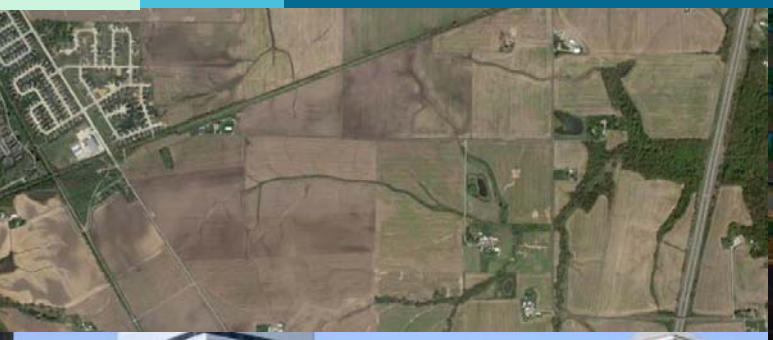
Sustainable Zoning and Subdivision Ordinance Revisions

Saint Louis County, Missouri



DIAGNOSIS

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Executive Summary

Project Overview

The Sustainable Subdivision and Zoning Ordinance Revisions project is intended to further the goals of the 2010 Green and Growing Initiative of St. Louis County to make it a more sustainable and energy efficient place to live, play, and do business. The purpose of the sustainable ordinance revisions is to incorporate new regulations and practices to promote sustainable development in St. Louis County. This project is funded by a grant from the U.S. Department of Energy through the Energy Efficiency and Conservation and Block Grant Program. This document is the project Diagnosis, a report that will analyze the regulations that are in place, compare them to adopted county sustainability goals, recommend ideas for code changes, and highlight national sustainable zoning best practices being undertaken in other communities that the county might consider.

Major Themes

Four major themes emerged from community stakeholder interviews and discussions with county staff conducted as part of the project initiation phase: 1) Focus on sustainable practices that are familiar to the community and provide value to families and neighborhoods; 2) Address infill and redevelopment to promote a more condensed pattern of growth and ensure compatibility with surroundings; 3) Create choices for residents and developers that allow different parts of the community to embrace what is important to them; and 4) Ensure an efficient, predictable review process to make sustainable choices easy to accomplish.

Related Efforts Underway

In addition to the Sustainable Subdivision and Zoning Ordinance Revisions project, the county has many other current sustainable policies and programs in place or underway, including:

- St. Louis SAVES™
- Green and Growing
    - Energy Efficiency and Conservation Strategy
    - Greenhouse Gas Inventory
- Membership in ICLEI: Local Governments for Sustainability
- St. Louis County Clean, Green, and Beautiful

Other notable sustainability efforts in the St. Louis region include:

- FOCUS St. Louis' Environmental Sustainability Roadmap
- U.S. Mayors Climate Protection Agreement
- Washington University International Center for Advanced Renewable Energy and Sustainability (I-CARES)

- St. Louis Regional Chamber and Growth Association Climate Prosperity Project
- East-West Gateway Great Streets Initiative

SUMMARY OF RECOMMENDED CHANGES

Based on a review of county policies and goals, staff identified nine key sustainability topics as a foundation for the Sustainable Zoning/Subdivision Code Policy and Goal Inventory report attached as Appendix A to this Diagnosis. These topics include: 1) Reduce Greenhouse Gases (GHG) and Improve Air Quality; 2) Improve Water Quality and Stormwater Management; 3) Increase Housing Accessibility, Diversity, and Affordability; 4) Encourage Energy Production and Energy Conservation; 5) Increase Mobility and Multi-Modal Transportation Options; 6) Promote Tree and Landscape Preservation and Enhancements; 7) Encourage Local Food Production; 8) Create Incentives for Green Building Concepts; and 9) Promote Efficient Land Use Patterns. Based on our review of the existing zoning and subdivision regulations and input received in the community meetings, we have consolidated these topics into five categories of analysis in the Diagnosis: 1) Energy Production and Conservation; 2) Urban Form and Transportation; 3) Water Quality and Stormwater Management; 4) Housing; and 5) Local Food Production. For each topic, the Diagnosis addresses the following:

- ***Current zoning and subdivision regulations*** relevant to each topic that need to be assessed in terms of furthering county sustainability goals.
- Potential ***barriers*** in the zoning and subdivision regulations and possible revisions to remove those barriers;
- Potential ***incentives*** for consideration to encourage sustainability;
- Specific recommendations to ***fill regulatory "gaps;"*** and
- ***Examples*** of other communities who have adopted or are considering similar regulatory changes.

The focus of this Diagnosis is on the zoning and subdivision regulations. Due to the interrelated nature of a number of these topics, some overlap between the analysis of current regulations and recommendations may occur between topics. We have retained this redundancy to ensure that each topic may be reviewed independently, if desired. A brief summary of recommendations by topic is provided below.

ENERGY PRODUCTION AND CONSERVATION

St. Louis County is ahead of many other communities in Missouri with regard to alternative energy production and energy conservation, where these subjects are simply not part of the current discussion. St. Louis County has taken the lead in demonstration projects such as the installation of two solar panels at Tilles Park in Ladue. The county parks department is also making improvement to three of their indoor facilities including HVAC, windows, lighting, and automated controls for a 10-15% reduction in energy usage. They are also replacing lighting in two parking lots to reduce energy usage by 20%. (http:// green.stlouisco.com/Buildings/CountyOperations/CountyOperationsSustainabilityInititatives).

While leading by example with these efforts, the county could improve some fundamental tools such as its zoning and subdivision regulations to promote renewable energy and energy conservation. Some of the potential changes identified below include:

- Expanding existing renewable energy generation provisions to more explicitly address appropriate locations and standards for the full range of renewable energy facilities;
- Remove barriers to green/cool roofs;
- Require energy efficiency in outdoor lighting plans;
- Allow nonconforming uses and structures to add green building features (solar, recycling, etc.) without having to bring entire use or structure into conformity if degree of nonconformity is not increased;
- Preserve solar access to properties and protect solar access of installed solar systems;
- Require a minimum amount of energy in new development come from renewable energy sources; and
- Prohibit in development review and approval process homeowner covenants that restrict solar or wind installation and collection technologies.

URBAN FORM AND TRANSPORTATION

Many Midwestern communities have followed the traditional growth model in which local governments approve new development projects under the assumption that all necessary new or expanded transportation facilities — mostly roads — would be provided automatically to service that growth. This approach has led to an over-reliance on expensive road networks that facilitate leap-frog development, negatively impact downtown areas, neglect healthier modes of travel, such as walking, biking, and transit, increase congestion, decrease safety, and increase air and water pollution. The key is to simultaneously set clear transportation goals (e.g., increase transit ridership or bicycle commuting) and land use goals (reduce sprawl and increase mixed-use development) so that each set of goals reinforces the other. Few development codes, however, have been updated to put this new understanding into practice.

While St. Louis County has started the process of making local urban form and transportation more sustainable, we recommend the county reconsider the following range of changes to the zoning and subdivision regulations discussed in detail below that will promote the sustainable development:

- Increase density around transit stops and in select zones. Identify and zone key transit-oriented development areas for higher density, heights, and mixed use.
- Establish a range of mixed-use districts, varying in use mix and intensity, that can be accomplished within existing development standards and without special approvals.
- Revise standards to allow infill development that will increase density as well as rebuild older neighborhoods that are compatible with surrounding development.
- Improve mobility by increasing connectivity between developments for vehicles and other modes of travel.
- Increase pedestrian and bike opportunities and connections, integrate with transit.
- Expand the use of accessory/secondary dwelling units that can promote more compact, infill development without large-scale, multi-story buildings.
- Develop standards for tree retention/replacement during construction.

- Enhance landscaping provisions – native trees and shrubs - within parking lots

WATER QUALITY AND STORMWATER MANAGEMENT

To avoid costly future stormwater infrastructure problems, many communities are moving to green infrastructure. Green infrastructure is a combination of management approaches and technologies designed to infiltrate, evapotranspire, capture, and reuse stormwater to maintain or restore natural hydrologies. The focus is on greater on-site stormwater management. Green infrastructure saves money in the long-term by reducing the need for and burden on conventional, highly-engineered ("grey") infrastructure, such as water treatment plants and detention ponds that are expensive to build and maintain.

St. Louis County clearly recognizes the need to manage water quality and stormwater issues and is making necessary changes. Some additional change to the zoning and subdivision regulations might include:

- Establishing Low Impact Development (LID) standards that move more stormwater management on-site;
- Reducing parking requirements (efficient stall configuration and smaller parking spaces); and
- Creating options for the use of pervious surfaces (parking, driveways, alleys).

HOUSING

A truly sustainable community must provide a variety of housing options to meet the needs of a diverse population. The community's housing stock must be affordable in that it offers a variety of rental and for sale units within reach of a mix of incomes. Housing must also be provided that is accessible to disabled residents and allows older residents to "age in place."

As part of the Sustainable Zoning and Subdivision Ordinance Revisions project, the county has an opportunity to expand its current efforts and to address these issues more broadly in the land use regulations. In particular, the county needs to more explicitly address the types of housing preferred in different locations, increasing predictability for the development community and neighborhood residents about what will be built in the future.

Some of the potential changes identified below include:

- Clarifying language in the zoning and subdivision related to housing types to more clearly define where in the county a diverse mix of housing types is desirable and ensuring standards are in place to accommodate this mix while protecting established neighborhoods;
- Establish procedures to encourage accessory dwelling units; and
- Allowing for creative approaches to infill housing, especially small-lot development.

LOCAL FOOD PRODUCTION

Establishing zoning regulations to promote local food production is timely and will add St. Louis County to the growing ranks of communities recognizing the health, environmental, and economic impacts of

growing, buying, and eating local. To make this happen, the county will need to make some changes to the current zoning and subdivision regulations as identified below, including:

- Incorporating use permission and regulations for community gardens and farmers' markets;
- Reviewing and updating lot standards to allow room for gardening, including on the roof; and
- Considering the roll of "active" green space in community design.

Introduction

Project Overview

"The greenest county in America…" is the goal that Charlie Dooley, County Executive, has identified for St. Louis County. To further this objective, the county has undertaken a milestone project to revise its zoning and subdivision regulations to incorporate regulations that promote sustainability. The purpose of this project is to identify specific changes in the zoning and subdivision regulations that promote large and small sustainable choices in development in St. Louis County. This project is funded by a grant from the U.S. Department of Energy through the Energy Efficiency and Conservation and Block Grant Program. This project furthers the goals of the 2010 Green and Growing Initiative of St. Louis County to make it a more sustainable and energy efficient place to live, play, and do business.

This document is the Diagnosis of the Zoning and Subdivision Land Use Code (Diagnosis), the initial report of the three phases established for this project. These phases include the following:

- ***Phase 1: Diagnosis of the Zoning and Subdivision Land Use Code***—The current zoning and subdivision regulations will be evaluated to identify barriers, and gaps in the regulations and potential amendments and incentives that can help achieve greater sustainable development in line with established county sustainability goals and policies. This diagnosis report will analyze the regulations that are in place, compare them to adopted county sustainability goals, recommend ideas for code changes, and highlight national sustainable zoning best practices being undertaken in other communities that the county might consider.
- ***Phase 2: Draft Code Revisions***—Based on the code diagnosis, the county will identify priority zoning and subdivision code amendments that it would like to take further action on. The project consultants will work with the county on drafting selected sustainable community code amendments. A public process for review and adoption will be part of this phase.
- ***Phase 3: Sustainable Community Development Manual***—Finally, as a means to support greater sustainable development throughout St. Louis County, the consulting team will work with the county to create a manual aimed at assisting its municipalities in evaluating their own land use codes from a sustainable development perspective. This manual will build on a workshop held during phase 1 for St. Louis municipalities to raise awareness about the land use practices of community sustainability. Local officials were asked to identify key sustainability issues to be addressed in the manual.

RELATED EFFORTS UNDERWAY

Countywide Sustainability Initiatives

In addition to this project, the county has taken the lead in the St. Louis region to promote sustainability with many other sustainable initiatives. This project is meant to build on and advance these efforts. The following is a list of some of the notable sustainable programs the county has initiated or joined in:

- **St. Louis SAVES™** (2011)—a low-interest rate financing program for St. Louis County homeowners to save money on home energy efficiency improvements.
- **Green and Growing** (2009)—a long-range sustainability framework to identify opportunities to advance sustainability and greenhouse gas reductions.
    - **Energy Efficiency and Conservation Strategy** (2009)—illustrates the community's long-term plan for reducing energy use, decreasing emissions, and creating jobs within the community.
    - **Greenhouse Gas Inventory** (2008)—provides an inventory of current greenhouse gas emissions setting a baseline for progress.
- **Membership in ICLEI: Local Governments for Sustainability** (2010)—a commitment to advancing climate protection and sustainable development.
- **St. Louis County Clean, Green, and Beautiful** (2010)—a program to engage neighborhoods to take pride in their community by being clean, green, and beautiful.

Notable Efforts by Other Organizations

- **FOCUS St. Louis' Environmental Sustainability Roadmap**—a study of sustainability issues in the region offering local examples to serve as a benchmark for local communities to measure their progress.
- **U.S. Mayors Climate Protection Agreement** – As of late 2009, 14 cities in St. Louis metropolitan region have signed this agreement.
- **Washington University** – International Center for Advanced Renewable Energy and Sustainability (I-CARES) organized to address issues of energy, environment, and sustainability through interdisciplinary, collaborative research.
- **St. Louis Regional Chamber and Growth Association (RCGA) -** Climate Prosperity Project.
- **East-West Gateway -** Great Streets Initiative.

ORGANIZATION OF THIS DOCUMENT

This Diagnosis looks at relevant zoning and subdivision provisions as they pertain to each of the five sustainability topics identified through stakeholder interviews and the county Sustainability Policy Inventory. These topics include Energy Production and Conservation, Urban Form and Transportation,

Water Quality and Stormwater Management, Housing, and Local Food Production. The Diagnosis identifies and summarizes:

- ***Current zoning and subdivision regulations*** relevant to each topic that need to be assessed in terms of furthering county sustainability goals.
- Potential ***barriers*** in the zoning and subdivision regulations and possible revisions to remove those barriers;
- Potential ***incentives*** for consideration to encourage sustainability;
- Specific recommendations to ***fill regulatory "gaps;"*** and
- ***Examples*** of other communities who have adopted or are considering similar regulatory changes.

The findings within this Diagnosis will help guide drafting zoning and subdivision ordinance revisions in the next phase of this project.

