement. Identified below:

1. Awarded LEED Certification for the City Hall Rehabilitation
2. Awarded LEED Certification for Centennial Commons Recreation Center Rehabilitation
3. Awarded LEED Certification for the Fire House Rehabilitation
4. City and School District vehicles fueled at garage are fueled with B10 instituted in 2007, upgraded to B11 in January of 2008.
5. Implemented nitrogen filled tire Program 2007.
6. Purchased First Hybrid Vehicle for the City Fleet in 2008 for the City manager, the Escape Hybrid has the top Green Rating in its class.
7. Implemented personnel program with financial backing to encourage employees to locate within City Limits in 2007.
8. Implemented personnel program with financial incentives to motivate employees to take transit, walk, or carpool to work in 2007.
9. Implemented Single Stream Recycling Program in 2007.
10. The Green Center is an arts and environmental organization dedicated to helping people experience the wonder of nature, to protecting the ecosystems of our world, to encouraging the creation of art inspired by nature, and to building a spirit of community with the natural world. The City provides the Green Center with office and educational space in Kaufman Park and public land for natural management and public education since 2002.
11. Implementation of Urban Forestry Board in 2006. Their mission is to develop a forest management plan for public rights of way within the City

GREEN PRACTICES COMMITTEE HISTORY

limits and educate the public on the value of the value of the urban forest. This also includes recommendations on tree plantings and our tree trimming programs i.e. requiring landscaping on new commercial construction.

12. We replace all new park furnishing (benches, picnic tables etc.) with Recycled plastic items in 2006.
13. Coordination with Regional Environmental Union of St. Louis Entities REUSE in 2008.
14. Investigating collection of used cooking oil from U-City Restaurants for refinement and use in the U-City fleet.

Based on continued feedback from Council, this is just the beginning. The concept of an Environmental Commission or Committee was introduced last year. Staff has been working with citizen volunteers such as Tim Michels and Jerry Breakstone, likely candidates for participation, to better to define a vehicle and role for citizen engagement. There any number of avenues the Council could take to accomplish a heightened awareness of green practices. Assessment of existing regulations and practices, and implementation of new programs would be at the core of any citizen assessment. I will outline a few and await your feedback.

A formal commission could be set up, much like the Historic Preservation Commission. A standing advisory board composed of members with specific talents and backgrounds such as environmental engineering, environmental scientists, planners or architects. Council would make appointments to the 7 to 10 member board for defined terms with a defined mission outlined in the enabling ordinance.

Council could appoint an advisory board that functions much like a task force to establish a report similar to the one attached here, provided by the City of Clayton. The group met regularly, with the goal of creating a report for Council. The group could be Council appointed similar to the Second Century Commission or staff appointed similar to the Citizens Advisory Financial Task Force.

My initial proposal would be to establish a Council appointed Committee of seven members, each Council member appointing one individual. The Committee would function as a standing committee, meeting monthly, without the formalized structure of an establishing ordinance. This would give the group time to work together and better define their policy-making role before making a recommendation for an enacting an ordinance.

Please find below a number of internal issues that could be reviewed by the Green Practices Committee (GPC) for recommendation to Council.

## **Green Practices Committee (GPC)**

The Green Practices Committee will strive to develop practices in University City that improve environmental quality, decrease waste, and conserve natural resources and energy, thereby establishing University City as a practical model for other municipalities and businesses.

As part of the City Council's strategic goal to enhance the scope and impact of our services and programs related to the environment, the Green Practices Committee (GPC) would be charged by the City Manager and City Council to develop a plan for an expanded green practices program in our city.

The GPC will identify areas of opportunity for an expanded environmental practices program by examining the current state of environmental practices in each department, identifying areas of immediate improvement and recommending areas for future improvement. The committee will review initiatives in other municipalities/businesses and information from environmental groups to design the most practical model for University City.

## **Opportunity Assessment**

The CPC will complete an assessment that identifies quantitative measures that provide direct or indirect indicators of environmental performance.

The City will consider employing a college student intern as well as some students working on independent studies and course work to help complete the assessment. The assessment will establish baseline practices as of 2008/2009 and be updated annually by an intern. In the interim, Assistant City Manager, Petree Eastman, can serve as staff liaison. The Committee will serve as an important tool for measuring performance, assessing progress, and setting goals with respect to environmental practices. I hope that the Committee could grow into a working commission similar to the Arts and Letters Commission, which is very hands on in the community. Initial areas to assess internally include, but are not limited to:

### **1. TRANSPORTATION MANAGEMENT**

- a. *Number of Parking Spaces*
- b. *Number of Customer Parking Spaces*
- c. *Alternative Modes of Transportation*
  - i. *Ride Sharing*
  - ii. *Access to Public Transportation*
  - iii. *Bicycle Use*
- d. *Fleet Use*
  - i. *Number of Vehicles used*
  - ii. *Fuel Types*