Diagnosis

Major Themes

In preparation for the creation of this Diagnosis, the Clarion team interviewed key county staff and numerous stakeholders (developers, county representatives, sustainability advocates, and land use professionals). We discussed with them the county's current development regulations and ways in which they could be enhanced to foster more sustainable development patterns and remove barriers to sustainable developments that incorporate features like alternative energy systems. Following these project interviews, county planning staff prepared a Sustainable Zoning/Subdivision Policy and Goals Inventory (Inventory) that summarized existing county sustainability goals, policies, and plans (Appendix A). The summary and input received during the stakeholder interviews and the consultant team review of the county's current zoning and subdivision regulations served as the basis for this Diagnosis.

Four major themes emerged from community stakeholder interviews and workshops:

1) **"Show Me" Sustainability –** Participants like the idea of sustainable development but want more details as to what that means. There are concerns in the community about how sustainable requirements will affect desirable development in the current economic environment. Sustainable practices that: (1) are familiar from use in area jurisdictions, (2) will provide value to families and neighborhoods, and (3) are in keeping with national best practices will receive the most support in St. Louis County.

2) **Address Infill and Redevelopment** to promote a more condensed pattern of growth and ensure compatibility with surroundings. It is widely recognized that much of St. Louis County is basically built out with few vacant large parcels available for development. Consequently, stakeholders urged that the county concentrate on promoting sustainable infill and redevelopment. A particular challenge noted by stakeholders was that the zoning and subdivision regulations generally apply the same requirements to infill development as they would to an undeveloped site. This one-size-fits-all approach may reduce the viability of reuse and revitalization on many of the county's more challenging development sites.

3) **Create Choices for Residents and Developers –** For many, the concept of sustainable development is a new one, even if some of the practices (more walking, less parking) were around long before the term "sustainable" was used to describe them. In order to allow the community an opportunity to explore sustainability, it will be important to provide choices and flexibility. While one neighborhood might embrace more compact development, another might

prefer larger lots on which to grow vegetables and raise chickens. Sustainability can include a number of concepts and providing options in St. Louis County will go a long way toward greater acceptance of this new idea.

4) **Establish the Right Process** - It is unproductive to encourage people to make changes but then make it difficult to do so. To give sustainability a jump-start in St. Louis County, it will be necessary to ensure a short, predictable review process and wherever possible make the sustainable choice not only the best option but the easiest to accomplish.

In addition to the overarching themes outlined above, detailed recommendations related to each of the five key sustainability topics noted below also emerged from the public outreach and code review process. These more specific recommendations have been incorporated, as appropriate, throughout this Diagnosis.

Based on the stakeholder interviews and Inventory prepared by the county Department of Planning, five key sustainability topics have been identified to form a foundation for the Diagnosis during Phase 1. These topics serve as a method to identify regulatory issues and potential revisions that will meet the directives of the major themes, above. The topics include:

- Energy Production and Conservation,
- Urban Form and Transportation,
- Water Quality and Stormwater Management,
- Housing, and
- Local Food Production.

This document inventories current zoning and subdivision regulations that either support or hinder the county's goals related to each topic and provides specific recommendations intended to remove barriers, create incentives, and fill gaps to help achieve greater sustainable development throughout the county.

Due to the interrelated nature of a number of these topics, some overlap between current regulations and recommendations may occur between topics. Redundancy has been retained to ensure that each topic may be reviewed and applied independently, if desired.

Energy Production and Conservation

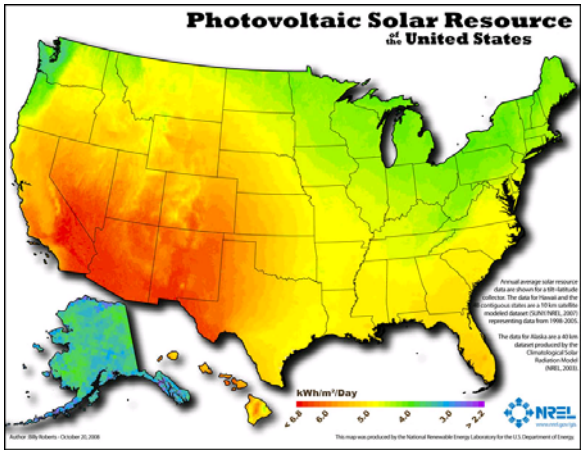
Introduction

Rooftop solar panels used for energy production

Alternative energy production and energy conservation have been at the forefront of conversations in many communities in recent years as concern about the dependence of the country and many local economies on fossil fuels—coal, oil, and natural gas, has grown. The U.S. Department of Energy reports that more than 85 percent of the energy consumed in the United States comes from fossil fuels. This includes nearly two-thirds of our electricity, and virtually all of our transportation fuels. In Missouri, 84 percent of energy is generated from coal, most of which is hauled in from Wyoming. Energy generation from fossil fuels is also the single largest contributor to greenhouse gas emissions, which have been linked to global warming and health impacts from air pollution.

Awareness and interest in these issues have increased as funding and incentives for renewable energy and energy efficiency projects have become more readily available to local governments and residents. Renewable energy, such as wind and sun, are also becoming a more viable source for power as technology advances. In the U.S., only about 10 percent of energy is generated from renewable sources and only about 0.1 percent from solar. This amount is projected to increase rapidly as oil prices continue to increase – some experts estimate that by 2015 the cost of solar will be on par with the cost of fossil fuel and that by 2025 it will be cheaper.

Price will be a particularly relevant factor in Missouri where the Missouri Department of Natural Resources states that relatively low electric utility costs have limited consumer demand for alternative energy sources. Moving some users to alternative energy sources is also beneficial to the power grid; smaller and more geographically distributed generation at many locations within the county around the grid increases power reliability and quality while reducing the strain on the electricity transmission system.[1] As of late 2009, 14 cities in the St. Louis metropolitan region have signed the U.S. Mayors Climate Protection Agreement. Twelve cities in the St. Louis metropolitan area have also joined Sierra Club's Cool Cities Program, encouraging local leaders and residents to utilize clean energy solutions thus reducing energy usage.



NREL calculates the solar resource potential across the country

Among alternative energy sources, solar power has the greater potential for St. Louis County. According to the Missouri Department of Natural Resources, "Missouri's solar resource for flat plate solar collectors is actually fairly good in comparison to other parts of the country. The National Renewable Energy Laboratory's maps (right) show that Missouri has between 4.5 to 5.0 kWh/m2/day. Site specific

[1] Lovins, H., Small is Profitable, p.47

solar access in Missouri depends on locating the system so that it is not shaded by trees or other buildings." In comparison, most of the potential wind energy in the state is located in the northwest corner, and the ability to use current wind supply will be fairly limited in the St. Louis region until technology improves.

In addition to exploring alternative energy production techniques, encouraging energy efficiency and conservation offer some important avenues to reduce energy consumption dramatically. Energy conservation techniques – taking actions to reduce energy use – are showing encouraging results already in many communities. A few key energy conservation concepts, such as the use of green roofs (partially or completely covered with vegetation), cool roofs (a light-colored roof that stays at or near the ambient temperature during the day, compared to most roofs that greatly exceed the ambient temperature), solar building orientation (siting of a building to make the most of solar exposure), and efficient lighting in public places are all suitable in St. Louis County.

Current Policies and Programs

St. Louis County is ahead of many other communities in Missouri with regard to alternative energy production and energy conservation, where these subjects are simply not part of the current discussion. St. Louis County has taken the lead in demonstration projects such as the installation of two solar panels at Tilles Park in Ladue. The county parks department is also making improvement to three of their indoor facilities including HVAC, windows, lighting, and automated controls for a 10-15% reduction in energy usage. They are also replacing lighting in two parking lots to reduce energy usage by 20%. (http:// green.stlouisco.com/Buildings/CountyOperations/CountyOperationsSustainabilityInititatives).

In addition, the county also has the following current policies and programs in place:

Inventory Section 4. Alternative Energy Production and Energy Conservation Goals

Goal 1: Lower county energy consumption while reducing vulnerability to rising energy costs.

Goal 2: Promote community-wide acceptance of renewable energy projects.

Goal 3: Install renewable energy technologies on county facilities. Develop energy-related policies and programs and produce energy efficiency building guidelines.

Goal 4: Facilitate regulatory strategies to conserve energy across county jurisdictions.

> *Source: Goals 1-4 2010 Green and Growing Initiative (http://greendraft.stlouisco.com/Transportation/SustainabilityGoalsAlignment)*

Inventory Section 8. Green Building Concept Goals

Goal 1: Create incentives for cool roof technology to reduce energy consumption.

Goal 2: Improve site design criteria to better utilize current solar orientation to reduce cooling costs and energy consumption.

Goal 3: Pervious driveways, walks and parking areas should be incentivized to allow rain water to percolate into the ground.

Goal 4: Encourage review of building codes to promote energy conservation.

Goal 5: Promote parking lot and street energy efficient lighting.

Source: Goals 1-5 Department of Planning Staff Recommendations- no documented sources currently exist

Goal 6: Promote devices for the generation of energy, such as solar panels (currently, these uses are allowed and are considered accessory uses in county zoning districts).

Source: St. Louis County Zoning Ordinance

Summary

While St. Louis County has started the process of making energy production and conservation a priority sustainable practice, we recommend the county consider the following range of changes to the zoning and subdivision regulations that will be discussed in detail below:

- Expanding existing renewable energy generation provisions to more explicitly address appropriate locations and standards for the full range of renewable energy facilities;
- Remove barriers to green/cool roofs;
- Require energy efficiency in outdoor lighting plans;
- Allow nonconforming uses and structures to add green building features (solar, recycling, etc.) without having to bring entire use or structure into conformity if degree of nonconformity is not increased;
- Preserve solar access to properties and protect solar access of installed solar systems;
- Require a minimum amount of energy in new development come from renewable energy sources; and
- Prohibit in the development review and approval process homeowner covenants that restrict solar or wind installation and collection technologies.

Current Regulations

The following table cites some of the main current regulations in the zoning and subdivision regulations related to alternative energy production and energy conservation. It is not meant to be all-inclusive, but to highlight some of the key provisions currently on the books that are directly related to climate change.

Regulations Addressing Energy Production and Conservation	
REF.	**REGULATION**
Zoning Code	
1003.111 - 1003.155	***Devices for the generation of energy*** – such as solar panels, wind generators, and similar devices permitted as accessory use in PS, NU, KP, residential, commercial, and industrial districts; in all residential districts they are limited to cover no more than 7% of the lot area.
1003.111 – 1003.155	***Height Limits*** – typically 45 ft., exception made for telecommunication towers; some exceptions to 60 ft. with conditional use permit. No exceptions for wind energy conversion systems.

Regulations Addressing Energy Production and Conservation	
REF.	**REGULATION**
1003.167 .9	***Lighting Requirement*** – require a cut-off angle not greater than 85 degrees with appropriate footcandle regulations.
1003.170	***Nonconforming Uses, Lands, and Structures –*** no enlargement, extension, or alteration of nonconforming structures.
1003.187	***Planned Environmental Unit Procedure –*** allows creation of planned development with economic and energy efficient subdivision design; includes procedure for dedication of land for public schools and parks.
Subdivision Ordinance	
1005.160 .5	***Lighting*** – Street lights required in non-residential subdivisions in accordance with street lighting standards (below); the alternate light plan allows for variation in the required street light requirements.
1005.320	***Street Lighting*** – requires street lighting plan; establishes minimum illumination standards for residential and non-residential uses; lighting shall be designed to avoid unnecessary illumination of residential interiors; timing devices.

Diagnosis

The following table contains a diagnosis of regulations addressing permitting alternative energy options and energy conservation.

Diagnosis: Energy Production and Conservation		
EXISTING PROVISIONS	**POSSIBLE REVISIONS**	**EXAMPLES**
Remove Barriers		
EPC-B1: Strict nonconforming use/structure requirements that discourage "green" building renovation or expansion.	Allow renovations/ expansions related to "green building" (e.g., adding solar panels, insulation, etc.) to take place without bringing entire building or site into compliance or allow expansions that reduce the degree of nonconformity or do not increase it to proceed without full compliance.	▪ Salt Lake City, UT, is adopting adminstrative provisions allowing "green building" improvements to nonconforming uses/structures without full site compliance. Also, it has adopted special review procedures to allow solar installations on historic properties. ▪ Many mature communities allow expansion of nonconforming uses/structures if the expansion does not increase the degree of nonconformity.
EPC-B2: Revise code to address outdoor lighting.	▪ Consider adopting a comprehensive outdoor lighting code that addresses maximum illumination, lighting	▪ Consider adoption of model regulatory provisions recommended by the illuminating Engineers Society of America (IES) and International Dark-Sky Association (IDA), like maximum wattage, required

Diagnosis: Energy Production and Conservation		
EXISTING PROVISIONS	**POSSIBLE REVISIONS**	**EXAMPLES**
	budgets, lighting curfews, etc. ▪ Consider targeted amendments to lighting code to require PV-powered outdoor lighting, LED and other modern, energy-saving lighting, and reduce overlighting of sites and waste of energy.	luminaries or lamp shading, curfews for lighting, and more. http://www.ies.org/handbook/ and http://www.darksky.org/mc/page.do?sitePageId=84399 ▪ Plymouth, MN, has adopted progressive outdoor lighting ordinance that restricts illumination levels and establishes site lighting budgets. Salt Lake City considering similar provisions. ▪ Shelburne, VT, requires commercial signs to be turned off if a business is not open. ▪ Overland Park, KS, established comprehensive lighting requirements for its downtown district requiring that lighting elements provide a "more natural spectrum of light," which includes LED, metal halide, halogen, and compact fluorescent (only when screwed into standard sockets). It prohibits low pressure sodium lamps and fluorescent lights. ▪ Focus St. Louis' Environmental Sustainability Roadmap (2009) describes how a number of cities within the county assembled to discuss ways to retrofit street lights to reduce energy consumption. (page 5)
EPC-B3: The lack of existing regulations addressing ground-source heating and cooling creates uncertainty	▪ Establish regulations that allow ground-source heating and cooling systems as a by-right use	▪ Wentzville, MO, defines ground-source heat pump systems and allows them as an accessory use in all districts. ▪ For information about tax incentives, see the Tax Incentive Assistance Project (http://energytaxincentives.org/business/renewables.php and http://www.energytaxincentives.org/general/implementers.php)
Create Incentives		
EPC-I1: County policies do not contain any incentives for renewable energy installations.	▪ Consider offering building and zoning permit fee waivers or rebates for renewable energy system installations. ▪ Coordinate with other	▪ States of California and Colorado place limits on the amount of local fees that can be imposed on permits for domestic solar energy systems. ▪ Minneapolis, MN, approves solar energy installations through the administrative review process and allows land owners to

Diagnosis: Energy Production and Conservation		
EXISTING PROVISIONS	**POSSIBLE REVISIONS**	**EXAMPLES**
	municipalities in region to standardize building and zoning code requirements for solar and other renewable energy systems.	obtain an easement to protect their access to sunlight. ▪ Sarasota County, FL, is currently offering rebates and low-interest loans to residents who upgrade their properties with energy saving technologies under the new Get Energy Smart Retrofit rebate program. www.scgov.net/retrofit/ ▪ Tucson, AZ, has adopted a tiered solar fee waiver for projects that incorporate solar thermal and voltaic systems and also provides a solar permit fee credit incentive up to $1,000. ▪ Henderson, NV, (Sec. 19.7.12), and Eagle County, CO, grant points in their sustainability point review systems for incorporating renewable energy sources. ▪ Boston, MA, reduces building permit fees for solar installations.
EPC-I3: County policies do not address electric vehicle charging stations.	Specifically allow electric vehicle charging stations as accessory use in all zone districts.	▪ Puget Sound Regional Council (PSRC) Model Development Regulations and Guidance reserves parking spaces for electric vehicle charging stations and counts the space toward the minimum parking requirement. Regulations also specify location and design criteria. ▪ San Francisco, CA, building code required new construction to be prewired for electric car chargers. ▪ Marriott Hotels are providing electric vehicle charging stations at a number of their hotels in the St. Louis area. ▪ Kansas City Power & Light (KCP&L) is partnering with "site" partners such as Black & Veatch and the City of Lee's Summit to provide electric vehicle charging stations.
EPC-I4: County policies do not specify incentives for cool/green roofs.	Allow height exceptions and/or additional FAR for buildings with cool/ green roofs.	▪ Portland, OR, grants FAR bonus for ecoroofs in selected zone districts. Green/vegetated roofs count toward open space requirements. ▪ Chicago, IL, offers density bonuses for small businesses that incorporate green roof design.

Diagnosis: Energy Production and Conservation		
EXISTING PROVISIONS	**POSSIBLE REVISIONS**	**EXAMPLES**
		▪ Green roofs have been installed on buildings on both the Washington University and St. Louis Community College campuses.
Filling Regulatory Gaps		
EPC-G1: Zoning and subdivision regulations do not address homeowner covenants that restrict small-scale solar installations.	Consider adding provisions to planned development and subdivision regulations that prohibit homeowner covenants that ban solar systems allowed by building and zoning regulations.	▪ States such as Colorado and Nevada have banned homeowner covenants that restrict solar installations. ▪ Salt Lake City, UT, and other jurisdictions ban restrictive solar covenants through planned development review regulations.
EPC-G2: Zoning does not contain review criteria or compatibility standards for solar energy systems.	Incorporate separate definitions and performance criteria for different types and scales of renewable energy facilities to explicitly address where these various types may or may not be appropriate. Include safety and compatibility standards. Add renewable energy section to provide additional guidance.	▪ Denver, CO, permits solar and photo-voltaic energy systems as an accessory structure subject to the building form standards for accessory structures. ▪ Seattle, WA, permits by-right solar collectors, solar greenhouses, and other solar devices as an accessory use with specific design criteria for each district. The area covered or enclosed by solar collectors in some districts may be counted toward the required open space. ▪ Portland, OR, permits accessory solar energy systems in accordance with design standards. ▪ Berkeley, CA, permits solar energy equipment to exceed the height limit and encroach in required yards with and administrative use permit. ▪ In Miami, FL, solar energy collectors and similar equipment required to operate and maintain the building do not have to comply in most cases with building height limitations. ▪ Fort Collins, CO, promotes energy conservation by not allowing prohibitions or limits to be set in homeowners' covenants on solar collectors, clothes lines, and compost bins.
EPC-G3: Zoning does not adequately address	▪ Add provisions allowing solar and small WECS in	▪ Portland, OR, defines "Small Scale Energy Production" where energy is collected from

Diagnosis: Energy Production and Conservation		
EXISTING PROVISIONS	**POSSIBLE REVISIONS**	**EXAMPLES**
other renewable energy systems such as wind energy conversion systems (WECS), ground-source heating/cooling systems, etc. as principal or accessory uses.	specific districts subject to clear standards relating to height, noise, and other potential off-site impacts. ▪ Review potential standards to permit ground-source heating and cooling systems.	solar, wind, geothermal, and more. This is considered a basic utility use and is allowed in most districts as an accessory use. ▪ Kansas City, MO, allows small-scale renewable energy systems in most zone districts. ▪ Nevada, IA, allows WECS by right in all industrial districts and by special use permit in all other districts subject to performance standards. ▪ Centennial, CO, allows small wind turbines by right in zoning districts following clearly written design standards that address impacts. ▪ North Dakota requires a permit for all nonresidential geothermal projects (allows them without a permit for private residential uses) to ensure proper design and construction and to minimize risk of environmental problems. ▪ Wentzville, MO, defines ground source heat pump systems and allows them as an accessory use in all districts.
EPC-G4: No requirements in zoning regarding solar-oriented lots and subdivisions.	Require minimum percentage of lots in larger subdivisions to be solar oriented (i.e., longer east-west axis to provide more exposure to sun for passive solar gain in winter to reduce heating loads and less solar gain in summer to reduce cooling loads), perhaps with flexibility to account for existing site constraints and topography.	▪ Missouri Department of Natural Resources Publication 1293 addresses how to measure solar lot orientation. ▪ Fort Collins, CO, requires 25% of 15,000 sq. ft or greater residential lots to be "solar-oriented". ▪ Multnomah County, WA, and Ft. Collins, CO, require 20-30% of lots in new subdivisions to be solar-oriented. ▪ LEED-ND awards point for solar oriented building or block design. ▪ Glenwood Springs, CO, requires a minimum of 50% of lots in non-infill single-family subdivisions to have a north-south dimension of 90 feet or more; and to have a front lot line that is oriented within 30 degrees of a true east-west axis.
EPC-G5: Zoning and subdivision regulations do not address solar	Consider adding more formal process for protecting solar access.	▪ New Pattonsburg, MO, has basic solar access standards in the zoning regulations that consider: available solar access,

Diagnosis: Energy Production and Conservation		
EXISTING PROVISIONS	**POSSIBLE REVISIONS**	**EXAMPLES**
access protection.		architectural conflicts, and low-income housing restrictions. ▪ Boulder, CO, has detailed solar access review for every development to protect adjacent solar "envelope". Title 9, Ch. 9, Sec. 17.[2] ▪ Laramie, WY, allows registration of solar panels that triggers protection. ▪ See Kettles, A Comprehensive Review of Solar Access Laws In Use And Suggested Standards For A Model Ordinance. http://www.solarabcs.org/solaraccess/Solaraccess-full.pdf
EPC-G6: Zoning does not explicitly provide for cool roofs, green roofs and green walls, acknowledging their capacity to reduce building cooling loads, reduce heat island effect, and help mitigate storm water volume.	Add definitions for cool, green, or eco-roofs to zoning ordinance. Require cool roofs. Develop and adopt standards for green roofs and walls and inform the community they are both allowed and encouraged. Allow green roofs to count towards landscaping/open space requirements or provide bonuses for including. Consider adopting the IGCC and using the provisions for green roofs and walls.	▪ Chicago, IL, requires green roofs on all new downtown buildings. ▪ Knoxville, TN, requires an Energy Star Compliant (highly reflective) and high emissivity (ability to release absorbed heat) roof with a minimum emissivity and coverage area for each of its property development areas. ▪ LEED-ND awards 1 point for cool or shaded roof. ▪ Portland, OR, requires eco-roofs for all new city facilities with 70% coverage and high reflectance, ENERGY STAR-rated roof material on the remainder of the roof area. ▪ Miami, FL, allows 25% of landscaping requirement to be met on rooftops and amenity decks. ▪ Henderson, NV, allows green roofs as an alternative to other permitted roof forms and grants points in its sustainability point review system for cool or vegetated roofs.
EPC-G7: No mandatory minimum percentage of energy generation from alternative sources for buildings/developments.	Require minimum alternative energy % generation or purchase or GHG reduction.	▪ Henderson, NV, awards 5 points in sustainability point system if 20% of energy is generated on-site from renewable sources. 3 points if off-site. ▪ Boulder County, CO, BuildSmart criteria for new one- and two-family dwellings and accessory buildings requires on-site

[2] Solar Access Boulder, CO http://www.bouldercolorado.gov/files/PDS/apps/guides/solrshad.pdf

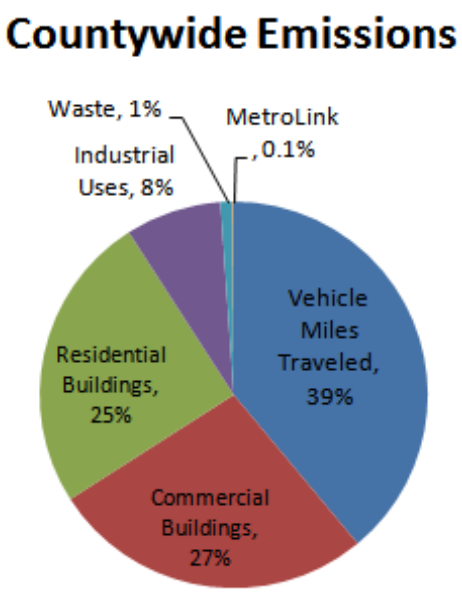
Diagnosis: Energy Production and Conservation		
EXISTING PROVISIONS	**POSSIBLE REVISIONS**	**EXAMPLES**
		renewable energy generation for specific uses determined by use and size. ▪ LEED-ND awards 1 point if 5% of energy is generated from renewable sources.
EPC-G8: Zoning does not address shade structures.	Consider making shade structures mandatory on building facades, roofs, and in parking lots.	▪ Marana, AZ, requires shaded walkways between entrances of large retail buildings and street. ▪ Austin, TX, requires sidewalks along 50% of building façades adjacent to or facing the principal street or adjacent parking to be shaded in its mixed-use corridors.
EPC-G9: Zoning and subdivision regulations do not require any minimum level of solar reflectance for paving materials.	Require paving materials to have a Solar Reflectance Index of at least 29 to reduce solar gain and the urban heat island effect.	▪ Houston, TX: Cool Houston! Is a plan to cool the region through changing the surfaces of the region by recognizing the surfaces that will most likely be replaced or resurfaced and targeting actions to help the decision makers choose better surfaces that will reduce the urban heat island effect and keep the region cool. ▪ Miami, FL, requires a minimum solar reflectance for all paving materials based on type of material.

URBAN FORM AND TRANSPORTATION

Introduction

Communities around the country are increasingly realizing the benefits of more closely coordinated policies for land use and transportation. A compact development pattern that reduces automobile reliance in favor of walking or public transportation has benefits both in terms of greenhouse gas reductions and public health. Many Midwestern communities, however, have followed the traditional growth model in which local governments approve new development projects under the assumption that all necessary new or expanded transportation facilities — mostly roads — would be provided automatically to service that growth. This approach has led to an over-reliance on expensive road networks that facilitate leap-frog development, negatively affect downtown areas, neglect healthier modes of travel, such as walking, biking, and transit, increase congestion, decrease safety, and increase air and water pollution. The key is to simultaneously set clear sustainable transportation goals (e.g., increase transit ridership or bicycle commuting) and land use goals (reduce sprawl and increase mixed-use development) so that each set of goals reinforces the other. Few development codes, however, have been updated to put this new understanding into practice.

Low-density development patterns and automobile dependence are significant contributors to greenhouse gas emission. In general, transportation sources contribute to about a third of greenhouse gas emission on the U.S. (http://www.epa.gov/otaq/ climate/basicinfo.htm). In a calculation based on 2008 statistics, vehicle miles traveled (VMT) accounted for approximately 39 percent of greenhouse gas emissions in St. Louis County. (St. Louis County Green and Growing). Overall emissions are predicted to increase by approximately nine percent by 2040 if no action is taken to reduce the causes of greenhouse gas emissions. (http://green.stlouisco.com/GreenhouseGasInventory/Forecasts).[3]



Regardless of future VMT measurements, many observers believe climate change is already evident in St. Louis County. Over the past 100 years, the Midwest has experienced an increase in precipitation as well as an increase in temperatures. The Union of Concerned Scientists predicted that over the next 100 years, temperatures will increase in the St. Louis region five to ten percent, increasing the number of days likely to exceed 100 degrees, while precipitation is predicted to increase ten to 30 percent, increasing the possibility of winter and spring flooding . Not only will these climate changes will have an impact on sectors including agriculture and other weather-dependent industries, they will very likely affect St. Louis County

[3] This forecast is not entirely in keeping, however, with 2008 VMT projections made by East-West Gateway in the report *Trends in Regional Traffic Volume: Signs of Change?* That study projected a flattening of VMT increases; however, the report was prepared at a time of record high gas prices and at the beginning of the Great Recession, and therefore, it may be necessary to re-forecast those number as the economy steadies.

residents in terms of the adverse health impacts related to severe heat waves and associated poor air quality, as well as the safety issues caused by flooding in heavily populated areas.

Building Sustainable Development Patterns

Through promoting sustainable development patterns, auto-dependent mobility and vehicle miles traveled can be reduced, thereby helping to reduce greenhouse gas emissions. Zoning strategies can include encouraging mixed-use development (residential and commercial use in same area), reducing parking requirements, creating walkable communities, and allowing compact/denser building design. In addition, the high personal cost to own and maintain a vehicle can be burdensome for low- and fixed-income individuals and families. Thus, increasing mobility will increase the financial and physical freedom of St. Louis County's residents. The impacts of these changes are measurable. For example, a study of 83 metro areas found that residents in compact regions such as Portland and Boston drive 25% less than sprawling regions such as Atlanta and Raleigh.[4] Higher-density urban areas, especially those incorporating mixed uses, make public transit and people-powered transportation more practical, while reducing emissions and encouraging exercise.

Denser, compact, and mixed-uses communities reduce driving and in turn reduce greenhouse gas emissions and encourage exercise.

Encouraging Infill Development

In a built-out community like St. Louis County, most "new" development takes place not on greenfields but within established neighborhoods. The neighbor's expectations of what should be built on a small site and the role of the current regulations in reinforcing the large lot residential development pattern make it difficult to build anything different and may involve some spirited discussion in front of the planning commission. To make the transition to higher density in targeted areas such as TOD sites or around commercial centers more certain for both neighborhood residents and developers, the land use regulations should include both infill exceptions that allow more dense construction on the site, and standards that require the new structures to blend into and be compatible with the surrounding neighborhood.

Changing the Automobile Habitat

Making development changes that encourage people to switch to walking, biking, or public transportation also requires a new look at how the land use regulations currently make numerous accommodations for cars. St. Louis County, like many, many Midwestern communities, was designed to make it easy to drive a car. According to the Missouri History Museum, the first "horseless carriage" made its appearance in St. Louis in 1893, and by the early 1960s the streetcar system was shut-down. The zoning and subdivision regulations require design with cars in mind. One of the most obvious design features is the parking lot. Studies have documented to relationship between free parking and a preference for automobile travel over other forms of transportation.[5] A newer study also shows that the construction and maintenance of parking spaces takes a measurable toll on the environment.