- 2. OUTDOOR ENVIRONMENT MANAGEMENT**
  - a. *Landscape Planning and Management*
  - b. *Community Landscaping*
  - c. *Land Use*
  - d. *Grounds Maintenance Additives and Techniques*
  - e. *Wildlife Habitats (Ruth Park)*
- 3. PROCUREMENT SERVICES**
  - a. *Procurement Services Environmental Goals*
  - b. *Environmental Purchasing Guide*
  - c. *Green Preferred Suppliers*
  - d. *Green Contracting*
  - e. *Packaging Reduction Requirements*
  - f. *Representative Items Purchased*
- 4. ENERGY MANAGEMENT**
  - a. *Types of Energy Consumed*
  - b. *Total Energy Consumption*
  - c. *Cost of Energy consumed, by type*
- 5. RENEWABLE ENERGY AND CONSERVATION**
  - a. *Renewable Energy Purchases*
  - b. *Energy Conservation*
  - c. *Energy Generation Emissions*
- 6. BUILT ENVIRONMENT**
  - a. *Green Design and Construction Guidelines*
  - b. *Renovation Projects Guidelines*
  - c. *Use of Built Environment*
- 7. WASTE MANAGEMENT AND RECYCLING**
  - a. Non-hazardous Solid Waste**
    - i. *Standard Solid Waste*
    - ii. *Construction and Demolition Wastes*
  - b. Hazardous Wastes**
    - i. *Chemical Wastes*
    - ii. *Electronic Wastes*
  - c. Recycled Solid Waste**
    - i. *Recycled Materials*
    - ii. *Composted Materials*
    - iii. *Reused Materials*
- 8. WATER MANAGEMENT**
  - a. Water Use**
    - i. *Annual Water Used by Buildings with Metering Data*
    - ii. *Cost of Water Used*
  - b. Wastewater Generation and Disposal**
    - i. *Annual total wastewater generated*
    - ii. *Cost of Wastewater*
    - iii. *Amount of wastewater reused*
    - iv. *Number of wastewater discharges monitored for flow*

**c. Storm water Indicators**

- i. Runoff Generated by Building*
- ii. Storm water Management and Reuse*
- iii. Number of storm water discharges monitored for quality*
- iv. Combined Sewers*
- v. Overland Pollution and Flood Mitigation*

**9. GREEN PRACTICES COMMUNICATION**

- a. Narrative of Green Practices Committee Communication Efforts*
- b. Number of Environmental Outreach Initiatives and Events*
- c. Green Practices Communication/Programs*
- d. On going review of recommendations for Council*

Using incentives or regulations, there are a number of external areas the GPC could review for recommendation as well a few are outlined below.

- 1. Reductions in Consumer Waste (packaging or grocery bag restrictions)**
- 2. Green Construction Materials/Building & Site Efficiencies**
- 3. Allowances for Permeable Surfaces**
- 4. Allowances for Density (reduce sprawl)**
- 5. Issues surrounding land and water pollution, Litter, Litter, Litter**

**Initial Steps**

- 1. Council Members each appoint a member.** The Committee will be coordinated through Ms. Eastman. Analysis and recommendations would be forwarded to Council.
- 2. Minutes** would be kept and available on the website.
- 3. We could create "The Green Scene" In CityScape** - In each edition of the city newsletter, CityScape, include a brief article/fact about the initiative and offer advice and tips on how residents and businesses can implement more environmentally friendly practices. This can be done with current staff.
- 4. Green Initiatives at University City** – At the *Green Initiatives* webpage at the City's website, residents can learn about all the initiatives that are taking place at City Hall in an effort to make University City even greener! Eventually, the webpage will include a Facts & Figures page where residents can find fun facts about the environment and about resource usage in America. Initially done with current staff and augmented in future by the intern.
- 5. Green Intern at University City** –Over time, seek to hire a college student to assist with analysis and programming for the committee and complete the assessment.

**6. Future Recommendations:** With some time and experience under their belts, the Committee members themselves could provide an outline for an Environmental Commission for Council to consider.

Please let me know your preferences or I can slate for discussion during an upcoming City Manager's Report.



## Department of Public Works

6801 Delmar Boulevard, University City, Missouri 63130, Phone: (314) 862-6767, Fax: (314) 862-0694

### Summary of Grant Funded Environmental/Recycling Projects in University City

**319 Water Quality Project-** grant funds provided by the Missouri Department of Natural Resources. This project was designed to protect and improve the quality of water entering the River des Peres by identifying and implementing systems to prevent non-point source contaminants throughout the watershed from entering the receiving tributaries. Activities included demonstration, education and monitoring. The River Des Peres Southwest Branch Water Quality Improvement Project funded the installation of various bioremediation techniques used to improve water quality. Installed storm water management practices included, four rain gardens, several bio-swales, earth berms, grass filters, native plant landscaping, 45 rain barrels, a bio-retention basin (pond), and drainage structures. Other activities included, water quality testing and monitoring to identify non-point source contaminants entering a section of the River des Peres from McKnight Road to Vernon Avenue in University City. Improvements to the Ruth Park Compost Facility (at McKnight near Olive Blvd.) to manage on-site run off are scheduled this fall.

**Energy Efficiency and Conservation Block Grant** – grant funds provided by the U. S. Department of Energy. Projects include a Green House Gas inventory and a street light audit and reduction plan to remove approximately 20% of utility owned street lights. Project includes retrofitting remaining street lights with energy efficient bulbs.

**Yard Waste Composting Program** – grant funds provided by the St. Louis-Jefferson Solid Waste Management District and will be used to purchase a skid steer loader to assist with yard waste processing operations at the Ruth Park Composting Facility site and the mulch/compost storage site in Heman Park.

**Recycling Education** – grant funds provided by the St. Louis-Jefferson Solid Waste Management District and were used to create a mailer printed on recycled green plastic material. Funds were used to design, produce and mail approximately 12,000 postcards to University City residents included on the refuse bill mailing list. The postcards will arrive in homes during the 4<sup>th</sup> week of August.

**Single Stream Recycling** – grant funds provided by the St. Louis-Jefferson Solid Waste Management District and were used to purchase 95 and 65 gallon recycling carts to allow participating residents to upgrade to a larger size recycling cart. One thousand recycling carts were purchased and are currently available to residents.