[4] Reid Ewing, *Growing Cooler: The Evidence on Urban Development and Climate Change (2009).*
[5] Donald Shoup, *The High Cost of Free Parking (1997).*

According to scientists at the University of California at Berkeley, including the provision of parking (by measuring parking construction emission externalities) in the overall lifecycle inventory of an automobile increases the greenhouse gas emissions by up to 27% (http://iopscience.iop .org/1748-9326/5/3/034001/fulltext)[6]. Changing the county's approach to parking -- for example, by further reducing parking requirements for compact, mixed-use development that generate less traffic -- can provide a positive impact in terms of use of alternative transportation, reduction of greenhouse gas emissions, and design of walkable spaces rather than parkable spaces.

The impact of the automobile is not limited to parking, but can also be seen in streets and development patterns that can crowd-out pedestrians. Some observers have noted that the pedestrian environment in parts of St. Louis County can be both uncomfortable and unsafe. This can be caused by auto-oriented design standards such as:

- Excessive additional right-of-way and large minimum turning radii requirements that run counter to sustainability objectives of narrow streets and less pavement;
- Long maximum block lengths that make neighborhood connectivity and walkability a challenge; and
- Lack of landscaping and green space.

It is necessary to revise these design and development standards to balance the automobile and the pedestrian. One successful approach to this has been through adoption of a complete streets policy, similar to those adopted by the cities of Ferguson and DeSoto, that will ensure that streets are designed to be safe and suitable for all users, not just the automobile. Similarly, the St. Louis Great Streets Initiative created by the East-West Gateway Council of Governments aims to create active streets serving all modes of transportation thus stimulating the economy and creating a social space for the community.

Tree Preservation and the Positive Impacts of Green Spaces

The proximity of homes, work, and play to one another in compact development patterns is not the only method of creating a more sustainable environment and reducing greenhouse gas emissions. The trees and green spaces incorporated in most the mixed-use neighborhoods also play an important role.

Trees not only help define the visual character of a community but provide important biological and hydrological functions. In an effort to create more sustainable and healthy communities, communities throughout the country are moving beyond thinking of trees in merely traditional terms, such as for aesthetics and shade, and making them part of the community's "green" infrastructure. In this role, trees can be used to control and filter stormwater, reduce sediment into surface waters, limit flooding, reduce greenhouse gases, clean pollution from the air, save energy on cooling, and reduce the urban heat island effect. According to the U.S. Department of Energy, a 30-year old hardwood tree can sequester the equivalent of 136 pounds of carbon dioxide annually - - about 70 such trees can offset the carbon dioxide emissions from one medium-sized car for the year. In addition to the preservation of existing trees, provision of new trees in conjunction with development, in parks, and in available spaces along the county's rights-of-way should also be areas of focus.

[6] Mikhail Chester, Arpad Horvath and Samer Madana , *Parking Infrastructure: Energy, Emissions, and Automobile Life-Cycle Environmental Accounting (2010)*

Native landscaping and open spaces can also beneficial to the neighborhood. Open spaces, both in and around a community, provide important community space, habitat for plants and animals, recreational opportunities, places of natural beauty, and critical environmental functions and areas (e.g., wetlands and floodplains). Open space may include areas for public parks, golf courses, gardens, and trails that provide both active and passive usage. Locating open space within walking or bicycling distance of home and work will reduce the number of vehicle miles traveled in the community, Additionally, changing from large lawns and manicured parks to native, non-turf landscaping contribute to the ability of soil and the humus within the soil to act as a large, long-term carbon bank. The Missouri Department of Conservation's Grow Native! Program points-out additional benefits that make native plants more cost effective and beneficial:

> "Native plants conserve soil and water and provide the backbone for non-polluting landscapes because they don't need fertilizers or pesticides. They support a diversity of wildlife through improved habitat and reduce long-term maintenance. They are winter hardy and drought tolerant and are less prone to destructive insects and diseases."

Missouri, with plenty of sunshine and rain, has a long list of native plants that can contribute to a vibrant landscape palette.

Current Policies and Programs

In the Sustainable Zoning/Subdivision Code Policy and Goal Inventory created by the St. Louis County Planning Department and attached as Appendix A to this Diagnosis, the county identifies a number of policies and programs currently in place to address urban form and transportation issues, including:

Inventory Section 1. Reduce Greenhouse Gases and Improve Air Quality Goals

Goal 1: Identify transit oriented development (TOD) locations for higher density, heights, and mixed use to reduce the need for automobiles.

Goal 2: Require connectivity that would include sidewalks, bikeways, trails and pedestrian malls that will allow people to easily access jobs, services and recreation by other means than an automobile.

Goal 3: Reduce parking requirements to encourage people to utilize mass transit, biking, or walking .

> *Source: Goals 1-3 2010Green and Growing Initiative-Green House Gas Inventory (http:// greendraft.stlouisco.com/GreenhouseGasInventory)*

Goal 4: Allow mixed use developments and accessory dwellings by right in specific residential, commercial districts, and industrial districts. (This is currently allowed in the county now, but the criteria need to be reviewed and made more user-friendly for developers).

> *Source: St. Louis County Zoning Ordinance, Section 1003.157-Mixed Use Development District*

Inventory Section 5. Increased Mobility and Multi-Modal Transportation Goals

Goal 1: Enhance roadway design to improve safety, reduce congestion, and alleviate operational constraints.

Goal 2: Modify roadway design to support transit service.

Goal 3: Improve access to transit.

Goal 4: Work with Metro to expand transit access to underserved areas.

Goal 5: Increase pedestrian and bicycle mode share.

Source: Goals 1-5 2010 Green and Growing Initiative-Transportation
http://green.stlouisco.com/Transportation/TransportationMobility

Existing Policy: Bike lanes can be included when it is advantageous to define available space for use by bicyclists and motorists and to allow for more expected movements by both. Bike lanes generally should be constructed on the right side of the street. They should also be one-way facilities and transport bicyclists in the same direction as the bordering motored traffic.

Source: St. Louis County Bicycle Facilities Plan-Highways and Traffic, page 5.

Existing Policy: Wide shared outside through lanes are a good alternative to striped bicycle lanes. Bicycle lanes may position cyclists in an awkward position for safely maneuvering in a traffic intersection or the lanes may confine bicyclist against the right curb where they are less visible to motorists. Wide shared lanes accommodate bicycle traffic along with motored traffic side by side. The wide shared lane is the St. Louis County Department of Highways and Traffic's preferred bicycle facility configuration.

Source: St. Louis County Bicycle Facilities Plan-Highways and Traffic, page 6.

Goal 6: Encourage innovative partnerships with stakeholders to promote the use of clean fuel technologies.

Source: 2010 Green and Growing Initiative-Transportation
http://green.stlouisco.com/Transportation/TransportationMobility

Inventory Section 5. Strategic Plan Transportation Goals

Goal 7: When appropriate and feasible, develop bicycle and pedestrian facilities to connect neighborhoods to nearby parks, community facilities, and neighborhood-scale commercial areas.

Goal 8: Integrate bicycle and pedestrian facilities with transit.

Goal 9: Promote transit-oriented development.

Goal 10: Continue to implement a priority sidewalk system in high pedestrian traffic areas near schools, parks and community facilities.

Goal 11: Partner with municipalities for development of "complete streets" and "great streets".

Source: Goals 7-11 St. Louis County Strategic Plan, Update 2008, page 4-22

Inventory Section 6: Tree Preservation and Landscaping Enhancement Goals

Goal 1: Require some tree retention or replacement during development.

Goal 2: Add landscaping provision to the Zoning/Subdivision ordinances.

Goal 3: Encourage the use of native trees and shrubs.

Source: Department of Planning Staff Recommendations- no documented sources currently exist

Goal 4: Landscape guidelines should be used to require a minimum amount of green space within the parking lot.

Inventory Section 9. Efficient Land Use Pattern Goals

Goal 1: Evaluate existing conditions on a proposed development site and determine the natural resources and sensitive areas to protect, plus the evaluation of conceptual plans to reduce impervious area and use green infrastructure, where appropriate, to the maximum extent practicable.

Goal 2: Use stream buffers to physically protect a stream from the encroachment of development. Stream buffers also protect development by maintaining the integrity of the natural stormwater drainage systems.

Source: Goals 1-2 MSD Stormwater Best Management Practices Post-Construction Recommendations, page 17-February 2011

Goal 3: Work with communities and developers to create attractive, pedestrian friendly developments.

Goal 4: Reduce parking requirements to reduce the heat island effect, as well as preserve open space for water infiltration.

Goal 5: Promote infill development, where appropriate, to encourage compact and walkable communities.

Goal 6: Expand open space management policies to preserve natural areas. Currently, the zoning ordinance requires stream buffers, Karst protection, floodplain protection; and our site plan process requires a natural resources inventory.

Goal 7: Provide incentives to develop brownfield sites.

Goal 8: Encourage the conservation of land resources, minimization of auto travel, and the location of employment and retail centers in proximity to higher density housing.

Source: Goals 3-8 2010 Green and Growing Initiative http://green.stlouisco.com/LandUse/SustainabilityInitiatives

Goal 9: Allow mixed use developments and accessory dwellings by right in specific residential, commercial districts, and industrial districts. (This is currently allowed in the county now, but the criteria need to be reviewed and rewritten to be more user-friendly for developers).

Source: St. Louis County Zoning Ordinance, Section 1003.157-Mixed Use Development District.

Goal 10: Promote Transportation Oriented Developments near transit (MetroLink and Bus) stops, where appropriate.

Goal 11: Promote context sensitive design that supports higher densities, walk-ability, and access.

Source: Goals 10- 11 St. Louis County Strategic Plan, Update 2008, page 4-22

Goal 12: Conduct small area studies to identify transitioning areas that would be appropriate for a greater mix of use and transit-oriented style amenities.

Goal 13: Where necessary, revise and streamline the zoning ordinance and development review process to encourage greater mix of use and pedestrian-scale, transit-oriented development.

Source: Goals 12-13 St. Louis County Strategic Plan, Update 2008, page 5-36

Summary

While St. Louis County has started the process of making local urban form and transportation more sustainable, we recommend the county consider the following range of changes to the zoning and subdivision regulations discussed in detail below that will promote sustainable development:

- Increase density around transit stops and in select zones. Identify and zone key transit-oriented development areas for higher density, heights, and mixed use.
- Establish a range of mixed-use districts, varying in use mix and intensity, that can be accomplished within existing development standards and without special approvals.
- Revise standards to allow infill development that will increase density as well as rebuild older neighborhoods with compatible development.
- Improve mobility by increasing connectivity between developments for vehicles and other modes of travel.
- Increase pedestrian and bike opportunities and connections, integrate with transit.
- Expand the use of accessory/secondary dwelling units that can promote more compact, infill development without large-scale, multi-story buildings.
- Develop standards for tree retention/replacement during construction.
- Enhance landscaping provisions – native trees and shrubs - within parking lots

Current Regulations

The following table cites some of the main current regulations in the zoning and subdivision regulations related to urban form and transportation. It is not meant to be all-inclusive, but to highlight some of the key provisions currently on the books that are directly related to sustainable development.

Regulations Addressing Urban Form and Transportation	
SECTION	**REGULATION**
Zoning Code	
1003.123 and 1003.125	***R-7 and R-8***– Specific (small) commercial uses permitted when located within a multiple family structure occupying no more than 5% of the gross floor area with no visibility.
1003.131.2(2) 1003.133 &1003.135	***C-1, C-2, and C-3 –*** one apartment permitted in building primarily designated for a commercial use (with limitations).
1003.141.3(4)	***C-6 -*** one dwelling unit (limited to the owner, manager, or employees) permitted per each 12,000 sq. ft. of office use.

Regulations Addressing Urban Form and Transportation	
SECTION	**REGULATION**
1003.165.4(5) (a) and (b)	***Off-Street Parking –*** 15 ft. wide perimeter landscaping strip required between parking lot and street in C and M districts; parking lot screening between non-residential and residential uses.
1003.165.4(8)	***Off-Street Parking –*** permits shared, off-site parking for uses in C and M districts; must equal 100% of required parking for all uses combined.
1003.165.4 (12)	***Off-Street Parking –*** 20% parking reduction for developments with 2 or more uses in C-2, C-3, M-1, or M-2 with greater reductions for larger uses with a parking study with Director permission.
1003.165.4 (13)	***Off-Street Parking –*** Parking reduction for elderly housing.
1003.145	***Planned Commercial District -*** allows for combinations of development types and uses that are not outright permitted in other commercial districts.
1003.157	***Mixed Use Development District -*** this district promotes a mix of uses, compact development, and pedestrian oriented design; parking reductions allowed; district dimensions created through development plan approval; specimen trees and tree masses required to be identified on plan.
1003.183	***Density Development Procedure*** – allows variations in lot area and setbacks within the NU, R-1, R-2, R-3, R-4, and R-5 districts while maintaining the maximum permitted density.
1003.187	***Planned Environment Unit Procedure*** – allows flexibility in the creation of subdivisions in residential districts for the construction of any type of residential structure and limited retail sales and services; densities are limited to the underlying zone district.
1003.189	***Commercial-Industrial Designed Development Procedure*** – allows some minor flexibility in the layout of commercial and industrial uses.
1003.111-1003.125	***Home Occupations*** – permitted use in all residential districts.
1003.170	***Non-Conforming Uses, Lands, and Structures –*** use or structure shall not be enlarged, extended, or altered; uses may be changed.
1003.179.2 (2)	***Site Plan Review –*** Department of Highways and Traffic reviews proposed streets and access drives for design, street trees, sidewalks, and other improvements in the ROW;also reviews grading, drainage, stormwater management, stream buffer areas, and floodplain information.
1003.179.2(3)	***Site Plan Review –*** Planning Department reviews internal traffic and pedestrian circulation system, landscaping, parking areas, and additional characteristics of site design; describes basic landscaping techniques and identifies design aspects to show for internal circulation.
1003.179.3	***Site Plan –*** must show off-street parking, stormwater drainage facilities, existing and proposed landscaping, location of stormwater detention facilities, stream buffer areas
1003.182	***Special Business Permit Procedure –*** additions to residential structures used commercially required to meet increased setbacks; specimen trees and tree masses required to be identified on plan; off-street parking for commercial use applicable.

Regulations Addressing Urban Form and Transportation	
SECTION	**REGULATION**
1003.183	***Density Development Procedure* –** allows creation of cluster subdivisions in residential districts.
1003.187	***Planned Environmental Unit Procedure* –** allows creation of planned development with economic and energy efficient subdivision design; includes procedure for dedication of land for public schools and parks.
1003.191	***Landmark and Preservation Area* –** procedure to establish; requires compliance with off-street parking but allows 20% reduction where necessary.
Subdivision Ordinance	
1005.020	***Purpose* –** includes preservation of natural features such as stands of trees, streams, significant rock formations.
1005.060	***Preliminary Plat* –** must show preliminary plan for stormwater control and stream buffer areas; sufficient contour data to show slope and drainage of tract; water courses, sink holes, areas inundated by stormwater, significant natural features such as wooded areas and rock formations; proposed sidewalks and pedestrian walkways; Fire District comments where variances are requested for reductions in pavement width.
1005.150.3	***Minimum Lot Width* –** 50-60 foot minimum lot width at the building line for lots less than 10,000 sq. ft.; larger minimum widths for larger lots.
1005.150.8	***Exceptional Development Conditions* –** Planning can withhold approval of construction on hazardous lots (rock formation, soil, steepness, flooding) until review of engineering studies shows safety.
1005.150.9, 1005.155.4	***Landscaping* –** 20 ft. permanently landscaped buffer between residential subdivisions and non-residential uses (applicable to multiple family subdivisions also)
1005.155.2	***Street Frontage* –** suitable access and easements must be provided for vehicular and pedestrian traffic.
1005.160	***Non-Residential Subdivision Design Standards* –** required buffering of adjacent residential uses by providing additional depth of lots; Planning Department may require pedestrian ways and sidewalks to provide access to parks, schools, shopping areas, or similar facilities as necessary to insure public safety; alternative lighting plan standards; landscaping requires 1 tree per 50 ft. of street frontage or submit overall landscaping plan.
1005.160.6 &1005.340	***Street tree requirements* –** in residential subdivisions one street tree is required for each street frontage; in non-residential subdivisions one street tree is required for every 50 feet of street frontage; maximum of 40% of one species; locational standards for street trees; may submit an overall tree and shrub landscaping design plan for subdivision.
1005.170	***Pedestrian Ways*** – Planning Department may require pedestrian ways that shall include 20 ft ROW; walkway must be 4 ft. wide and 4 in. thick made of Portland cement pavement or other all-weather surface.
1005.180	***Street Standards*** – any subdivision platted along an existing street shall provide up to 20 ft. ROW; blocks shall not exceed 1500 ft.
1005.270	***Sidewalks* –** required on both sides of the street except in cul-de-sacs containing 8 or

Regulations Addressing Urban Form and Transportation	
SECTION	**REGULATION**
	fewer single family lots, R-1 development, large lot subdivisions, and Non-Urban subdivisions using density development procedures; includes construction specifications requiring 4 ft width; variance procedure where sidewalks deemed not necessary or where alternative sidewalk plan submitted.
1005.340	***Landscaping*** **–** subdivision landscaping plans required showing types, sizes, and locations of existing and proposed plantings; residential requires 1 tree for every frontage; common areas, multifamily, and non-residential subdivisions require 1 tree for every 50 ft. of street frontage; specifies planting location; tree list maintained by Planning; may submit alternative landscaping plan; Highways and Transportation may require sodding or ground cover for erosion control.

Diagnosis

The following table contains a diagnosis of regulations addressing urban form and transportation.

Diagnosis: Urban Form and Transportation		
EXISTING PROVISIONS	**POSSIBLE REVISIONS**	**EXAMPLES**
Remove Barriers		
UFT-B1: Creation of mixed-use development is difficult and subject to varying standards; current commercial zones have limited provision for residential uses.	▪ Establish a range of mixed-use districts with baseline dimensional (minimum and maximum) and development standards. ▪ Define mixed-use as a primary use type, with particular emphasis on increasing amount of residential use in commercial areas/ projects. Consider adding it to appropriate districts as a permitted use. ▪ Make explicit how setbacks, height, density, etc, are to be calculated for mixed-use development so that developers can better plan sites and financing.	▪ Colorado Springs, CO, has mixed-use zone districts and design standards that promote mixed-use projects while protecting surrounding lower-scale residential neighborhoods. ▪ Henderson, NV, has tiered mixed-use zone districts with specific standards set for each zone. ▪ Omaha, NE, incorporates residential uses into all of its commercial districts either as a use-by-right or as a conditional use. ▪ Dallas, TX, has three mixed-use districts and two central area (downtown) districts with specific lot coverage, FAR, height, and tall building location requirements; all three mixed-use districts provide a density bonus for affordable housing ▪ University City, MO, has a high-density residential/office district focused on a mix of residential and office uses
UFT-B2: Mixed-use zone district specifies maximum residential	▪ Consider requiring minimum densities/FAR in some areas, especially in potential	▪ Arlington, TX, draft code incorporates minimum and maximum densities for mixed-use districts

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EXISTING PROVISIONS	**POSSIBLE REVISIONS**	**EXAMPLES**
densities, but not minimum density or floor area ratio. Minimum mix of uses (20% each residential, commercial, and office or industrial as baseline) may not be flexible enough.	transit-oriented development or in mixed-use buildings that include residential units. ▪ Allow flexibility in minimum mix of commercial/office uses in residential to provide employment and minimum mix of residential units in commercial areas to provide housing close to jobs.	▪ Many cities require minimum densities in areas designated for mixed-use and transit-oriented development, including Portland, OR (Ch. 33, Title 120, Sec. 205); Sparks and Henderson, NV (Ch. 19.3, Sec. 18); and Denver, CO. ▪ Orange County, FL, proposed MXDAC mixed-use district specifies minimum use mix in designated areas.
UFT-B3: There are no transitional compatibility standards between mixed-use development and existing development.	Establish standards for building height and massing and other features that ensure the edges of the higher-density, compact use are similar in nature to surrounding development.	▪ Colorado Springs, CO, has mixed-use zone districts and design standards that promote mixed-use projects while protecting surrounding lower-scale residential neighborhoods. ▪ Arlington, TX, has height step-down and screening standards that are applicable between mixed-use and residential districts. ▪ Clayton, MO, established no maximum building height in one of the overlay districts but rather determines the height by use and compatibility with the surrounding area.
UFT-B4: Dimensions in commercial districts are suburban in nature (e.g., 25-30% maximum lot coverage) and hinder compact development.	Reduce required dimensional standards in commercial districts to encourage compact development.	▪ Omaha, NE, has a commercial corridor overlay district that applies the urban design element to the city's major commercial corridors. The design standards emphasize walkability and multi-modal transportation.
UFT-B5: Code does not allow accessory dwelling units.	Permit accessory dwelling units in all or most residential districts. Include protective standards related to unit size, ownership, owner occupancy of principal dwelling, design, parking, to ensure compatibility.	▪ Denver, CO, permits accessory dwelling unit buildings as an accessory structure subject to the building form standards for accessory structures. ▪ Salt Lake City, UT, is considering amendments to zoning code to permit accessory dwelling units in specified areas (e.g., near transit) and where neighborhoods plans approve of ADUs, with protective standards for owner occupancy, size limits, etc. ▪ Seattle, WA, allows accessory dwelling

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EXISTING PROVISIONS	**POSSIBLE REVISIONS**	**EXAMPLES**
		units in most residential areas with protective standards and with an annual cap on the number of units permitted. ▪ Boise, ID, allows accessory dwelling units in all single family zoning districts. The ordinance establishes reasonable restrictions that are intended to ensure that the visible and functional character of the neighborhood is not affected by accessory units. ▪ Madison, WI, established accessory dwelling units as a conditional use in all residential districts. ▪ Kansas City, MO, allows carriage houses in some of the residential use districts.
UFT-B6: Street standards require minimum street widths, but rules to modify standards to allow narrower street widths are not clear.	Provide clear rules to approve narrower street widths to promote innovative design where traffic volume is conducive or where traffic control devices have been implemented.	▪ Eugene, OR, allows for narrower street design standards in TOD and mixed use areas. ▪ Ferguson and DeSoto, MO, have established complete streets policies to ensure that streets are designed for all users including pedestrians, bicyclists, and public transportation. ▪ Smart Code and most form-based codes (e.g., Duluth, MN, Ocean Springs, MS, Mobile, AL) require narrower streets.
UFT-B7: Base zoning code parking standards are suburban-oriented and excessive for compact development—discouraging infill and redevelopment. Current parking reductions typically require a parking study and discretionary approval. There are no specific standards for parking lot landscaping.	▪ Reduce base off-street parking requirements across the board for infill and redevelopment. ▪ Increase automatic reduction for mixed-use projects and codify shared parking arrangements. ▪ Allow on-street parking adjacent to property to count towards minimum on-street requirements. ▪ Adopt maximum parking limits to promote more	▪ Austin, TX, grants vertical mixed-use buildings automatic 60% parking reduction. ▪ Anchorage, AK, grants automatic 25% reduction in parking for mixed-use projects. ▪ Irving, TX, limits commercial and industrial use parking to 125% of the minimum required parking. ▪ Denver, CO, limits parking for transit-oriented development to no more than 110% of the minimum parking spaces required. ▪ St. Louis County Clean Green and

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EXISTING PROVISIONS	**POSSIBLE REVISIONS**	**EXAMPLES**
	compact, dense urban development. ▪ Establish clear minimum parking lot landscaping requirements tailored for infill development.	Beautiful has created a native landscaping guide with information that could be incorporated into the regulations. ▪ Overland Park, KS, does not have a minimum parking requirement for commerce/workshop/civic uses in its downtown district. It regulates shared parking for sites over 10,000 square feet in gross floor area (minimum of 1 and ¼ spaces per 1,000 square feet of non-residential gross floor area). On-street parking is included in shared parking calculations. ▪ St. Louis County Phase II Storm Water BMP Implementation Work Group report "Stormwater Best Management Practices Post-Construction Recommendations" (Feb. 2011) established three areas of focus for off-street parking: reduce the number of required parking spaces, reduce the space required per parking space, and reduce the amount of stormwater runoff from parking areas.
UFT-B8: Infill areas are subject to suburban-oriented development standards.	Consider adopting tailored development standards (landscaping, parking, open space) for designated infill and redevelopment areas throughout county.	▪ Laramie, WY, has customized landscaping, parking, and open space standards. for mature areas of city. ▪ Franklin, TN, has adopted traditional neighborhood standards addressing connectivity for older areas of city.
Create Incentives		
UFT-I1: Mix of housing types is allowed in many residential districts, but there is no incentive for developers to include more than one type.	Consider density bonus provision in code for projects that incorporate affordable or workforce housing units and allow for reductions in required off-street parking for projects located in areas where transit service currently exists or is planned in the future. Concentrate these types of adjustments along major travel corridors where	▪ Ferguson, MO, incorporated form-based zoning in its Downtown Strategic Development Plan to encourage mixed uses downtown. ▪ Sparks, NV, offers reduced parking requirements for projects with affordable housing in the city's TOD corridor. ▪ Boulder, CO, grants automatic parking reductions to affordable housing projects whose residents typically have fewer cars and rely more on public

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EXISTING PROVISIONS	**POSSIBLE REVISIONS**	**EXAMPLES**
	higher-intensity development is less likely to have a negative impact on established neighborhoods and may be served by high frequency transit.	transit. ▪ Henderson, NV, offers density bonuses and reduced parking for projects that incorporate housing as part of a broader mix of uses along the city's BRT Corridor. ▪ Glenwood Springs, CO, provides a lot coverage bonus for infill developments that incorporate accessory dwelling units. ▪ Many communities that allow accessory dwelling units do not count them against impervious cover limits or against maximum densities.
UFT-I2: Mixed use projects are given no preference over single-use projects.	Adopt streamlined review process and/or reduction in application fees for mixed use and infill project.	▪ Omaha, NE, exempts the CBD and NBD from off-street parking requirements for all uses. ▪ Clayton, MO, is part of the Partial Expense Reduction for Commuters (PERC) program that offers benefits to business and employees for utilizing mass transit. ▪ Miami-Dade County, FL, expedites processing of designated sustainable development projects. ▪ Reno, NV, allows for administrative approval (by the planning director) of mixed use projects along transit corridors if they meet minimum density bonus requirements and urban design standards.

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EXISTING PROVISIONS	**POSSIBLE REVISIONS**	**EXAMPLES**
UFT-I3: Zoning code parking regulations do not address parking or services for alternative fuel vehicles, carpool vehicles, and shuttles.	Allow for creation of priority parking spaces for alternative fuel vehicles, carpool vehicles, and shuttles. Add requirements/provisions for electric vehicle charging stations in parking lots and structures.	▪ Puget Sound Regional Council (PSRC) Model Development Regulations and Guidance reserves parking spaces for electric vehicle charging stations and counts the spaces toward the minimum parking requirement. Regulations also specify location and design criteria. ▪ Los Angeles, CA, provides preferential parking for hybrid vehicles. ▪ LEED awards 3 points out of 40 for basic certification for provision of preferential alternative fuel vehicle parking. LEED BD+C also provide points for siting in areas with higher density, in proximity to transit, and within ¼ mile of 10 or more basic services. ▪ Salt Lake City's new TOD ordinance grants automatic density bonuses and parking reductions for mixed-use developments along designated corridors. ▪ Omaha, NE, reduces off-street parking requirements if a use, application, or project provides bicycle parking and/or storage facilities.
Filling Regulatory Gaps		
UFT-G1: Areas near existing or future transit are not targeted for higher density.	Establish transit-oriented development (TOD) zone and increase (or require higher) allowed density near transit stations.	▪ Portland, OR, has certain districts that allow FAR and height bonuses for residential development around light rail stations. For each square foot of floor area developed and committed as housing, a bonus of 1 square foot of additional floor area is earned.
UFT-G2: Sidewalk and street connectivity requirements are limited to new subdivisions and are not comprehensive.	Provide more specific and aggressive standards for road connectivity. For example, add a "connectivity index" that requires new development to achieve a minimum connectivity score based on the number of intersections and road links provided within the development and to	▪ The Florida DOT adopted connectivity standards in its "Model Regulations for Multimodal Transportation Districts." These are used as criteria in funding local transportation projects. ▪ Franklin, TN, adopted a connectivity index with numerical standards to assess new subdivisions. ▪ Henderson, NV, requires all new development, except for new attached

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EXISTING PROVISIONS	**POSSIBLE REVISIONS**	**EXAMPLES**
	surrounding properties. Require pedestrian as well as vehicular connectivity.	and detached single family residential uses with less that 5 dwellings and properties ½ acre or less zoned nonresidential or mixed-use, to develop a circulation plan meeting a specific "connectivity index". ▪ Omaha, NE, has a civic importance overlay district that implements urban design standards in a wide range of areas across the city – from suburban to downtown. The standards reinforce pedestrian-oriented design and neighborhood connectivity.
UFT-G3: Current parking regulations do not contain a maximum limit on parking.	Impose a maximum limit on provided parking, such as 110% of the required minimum parking standard, to prevent excessive parking and asphalt.	▪ Madison, WI, established minimum and maximum parking limits for each use. ▪ Arlington, TX, proposes limiting commercial and industrial uses to the minimum required parking; any parking over 100% of the minimum will be required to provide additional landscaping and/or streetscape amenities. ▪ Overland Park, KS, established maximum parking standards for non-residential and residential uses. It regulates the number of surface and structured parking spaces by use and the maximum surface parking by square feet. ▪ Denver, CO, limits parking for transit-oriented development to no more than 110% of the minimum parking spaces required.
UFT-G4: Zoning code does not include provisions for bicycle parking.	Require bicycle parking plus other facilities (showers, lockers, etc.). Tailor to specific uses instead of linking to vehicle parking space requirements.	▪ Consider adopting new bicycle parking guidelines recommended by Assn. of Pedestrian and Bicycle Professionals (2d Edition 2010). ▪ Minneapolis, MN, requires bicycle parking for all principal uses. Minimum parking requirement for non-residential uses can be decreased by 10% or one space where bicycle parking spaces are provided equal to

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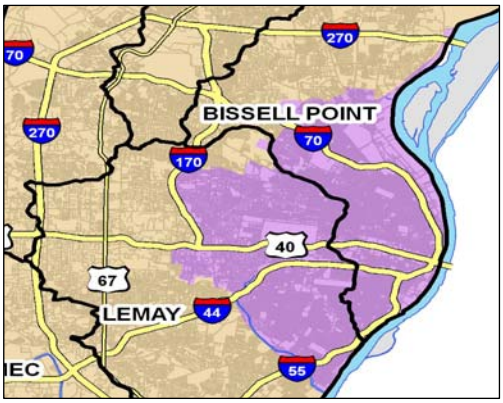
EXISTING PROVISIONS	**POSSIBLE REVISIONS**	**EXAMPLES**
		25% of the number of required automobile parking spaces. ▪ Madison, WI, established long- and short-term bicycle parking requirements. Long-term parking must be in an enclosed and secured area and is intended to serve residential uses. Short-term parking must be located in a convenient and visible area and is intended to serve commercial uses or as guest parking. ▪ Austin, TX, awards points in sustainability scoring system for showers, secure indoor bike lockers, etc, similar to standards for LEED.
UFT-G5: While certain trees and tree masses are required to be identified on site plans, there is no tree protection ordinance for existing landscape trees.	Create regulations to preserve certain types and sizes of existing landscape tree ("specimen" trees), including food-bearing trees.	▪ Omaha, NE, tree planting standards include bonus provisions for preserving existing trees of approved species. ▪ Denver, CO, requires preservation of established trees in all residential zone districts unless permitted by the city forester. ▪ Miami-Dade County, FL, requires a tree removal permit to destroy or remove any tree on private property. ▪ Salt Lake City requires permit for any tree removal along riparian corridors and 1:1 replacement. ▪ Washington, D.C., requires protection and/or replacement of large trees in specified residential areas. ▪ Clayton, MO, requires preservation of "significant" trees (large deciduous trees listed with a minimum of 4 inch caliper at 4 foot trunk height) to the maximum extent feasible. Those that cannot be preserved are required to be replaced. ▪ American Planning Association PAS Report 446, Tree Conservation Ordinance.

WATER QUALITY AND STORMWATER MANAGEMENT

Introduction

Stormwater has been identified by the U.S. EPA as a major source of water pollution that increases in a direct relationship with urbanization. This is because the increase in impervious surfaces and soil compaction of construction are combined with the removal of trees and vegetation to result in lower water infiltration on the site and faster overland flow through the watershed. This is a complicated way to say that the more we build, the more pollution (including sediment, metals, and organics associated with petroleum) we move into our waterways.



MSD combined sewer system

Stormwater has typically been managed through hard infrastructure such as curbs, gutters, and piping. This approach can be expensive for both the developer and the community and leads to long-term maintenance and operation costs and issues. Currently, buildings account for over 31% of the St. Louis area's impervious surfaces, a number that will increase with the county's population and job growth over time. New stormwater infrastructure will need to be built and older infrastructure upgraded or replaced. This will be particularly expensive in the parts of St. Louis County that, according to the Metropolitan St. Louis Sewer District (MSD), are still served by a combined sanitary and stormwater sewer system (shown on the map above in purple). Heavy rains already cause the combination of stormwater and wastewater to exceed the capacity of the system. To avoid overflow into area streets and homes, the excess flow is dumped untreated in to the Mississippi River or one of its tributaries. Any new construction in the combined sewer area will more than likely have to contribute to new infrastructure separating the combined system.

TABLE 5 STORMWATER RUNOFF METHODS EMPLOYED

	MUNICIPALITY/COMMUNITY SIZE		
	SMALL (1)	MEDIUM (2)	LARGE (1)
Retention basins required	32%	70%	73%
Imposition of limits on site coverage by impermeable surfaces	14%	40%	64%
Actively encourage permeable materials where possible	14%	70%	54%
Actively encourage rain gardens and other plantings	18%	50%	50%
None of the above	59%	10%	9%

(1) Fewer than 5,000 inhabitants
(2) Between 5,000 and 15,000 inhabitants
(3) Greater than 15,000 inhabitants

This table from the Environmental Sustainability Roadmap by FOCUS St. Louis shows the results of a survey of stormwater runoff methods employed by local communities. As shown, more than 70 percent of medium and large communities commonly approve concrete structures to handle runoff for new development.

To avoid costly future stormwater infrastructure problems, many communities are moving to green infrastructure. Green infrastructure is a combination of management approaches and technologies designed to infiltrate, evapotranspire, capture, and reuse stormwater to maintain or restore natural hydrologies. The focus is on greater on-site stormwater management. Green infrastructure saves money in the long-term by reducing the need for and burden on conventional, highly-engineered ("grey") infrastructure, such as water treatment plants and detention ponds that are expensive to build and maintain. One of the key implementation tools of green infrastructure is the use of low impact development (LID) design. LID uses site- designed techniques such as rain gardens, bioswales, and green

roofs to mimic pre-development site hydrology that will address runoff on the site. However, as shown in the table above, grey infrastructure (concrete) is used far more frequently to handle stormwater in the St. Louis region.

Green infrastructure can provide more than just cost savings to development, it can increase property values in depressed neighborhoods. In Philadelphia, a green retrofit program that converted unsightly abandoned lots into "clean & green" landscapes with tree plantings and some additional lawn maintenance resulted in economic impacts that exceeded expectations. A study by the Wharton School at the University of Pennsylvania showed that vacant land improvements led to an increase in surrounding housing values by as much as 30 percent. In one neighborhood this translated to a $4 million gain in property values through tree plantings and a $12 million gain through lot improvements.[7]

The "Stormwater Best Management Practices Post-Construction Recommendation" by the St. Louis County Phase II Storm Water BMP Implementation Work Group (Feb. 2011)identifies strategies to better handle stromwater through five main focus areas: 1) off-street parking; 2) weed ordinances; 3) residential streets; 4) residential parking; and 5) green space, buildings, and site design. Each of these focus areas offers a model ordinance and local examples.

Current Policies and Programs

St. Louis County has clearly identified water quality and stormwater management as key sustainable priorities through the adoption of the following current policies and programs:

Inventory Section 2. Water Quality and Stormwater Management Goals

Goal 1: Examination of proposed county initiatives to determine if it is possible to incorporate alternative land use, vegetation, wildlife and stormwater management practices.

Goal 2: Review selected county sub-basins to determine water quantity and quality impacts and formulate county-wide solutions.

Goal 3: Solutions to restore natural drainage patterns lie throughout the landscape, seeking opportunities to optimize infiltration and storage. This process begins with land management strategies that reduce run-off. Key recommendations will emphasize the need to rely on land management that favors native vegetation versus the maintenance of less suitable, although more familiar horticultural standards, especially turf.

Goal 4: Increasing the roughness and variation in surface depressions of a vegetated surface reduces the net amount of immediate runoff with greater opportunity to infiltrate to the soil mantle. Some of these "best practices" are emerging from nation-wide rating systems, including the STAR Community Index. Goals, objectives, and performance measures are being developed and applied to St. Louis County related to stormwater mitigation and strengthening sustainable ecosystems for jurisdictions around the country.

[7] http://www.upenn.edu/gazette/0711/feature3_2.html

Source: Goals 1-4 2010 Green and Growing Initiative-Environmental Conservation http://green.stlouisco.com/EnvironmentalConservation/StormwaterCaptureReuse

Goal 1: Evaluate existing conditions on a proposed development site and determine the natural resources and sensitive areas to protect, plus the evaluation of conceptual plans to reduce impervious area and use green infrastructure, where appropriate, to the maximum extent practicable.

Goal 2: Use stream buffers to physically protect a stream from the encroachment of development. Stream buffers also protect development by maintaining the integrity of the natural stormwater drainage systems.

Goal 5: Require bio-retention areas (or rain gardens) to treat stormwater and possibly reduce detention requirements.

Source: Goals 1,2, and 5 MSD Stormwater Best Management Practices Post-Construction Recommendations, February 2011 pages 4-5

Inventory Section 2. Reducing Commercial Parking Spaces

Goal 5: Parking ratios should be reduced to 3 or less spaces for offices and 4.5 or less spaces for retail and medical purposes per 1,000 square feet of floor area according to sources identified as benchmarks by MSD's Planning Committee.

Goal 6: Maximum parking requirements should be set for developments so that the number of spaces could not exceed 10% of the parking required by zoning. Property owners could build additional parking spaces, however; they would need to be constructed with pervious paving or otherwise mitigated with an impervious area off-set (e.g., green roof).

Goal 7: Shared parking should be allowed between two or more uses to satisfy all or a portion of the required parking.

Goal 8: Phantom parking should be allowed which involves not constructing all the required parking spaces until the parking is actually deemed necessary due to demand. In the meantime, the areas reserved for this unconstructed parking must remain in green space and subject to a potential request to construct in the future.

Goal 9: Use parking studies to evaluate the need for parking spaces, especially when in proximity to mass transit, car pooling lots, bike parking facilities, mixed property use and hours of operation.

Inventory Section 2. Reducing Parking Space Requirements

Goal 10: Minimum stall dimensions can reduce the impervious area of parking lots by allowing smaller parking spaces per car; such as compact car spaces.

Goal 11: Use efficient stall configuration.

Inventory Section 2. Reducing Parking Space Runoff

Goal 12: Allow pervious parking so that rainwater can pass through the parking surface.

Inventory Section 2. Reduce Residential Driveway Requirements

Goal 13: Allow two-track driveways, which reduces the impervious area of a driveway by providing for a green space on the portion of the drive that is not needed for a vehicle's wheels to travel on.

Goal 14: Encourage shared driveways where two residences use the same drive.

Source: Goals 5-14 MSD Stormwater Best Management Practices Post-Construction Recommendations, February 2011, pages 1-15

Summary

The county clearly recognizes the need to manage water quality and stormwater issues and is making necessary changes. Some additional change to the zoning and subdivision regulations might include:

- Establishing Low Impact Development (LID) standards that move more stormwater management on-site;
- Reducing parking requirements (efficient stall configuration and smaller parking spaces); and
- Creating options for the use of pervious surfaces (parking, driveways, alleys).

Current Regulations

The following table cites the primary current regulations related to water quality and stormwater management. It is not meant to be all-inclusive, but to highlight some of the key provisions currently on the books that are directly related to the issue.

Regulations Addressing Water Quality and Stormwater Management	
REF.	**REGULATION**
Zoning Code	
1003.165.4	***Parking and Loading Areas*** – are required to be paved except in the FP, PS, NU, and R-1 Districts.
1003.167.12(1)	***Buffers Along Waterways*** – all waterways having a 100-year floodplain are required to have an undisturbed natural vegetative buffer for 50 ft. For all other waterways, the undisturbed buffer must be 25 ft.
1003.167.12(4) & (5)	***Stream Buffer Standards*** – plans and plats must show the boundaries of any stream buffer and indicate the types of natural vegetation to be retained, restored, or removed from the buffer area. ***Permitted Uses in the Stream Buffer*** – subject to review of by the Director, roads, bridges, utilities (including sanitary and storm sewers), and foot trails and paths are permitted in the stream buffer.
1003.179.2(2)	***Site Plan Review –*** Department of Highways and Traffic reviews proposed streets and access drives for design, street trees, sidewalks, and other improvements in the ROW; also reviews grading, drainage, stormwater management, stream buffer areas, and floodplain.
1003.179.2(3)	***Site Plan Review –*** Planning Department reviews internal traffic and pedestrian circulation system, landscaping, parking areas, and additional characteristics of site design; describes basic landscaping techniques and identifies design aspects to show for internal circulation.
1003.179.3	***Site Plan –*** must show off-street parking, stormwater drainage facilities, existing and

Regulations Addressing Water Quality and Stormwater Management	
REF.	**REGULATION**
	proposed landscaping, location of stormwater detention facilities, stream buffer areas.
1003.183	***Density Development*** **–** permissive open space set-aside and public park dedication allowed to be counted in gross area calculations
Subdivision Ordinance	
1005.020	***Purpose*** **–** includes preservation of natural features such as stands of trees, streams, significant rock formations.
1005.060	***Preliminary Plat*** **–** must show preliminary plan for stormwater control and stream buffer areas; sufficient contour data to show slope and drainage of tract; water courses, sink holes, areas inundated by stormwater, significant natural features such as wooded areas and rock formations; proposed sidewalks and pedestrian walkways; Fire District comments where variances are requested for reductions in pavement width.
1005.150.9 & 1005.155.4	***Landscaping*** **–** 20 ft. permanently landscaped buffer required between residential subdivisions and non-residential uses (applicable to multiple family subdivisions also).
1005.160	***Non-Residential Subdivision Design Standards*** **–** required buffering of adjacent residential uses by providing additional depth of lots; Planning Department may require pedestrian ways and sidewalks to provide access to parks, schools, shopping areas, or similar facilities as necessary to insure public safety; alternative lighting plan standards; landscaping requires 1 tree per 50 ft. of street frontage or submit overall landscaping plan.
1005.160.6 & 1005.340	***Street tree requirements*** **–** in residential subdivisions one street tree is required for each street frontage, in non-residential subdivisions one street tree is required for every 50 feet of street frontage; maximum of 40% of one species; locational standards for street trees; may submit an overall tree and shrub landscaping design plan for subdivision.
1005.185	***Stormwater Standards*** – may requires controlled release and storage of excess stormwater runoff for non-residential development; stormwater detention facilities may serve open space and/or recreation purposes.
1005.186	***Stream Buffer Standards*** – required for all subdivisions except agricultural or when used as regional ped/bike trails; 25 ft. stream buffer + 25 ft. building setback; lists permitted uses within the buffers; plans and plats require a list of natural vegetation to be retained, restored, or removed from the buffer area.
1005.210.4	***Stormwater and Stormwater Control Easements*** – requires stormwater control easements along all major creeks and significant tributaries and stormwater control system structures.
1005.290	***Storm Sewers*** **–** storm drainage improvements consisting of storm sewer systems or open channels shall adequately drain area; improvements shall be coordinated with surrounding development; maintenance responsibility of subdivision trustees.
1005.340	***Landscaping*** **–** subdivision landscaping plans required showing types, sizes, and locations of existing and proposed plantings; residential requires 1 tree for every frontage; common areas, multifamily, and non-residential subdivisions require 1 tree for every 50 ft. of street frontage; specifies planting location; tree list maintained by Planning; may submit alternative landscaping plan; Highways and Transportation may require sodding or ground cover for erosion control.

Diagnosis

The following table contains a diagnosis of regulations addressing water quality and stormwater management.

Diagnosis: Water Quality and Stormwater Management		
EXISTING PROVISIONS	**POSSIBLE REVISIONS**	**EXAMPLES**
Remove Barriers		
WQ-B1: Setbacks to perimeter yards do not provide exceptions for rainwater collection or grey water systems.	Allow structure associated with a rainwater collection (e.g., rain barrel) or grey water system to project into side and rear setbacks by five feet or more.	▪ Portland, OR, allows water collection cisterns under 6' in height in side and rear setbacks. ▪ Berkeley, CA, has a simple permitting system for grey water systems based on capacity. ▪ Baltimore, MD, draft updated zoning allows rain barrels and cisterns as permitted encroachments in yards.
WQ-B2: Parking and loading areas in most districts are required to be paved.	Permit permeable pavement or drive strip options.	▪ Rock Hill, MO, permits driveways with a strip of grass between two strips of concrete or brick. ▪ Minneapolis, MN, allows pervious pavement for single and two-family dwellings and open-celled paving grids for parking spaces in commercial and downtown districts. ▪ Madison, WI, permits residential driveways with a grass center for single and two-family dwellings provided that the areas on which the vehicle's wheels touch are a minimum of 12 inches in width. It also encourages the use of permeable paving for all parking spaces. ▪ Locations in Ferguson, Webster Groves, and St. Louis have installed pervious and permeable paving in parking lots.
WQ-B3: Current regulations provide requirements for stormwater retention/ detention.	Require more aggressive goals and requirements to increase groundwater recharge by requiring more on-site retention/detention of stormwater to allow greater infiltration into soil through low impact development (LID)	▪ St. Louis County Phase II Storm Water BMP Implementation Work Group "Stormwater Best Management Practices Post-Construction Recommendations," Appendix G (Feb. 2011), includes detailed drawings of bioretention along roadways. ▪ North Las Vegas, NV, is considering

Diagnosis: Water Quality and Stormwater Management		
EXISTING PROVISIONS	**POSSIBLE REVISIONS**	**EXAMPLES**
	standards.	tailored stormwater retention standards for infill development instead of on-site retention which discourages redevelopment in many instances. ▪ See U.S. EPA Water Quality Scorecard that encourages non-structural approaches to stormwater management. States of TN and WVa proposing these approaches for state stormwater permits.
WQ-B4: Current regulations provide stormwater management requirements for road and sidewalk facilities through grey infrastructure, not green.	Require that county streets and sidewalks integrate green infrastructure so that ROW landscaping is watered through curb cuts, bioswales and other stormwater detention facilities to allow more landscaping and better water infiltration, instead of conveying water through ditches and culverts.	▪ Covington, KY, has converted streets around its convention center to integrate green infrastructure (▪ Numerous communities, including Portland, OR; NYC; Redmond, WA; Los Angeles, CA; and Chicago, IL; require green infrastructure.
WQ-B5: Most zoning code parking standards are suburban-oriented and create excessive parking. Current parking reductions require a parking study and discretionary approval. There are no specific standards for parking lot landscaping.	▪ Reduce base off-street parking requirements across the board for infill and redevelopment. ▪ Increase automatic reduction for mixed-use projects and codify shared parking arrangements. ▪ Allow on-street parking adjacent to property to count towards minimum on-street requirements. ▪ Adopt maximum parking limits to promote more compact, dense urban development. ▪ Establish minimum clear parking lot landscaping requirements.	▪ Madison, WI, requires interior parking lot landscaping for parking lots with 20 or more parking spaces, and the landscaping is subject to specific standards, such as planting islands or landscaped strips, shade trees, low-impact stormwater management curb designs, and pedestrian pathways. ▪ Chesterfield, MO, requires landscaped islands a minimum of 9 feet wide with trees and 135 sq. ft. of pervious area per parking row. No parking space can be located farther than 50 feet from a tree. ▪ Austin, TX, grants vertical mixed-use buildings automatic 60% parking reduction. ▪ Anchorage, AK, grants automatic 25% reduction in parking for mixed-use projects. ▪ Irving, TX, limits commercial and industrial use parking to 125% of the

Diagnosis: Water Quality and Stormwater Management		
EXISTING PROVISIONS	**POSSIBLE REVISIONS**	**EXAMPLES**
		minimum required parking. ▪ Denver, CO, limits parking for transit-oriented development to no more than 110% of the minimum parking spaces required.
Create Incentives		
WQ-I1: Current regulations do not provide significant incentives to reduce impervious surfaces.	Do not count pervious surfaces towards lot coverage limits and calculations for stormwater detention requirements.	▪ Olympia, WA, Portland, OR, and Chicago, IL, encourage use of pervious pavement for residential streets and alleys. ▪ See U.S. EPA Water Quality Scorecard that encourages non-structural approaches to stormwater management. States of TN and WV are proposing these approaches for state stormwater permits. (http://www.epa.gov/dced/water_scorecard.htm)
WQ-I2: Zoning regulations do not provide incentives for green roofs (which can improve stormwater quality and reduce runoff volumes)	Offer density bonus, additional height, or other desirable development benefit for installation of vegetated roof	▪ Henderson, NV, allows green roofs as an alternative to other permitted roof forms and grants points in its sustainability point review system for installation of cool or vegetated roofs.
Filling Regulatory Gaps		
WQ-G1: Current regulations do not reserve any of the ROW or address the use of "green" infrastructure.	Require that certain portion of ROW be reserved for trees and other "green" infrastructure to avoid conflicts with utilities and other grey infrastructure.	▪ Creve Coeur, MO, requires a three-foot green strip between sidewalks and the street/parking areas. ▪ Liberty, MO, requires street trees based on street size and building size and requires protection of existing trees and vegetation. ▪ Carson City, NV, requires public streets in downtown mixed-use districts to have a minimum of six feet for street tree/furniture area with minimum landscaping requirements. ▪ Miami, FL, requires public frontages in certain zones to be lined with predominantly native and drought tolerant trees.
WQ-G2: Current	Require that excess parking	▪ Asheville, NC, requires porous

Diagnosis: Water Quality and Stormwater Management		
EXISTING PROVISIONS	**POSSIBLE REVISIONS**	**EXAMPLES**
regulations do not include provisions for pervious pavement.	(over 100% of minimum parking) use pervious pavement	pavement used for parking exceeding the maximum number of spaces. ▪ Ft. Wayne, IN, allows porous pavement spaces to replace required off-street parking at a ratio of 2 off-street: 1 porous space.
WQ-G3: Zoning and subdivision regulations do not establish standards for the provision of open space.	Revise zoning and subdivision regulations to add clear, numeric standards regarding minimum private common open space set aside for all developments. Consider public lands dedication for neighborhood and community regional parks.	▪ Franklin, TN, has specific land set-aside requirements for all new development, including types of open space. ▪ Arlington, TX, is considering private, common open space standards for all new development. ▪ National Parks and Recreation Association has established standards for the amount of park and open space lands as well as developed park facilities to meet the needs of population/thousand. (http://www.nrpa.org/)

HOUSING

Introduction

A mix of housing types is necessary to address accessibility and affordability needs and to provide a wide range of housing options for a diverse population.

A truly sustainable community must provide a variety of housing options to meet the needs of a diverse population. The community's housing stock must be affordable in that it offers a variety of rental and for sale units within reach of a mix of incomes. Housing must also be provided that is accessible to disabled residents and allows older residents to "age in place." The housing market, as we have known it for many years, is on the verge of tremendous change according to experts such as Arthur Nelson at the University of Utah. He predicts that ninety percent of the demand for new housing in the next ten years will be by households without children and 47 percent will be by senior citizens, many of whom are selling off their single-family homes. Of the seniors who move, 80 percent will vacate single-family homes but 60 percent will move into multi-family units.[8] Tightened rules for home mortgages will further accelerate the demand for smaller, less expensive homes and rental units.

Like many counties across the country, St. Louis County's population is changing. Population-wise, the county has remained fairly stable for the past decade. Between 2000 and 2010 the U.S. Census Bureau statistics show the county population shrinking by 1.7 percent, from 1,016,301 in 2000 to 998,954 in 2010. This statistic may be deceptive, however, because a look at population change over individual years shows that the county population actually increased by about 7,000 between 2008 and 2010.

Where the population is changing, however, is in age as county residents get older. By 2030, the percentage of Americans over the age of 65 is expected to rise as high as 20-25 percent of the population. In Missouri, the senior population (over 65) is expected to rise from one in seven to one in five by 2030.[9] And in St. Louis County, the largest age group in the 2000 census were people in their forties. As they move into their fifties and sixties there will be a significant increase in the county's elderly population. This trend translates to a need for more housing stock that can allow residents to stay in their current homes or neighborhoods as they get older—or "age in place." In order to accommodate these needs, there must be a diversity of housing types and homes must incorporate a single level design, wheel chair accessibility, and visitablility principles.

Additionally, the county's household sizes are shrinking. According to the Research Division of the County Planning Department, the county has seen a 29 percent drop in household size over the past 40 years, to the current level 2.4 persons per occupied home. In the U.S. as a whole, household size is also dropping, but has hovered around 2.6 persons per occupied house between 2000 and 2005. As household size decreases, demand for alternatives to the single-family detached home may also increase. This demand may be difficult to response to, as housing diversity in St. Louis County is somewhat limited and the majority of units are single family structures.

[8] Chris Nelson, University of Utah
[9] Missouri State Plan on Aging FY 2012 to 2015

Currently, St. Louis ranks as the second-most affordable housing market when compared with the top 20 large metropolitan areas in the country, according to the National Association of Home Builders during the fourth quarter of 2010. This ranking may not take into account the fact that the county's housing stock is aging, much of it constructed in the 1950s and 1960s. Older homes are often much smaller than modern homes which can make them more affordable; however, lower rental and purchase prices are may be offset by higher maintenance costs and utility bills associated with the age and condition of the home. The county notes also that the percentage of homeowners spending more than 35 percent of their income on housing - a percentage commonly used by financial experts to determine if a homeowner will encounter difficulties in paying for their residences - has increased from 12 percent in 2000 to 22 percent in 2009. Among renters this number is 41 percent, which may be related to the relatively low inventory of available rental housing, the increased number of renters that have been added during the current recession, and relatively high unemployment figures.

To adequately address all of these changing statistics and unforeseen financial circumstances that, by many accounts, will impact our economy for a number of years to come, the county will need to encourage a much more broadly diverse housing mix, both in terms of types of structures and price points.

Current Policies and Programs

The county has a number of current policies and programs designed to increase housing accessibility, diversity, and affordability, including:

Inventory Section 3. Broad Housing Goals

Goal 1: Identify distressed communities with assets for the targeted investment of resources to increase housing values and leverage additional private and public investment.

Goal 2: Promote rehabilitation of existing homes in order to provide opportunities for affordable and diverse housing in distressed communities.

Goal 3: Expand homeownership opportunities throughout St. Louis County to support the continued economic viability of the area.

Goal 4: Support development efforts of for profit and non-profit developers for the targeted development of affordable rental units for larger families.

Goal 5: Support development efforts by for profit and non-profit developers for the production of affordable rental units with supportive services and accessible design.

Source: Goals 1-5 St. Louis County Home Consortium Consolidated Plan 2011-2015, pages 67-70

Inventory Section 3. Strategic Plan Housing Goals

Goal 6: Increase redevelopment of older transitioning residential areas by planning for more mixed-used and transit-oriented style development.

Source: St. Louis County Strategic Plan, Update 2008, page 5-29

Goal 7: Consult with developers to identify barriers to use of the MXD zone district.

Goal 8: Where necessary, revise and streamline the zoning ordinance and development review process to encourage greater mix of use and pedestrian-scale, transit-oriented, development.

Goal 9: Conduct small area studies to identify transitioning areas that would be appropriate for a greater mix of use and transit-oriented style amenities.

Goal 10: Work with Economic Council, the development and real estate community and community stakeholders to identify transitioning areas and market the use of MXD zoning to promote greater mix of use and pedestrian amenities.

Source: Goals 7-10 St. Louis County Strategic Plan, Update 2008, page 5-36

Goal 11: Reduce substandard residential properties.

Goal 12: Increase the diversity of the housing stock; including accessory dwelling units (ADU) and product diversity.

Goal 13: Prevent foreclosures and reduce its negative neighborhood impact.

Source: Goals 11-13 St. Louis County Strategic Plan, Update 2008, page 6-19)

Goal 14: Ensure that zoning and other regulations are inclusive and provide for greater diversity, density and affordability in housing stock.

Source: Goal 14 St. Louis County Strategic Plan, Update 2008, page 6-25

Summary

As part of the Sustainable Zoning and Subdivision Ordinance Revisions project, the county has an opportunity to expand its current efforts and to address these issues more broadly in the land use regulations. In particular, the county needs to more explicitly address the types of housing preferred in different locations, increasing predictability for the development community and neighborhood residents about what will be built in the future.

Some of the potential changes identified below include:

- Clarifying language in the zoning and subdivision related to housing types to more clearly define where in the county a diverse mix of housing types is desirable and ensuring standards are in place to accommodate this mix while protecting established neighborhoods;
- Establish procedures to encourage accessory dwelling units; and
- Allowing for creative approaches to infill housing, especially small-lot development.

Current Regulations

The following table cites current zoning and subdivision regulations related to housing accessibility, diversity, and affordability. It is not meant to be all-inclusive; rather it highlights some of the key provisions currently on the books that are directly related to this issue.

Regulations Addressing Housing	
REF.	**REGULATION**
Zoning Code	
1003.110 - 125	***R-5, R-6A, R-6AA, R-6, R-7, R-8 Residential Districts –*** mix of residential structures (single family, two family, three family, multiple family, row houses, attached) permitted in district. Lot sizes range from 6,000 to 4,500 sq. ft. (for single-family detached) with planned approval options for smaller lot sizes.
1003.131.2(2) 1003.133 &1003.135	***C-1, C-2, and C-3 –*** one apartment permitted in building primarily designated for a commercial use (with limitations).
1003.141.3(4)	***C-6 -*** one dwelling unit (limited to the owner, manager, or employees) permitted per each 12,000 sq. ft. of office use.
1003.183	***Density Development Procedure*** – allows variations in lot area and setbacks within the NU, R-1, R-2, R-3, R-4, and R-5 districts while maintaining the maximum permitted density.
1003.157	***Mixed Use Development District -*** this district promotes a mix of uses, compact development, and pedestrian oriented design; parking reductions allowed; district dimensions created through development plan approval; specimen trees and tree masses required to be identified on plan.

Diagnosis

The following table contains a diagnosis of regulations addressing housing.

Diagnosis: Housing		
EXISTING PROVISIONS	**POSSIBLE REVISIONS**	**EXAMPLES**
Remove Barriers		
H-B1: Code does not explicitly provide for mixed-use development outside of MU district.	Amend definition of mixed-use to define it as a primary use type. Consider adding it to appropriate districts as a permitted use. Include provisions that encourage or require a mix of housing types, including affordable housing.	▪ Colorado Springs, CO, has mixed-use zone districts and design standards that promote mixed-use projects while protecting surrounding lower-scale residential neighborhoods. ▪ Henderson, NV, has tiered mixed-use zone districts with specific standards set for each zone. ▪ Salt Lake City, UT, permits multi-family developments by-right in non-residential districts. ▪ Dallas, TX, has three mixed-use districts and two central area (downtown) districts with specific lot coverage, FAR, height, and tall building location requirements; all three mixed-use districts provide a density bonus

Diagnosis: Housing		
EXISTING PROVISIONS	**POSSIBLE REVISIONS**	**EXAMPLES**
		for affordable housing
H-B2: Code does not allow accessory dwelling units in most districts.	Permit accessory dwelling units in all or most residential districts with protective standards related to unit size, ownership, occupancy of principal dwelling, etc.	▪ Kansas City, MO, allows ADUs in most residential zone districts. ▪ Denver, CO, permits accessory dwelling unit buildings as an accessory structure subject to the building form standards for accessory structures. ▪ Salt Lake City, UT, is considering amendments to zoning code to permit accessory dwelling units in specified areas (e.g., near transit) and neighborhoods where plans approve of ADUs. ▪ Wildwood, MO, permits accessory buildings in the R-1 district that meet specific size requirements – no more than 3,500 sq. ft., 10% of lot area, and may be no larger than the footprint of the principle single family dwelling.
Create Incentives		
H-I1: Mix of housing types is allowed in most residential districts; but there is no incentive for developers to include more than one type or to include affordable and/or workforce housing.	▪ Provide density bonuses for projects that incorporate affordable or workforce housing units; increase the bonus and allow for reductions in required off-street parking for projects located in areas where transit service currently exists or is planned in the future. Concentrate these types of adjustments along major travel corridors where higher-intensity development is less likely to have a negative impact on established neighborhoods and may be served by high frequency transit. ▪ Consider allowing small lot residential development in most residential zone districts with design and compatibility standards.	▪ Sparks, NV, offers reduced parking requirements for projects that incorporate affordable housing in the city's TOD corridor. ▪ Boulder, CO, grants automatic parking reductions to affordable housing projects whose residents typically have fewer cars and rely more on public transit. ▪ Henderson, NV, offers density bonuses and reduced parking for projects that incorporate housing as part of a broader mix of uses along the city's Boulder Highway BRT Corridor. ▪ Glenwood Springs, CO, provides a lot coverage bonus for infill developments that incorporate accessory dwelling units. ▪ Santa Cruz, CA, provides a simpler and shorter ADU permitting process and some ADU development incentives.

Diagnosis: Housing		
EXISTING PROVISIONS	**POSSIBLE REVISIONS**	**EXAMPLES**
Filling Regulatory Gaps		
H-G1: Current regulations do not address size or unit variations in multi-family developments.	Require a mix of unit sizes in multi-family developments to help ensure units at a range of price points are available.	▪ Erie, CO, Requires all multi-family developments to meet one of the following: ▪ A minimum of 50% of the total planned units shall vary in size from other units by at least 250 square feet. ▪ A maximum of 50% of the total planned units may have the same number of bedrooms. ▪ A minimum of ten percent of the total planned units shall have at least three bedrooms. ▪ Chapel Hill, NC, requires mix of housing sizes in new developments (25% must be less than 1,350 square feet).

LOCAL FOOD PRODUCTION

Introduction

In the United States, our highly mechanized and centralized food system makes sustainable food production a challenge. With the average food item in the U.S. traveling 1,400 miles to get to the dinner table, the sustainability of food production in this country as productive land is being reduced by suburban sprawl, forcing dependence on distant domestic farms and foreign producers.While rural farmland average is being lost, the number of small farms and gardening operations in urban areas is increasing at an unprecedented rate. In the U.S. alone, there are an estimated 10,000 community gardens operating today. Given that approximately 40 million Americans are considered "food insecure,"[10] promoting alternative, local sources of food is critical. Farmers markets, urban farms, and community gardens provide healthy food options while creating a sense of place and increasing community pride. Local food also decreases vehicle miles traveled and reduces transportation related greenhouse gas emissions. Moreover, local food is cheap, healthy, secure, and sustainable food.

Zoning regulations should address farmers markets, outdoor sales of goods not related to an indoor activity, community gardens, and urban farms. In Seattle, the comprehensive plan requires at least one community garden for every 2,500 households in an urban village or neighborhood. San Francisco, CA, has a goal of creating one urban farm on every block in the city by 2015. Chicago's Neighborspace program allows residents to use city parks for gardening. Locally, the City of Ferguson has adopted an ordinance that establishes clear rules for community gardens, among other things. This ordinance permits the sale of produce grown on the site, regulates structures on the site and addresses composting.

Community gardens provide healthy and inexpensive food options while reducing greenhouse gas emissions and encouraging community pride.

In addition, zoning code provisions should be compared to existing land uses to identify lots, areas, and neighborhoods that are suitable for urban agriculture uses, such as community gardens, farmers' markets, and food stands. Integrating urban agriculture into existing and future open space areas should also be a priority.

Addressing nuisance issues related to urban agriculture — especially regarding the keeping of livestock (chickens, ducks, goats, small pigs, etc) — is often a major concern for communities. However, by carefully placing limits on the number and species of animals allowed and by limiting the intensity of animal use to appropriate zones, many cities have successfully protected adjacent neighbors from potential odor, noise, or hygiene concerns. Portland allows up to three chickens, ducks, doves, pygmy goats, or rabbits without a permit, but residents can get a special use permit for a small-scale livestock facility with the permission of

[10] According to the USDA: "Households are classified as food insecure with hunger if their reported food-insecure conditions suggest that one or more household members was hungry at some time during the year because the household could not afford enough food. Households with children are further classified by whether any children were hungry at any time during the year because of the household's lack of money and other resources for food."

property owners within 150 feet of the site. Denver, CO recently revised its zoning code to allow beekeeping on residential lots.

Current Policies and Programs

The county has a number of current policies and programs designed to encourage local food production, including:

Inventory Section 7. Local Food Production Goals

Goal 1: Allow community gardens in appropriate zoning districts.

Goal 2: Allow farmers markets in all commercial zoning and mixed-use districts where appropriate.

Existing Policy: The Department of Health considers farmers markets to be "Temporary Food Establishments" and does require a permit and inspection prior to operation.

> *Source: Goal 2 St. Louis County Revised Ordinances, Chapter 807 "The Food Code"; 807.120 "Temporary Food Establishment Requirements", page 25*

Goal 3: Urban farms are currently allowed in the Non-Urban zoning district, but they should be allowed in other appropriate zoning districts.

Goal 4: Rooftop gardens reduce the heat island effect and should be allowed in all appropriate zoning districts.

Goal 5: Reduce fossil fuel consumption and GHG emissions by encouraging local food production.

> *Source: Goals 1-5 Department of Planning Staff Recommendations- no documented sources currently exist*

Summary

Establishing zoning regulations to promote local food production is timely and will add St. Louis County to the growing ranks of communities recognizing the health, environmental, and economic impacts of growing, buying, and eating local. To make this happen, the county will need to make some changes to the current zoning and subdivision regulations as identified below, including:

- Allowing for community gardens and farmers' markets in more zone districts;
- Reviewing and updating lot standards to allow room for gardening, including on the roof; and
- Considering the roll of "active" green space in community design.

Current Regulations

The following table cites current zoning and subdivision regulations related to local food production. It is not meant to be all-inclusive; rather it highlights some of the key provisions currently on the books that are directly related to this issue.

Regulations Addressing Local Food Production	
REF.	**REGULATION**
Zoning Code	
1003.103.3 & 1003.143.3 & 1003.151.3 & 1003.153.3	***PS, C-7, M-1, M-2 District Regulations –*** conditionally allows facilities for the composting of yard wastes.
1003.111	***R-1 District Regulations –*** commercial vegetable and flower gardening, plant nurseries and greenhouses (but not including any structure used as a salesroom), farming (including the cultivation and sale of any plant crops and domestic animals) are permitted.
1003.107.3 & 1003.109.4	***NU and KP District Regulations*** – commercial vegetable and flower gardening, plant nurseries and greenhouses (with accessory salesrooms as a conditional use), farming (including the cultivation and sale of any plant crops and domestic animals), and dairy farming are permitted on at least 5 acres.

Diagnosis

The following table contains a diagnosis of regulations addressing local food production.

Diagnosis: Local Food Production		
EXISTING PROVISIONS	**POSSIBLE REVISIONS**	**EXAMPLES**
Remove Barriers		
LFP-B1: Current code does not address specifically whether and to what degree greenhouses are allowed.	Make clear that accessory buildings, such as green houses, are allowed within side and rear setbacks, but perhaps no closer than 5 feet from any property line.	▪ Ferguson, MO, permits permanent community garden structures, such as storage sheds, compost bins, and greenhouses but may not exceed 900 sq. ft. of floor area or 15% of the garden site lot area, whichever is less. ▪ Portland, OR, allows greenhouses under 6' in Height in side and rear setbacks.
LFP-B2: Current code does not address whether food grown on site (garden) is permitted to be sold on site in most residential districts (permitted in NU, KP, and R-1).	Allow food grown on-site to be sold on site, with standards to ensure compatibility in residential districts in particular.	▪ Salt Lake City, UT, has recently amended its zoning ordinance to allow sales from community gardens. ▪ Chicago, IL, allows limited produce sales in residential areas from community gardens. ▪ Kansas City, MO, permits home gardens to sell produce on-site in all residential zones subject to a special use permit. It also allows community supported agriculture operations, which are permitted in all zones, to sell

Diagnosis: Local Food Production		
EXISTING PROVISIONS	**POSSIBLE REVISIONS**	**EXAMPLES**
		or donate produce on the property.
Create Incentives		
LFP-I1: LUC does not address allowing community gardens as an alternative open space amenity.	Allow community gardens and roof top gardens to qualify as required open space. Consider extra credit for providing irrigation, tool sheds, and other supportive elements.	▪ Portland, OR, provides FAR bonuses for roof top gardens. ▪ Henderson, NV, grants points in its sustainability point review system for providing viable community gardens and associated facilities.
Filling Regulatory Gaps		
LFP-G1: Codes do not address small-scale fowl/animal raising with compatibility standards.	Adopt comprehensive standards addressing fowl raising on a smaller scale in residential areas.	▪ Madison, WI, allows food production of produce, fowl raising, and animal husbandry by right and conditionally with compatibility standards. ▪ Maplewood, MN, allows up to ten chickens (no roosters) on one residential lot zoned for single dwelling residential. Residents must obtain a permit and get approval of 75% of the occupants within 150 feet. Regulations also require a coop and run and prohibit slaughtering on the property. ▪ Denver, CO, allows residents to own up to eight chickens or ducks, and up to two dwarf goats by obtaining a $20 license (no zoning permit or public notice is required).
LFP-G2: Current zone district uses do not identify where farmers' markets are an appropriate use.	Define farmers' market as an allowed use and identify zone districts in which it would be appropriate.	▪ San Francisco, CA, permits farmers' markets to be held on city parks and recreation-owned properties. ▪ Atlanta, GA, permits farmers' markets on property held by religious organizations in residential districts. ▪ Baltimore, MD, allows farmers' markets as a temporary use without a permit in all zones.
LFP-G3: Community gardens are not defined or mentioned as primary or accessory use in the code.	Add definition for community gardens and allow as a primary use in residential districts and as an accessory use in all or most districts. At minimum, allow them on open space lots in subdivisions as primary use.	▪ Gateway Greening, a St. Louis non-profit (http://www.gatewaygreening.org/) provides information about local community gardens that may be relevant to establishing local standards. ▪ Chicago, IL, defines community garden

Diagnosis: Local Food Production		
EXISTING PROVISIONS	**POSSIBLE REVISIONS**	**EXAMPLES**
		and urban farm, among other related terms and permits them in most districts. ▪ Kansas City, MO, allows grain, fruit or vegetables plants that are part of the front yard's borders in the front yard of a residentially zoned and occupied property, but it prohibits 'row crops.' 'Row crops' include grain, fruit, or vegetable plants, grown in rows, that are 24 inches or more in height. Kansas City also defines home garden, community garden, and community supported agriculture (CSA) as an agricultural use and permits the uses within in all zone districts. ▪ Cleveland, OH, Urban Garden District includes definitions, accessory structures for garden operations, addresses sales, and can be used as an overlay. ▪ Seattle, WA, passed a resolution clarifying that residents may plant raised vegetable gardens in the strip of the public right-of-way between the sidewalk and the curb. ▪ Springfield, MO, allows community gardens in all residential and some commercial districts; no parking is required for sites smaller than 1 acre; required bufferyards are eliminated.
LFP-G4: Current regulations do not address community gardens and food trees as desirable or possible use.	▪ Require new subdivisions or planned developments to provide public or neighborhood open space set-aside and allow community gardening use. Consider green infrastructure in design of subdivision to supply rainwater to community garden area. ▪ Require or encourage planting of food trees as	▪ Madison, WI, established an urban agriculture district to ensure that urban garden and farm areas are appropriately located and protected to meet needs for local food production. ▪ Austin, TX, awards a point in its commercial green building program for providing garden space dedicated to communal food growing. ▪ Henderson, NV, grants points in its sustainability point review system for providing viable community gardens and associated facilities.

Diagnosis: Local Food Production		
EXISTING PROVISIONS	**POSSIBLE REVISIONS**	**EXAMPLES**
	part of landscaping requirement.	