

2019

University City Sustainable Development Guidelines



Sustainable Development Guidelines

City of University City

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Overview: The Sustainable Development Guidelines are a working document in development by the University City Green Team, an interdepartmental work group committed to promoting sustainable practices in U City through all government functions. The Green Team is working in collaboration with regional partners (listed below).

Purpose: The purpose of these guidelines is to give developers a comprehensive list of sustainable practices that University City recommends, incentivizes, or requires for development. By providing a clear list of options and resources, the document will present the wide array of opportunities for environmentally-conscious building practices. This is part of our effort to reach the OneSTL sustainable targets set for the OneSTL Plan for Sustainable Development recently approved by Council.

The Guidelines are a working document, meant to be updated and improved going forward. The Green Team will continue to seek new ways to incentivize sustainable practices in ways that do not hinder development. University City has long been a leader of sustainable practices in the St. Louis region. Our regional partners have expressed their support and excitement that U City is leading the way with this forward-thinking set of guidelines. Staff will continue to work with our partners, City Council, and developers to strengthen this document and facilitate green development in our community.

Using the Document: The document is envisioned to eventually be part of the City's website. Developers would be directed to the site in the early stages of their planning process for guidance. The grid is a "menu" of options for making any development more environmentally-friendly. These are demarcated as required, incentivized, or recommended, and the supporting document gives the developer resources to further explore the feasibility of these options. Ultimately, the guidelines will provide a clear, user-friendly way for developers to incorporate more sustainable elements into their work.

Regional Partners:

- Jean Ponzi, Green Resource Manager, Botanical Garden Earthways Center
- Emily Andrews, Executive Director, US Green Building Council Missouri Gateway Chapter
- Aaron Young, Sustainability Planning Manager, East/West Gateway OneSTL
- Lois Sechrist, Environmental Stewardship Analyst, Ascension Health Care System
- Elizabeth Farr, Associate Project Manager, Economic Development Bi-State Development
- Joe Martinich, Professor Emeritus of Supply Chain Management and Analytics, University of Missouri – St. Louis, And Energy & Environment Committee Chairperson, City of Creve Coeur, MO
- The University City Green Practices Commission




University City Sustainable Development Guidelines SUMMARY

Compliance Options for New Developments and Major Renovations*

	Water and Green Infrastructure			Energy and Emissions					Transit Oriented Development			Materials			Bio-diversity				Other		
	Erosion Control during Construction	Post Construction Stormwater Solutions	Water Conservation	Renewable Energy	Energy Efficiency (per 2012 IECC)	Energy Efficiency(exceed 2012 IECC)	Monitoring/Commissioning	Electric Vehicle Solutions	Integrated Transit	Bicycle and Pedestrian Access and Amenities	Site Layout	Construction/Demolition Waste Diversion(50%)	Environmentally Preferable Building Materials	Sustainable Maintenance Practices	Preservation of Native Species	Introduction of Native Species	Pollinator-friendly Plants	Wildlife-friendly Building Design	Tenant and Employee Education	Indoor Air Quality	Dark-Sky Friendly Lighting
Compliance Paths																					
Required Practices																					
1 Acre and Over	✓	✓			✓																
Under 1 Acre	✓	some			✓																
Incentives																					
Tax Credits/Abatement				✓	✓**	✓**		✓													
Public Recognition/PR																					
Reduced Code Requirements		✓							TBD	TBD	TBD				✓	✓					
Utility Incentives		✓	✓	✓	✓	✓	✓	✓													
PACE				✓	✓	✓															

*May also apply toward repairs and smaller renovation per code
 **Federal tax credit for contractors who sell or lease a home that has met the 50% energy efficient standard

Compliance Options for New Developments and Major Renovations*	University City Sustainable Development Guidelines EXPANDED																																																																																																																	
Compliance Paths	Water and Green Infrastructure									Energy and Emissions										Transit Oriented Dev.				Materials and Recycling					Bio-diversity			Other																																																																																		
	1.1 Erosion Control During Construction			1.2 Post Construction Stormwater Solutions			1.2.1 Permeable Pavement			1.2.2 Runoff Landscaping for Parking Lots			1.2.3 Vegetated Roofs			1.3 Water Conservation			1.3.1 Rain Barrels, Rainwater Tanks, and Cisterns			1.3.2 Rain Gardens			1.3.3 Indoor Water Efficiency			2.1 Renewable Energy			2.1.1 Solar Power			2.1.2 Wind Power			2.1.3 Geothermal Power			2.2 Energy Efficiency (per 2012 IECC)			2.2.1 Efficient Building Envelope			2.2.2 Energy Efficient Lighting Strategies			2.3 Energy Efficiency (exceeding 2012 IECC)			2.3.1 Energy-Efficient HVAC			2.3.2 Cool Roofs			2.4 Monitoring/Commissioning			2.5 Electric Vehicle Solutions			3.1 Integrated Transit (Ped, Bike, Bus, Light Rail)			3.2 Bicycle and Pedestrian Access and Amenities			3.2.1 Bike Storage and Changing Facilities			3.3 Site Layout			4.1 Construction/Demolition Waste Diversion			4.2 Environmentally Preferable Building Materials			4.3 Sustainable Maintenance Practices			4.3.1 Waste Disposal and Recycling			4.3.2 Low-Emitting Materials			4.3.3 Green Cleaning/Janitorial Supplies			5.1 Preservation of Native Species			5.2 Introduction of Native Species			5.2.1 Pollinator-friendly Plants			5.3 Wildlife-friendly Design			6.1 Tenant and Employee Education			6.2 Indoor Air Quality			6.3 Dark-Sky Friendly Lighting		

*May also apply toward repairs and smaller renovation per code
 **Only available to systems that become operational on or after Jan. 1st, 2019
 ***Federal tax credit for contractors who sell or lease a home that has met the 50% energy efficient standard
 ▲ Per 2012 IECC



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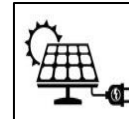
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1. WATER AND GREEN INFRASTRUCTURE

1.1 Erosion Control during Construction

Effective erosion controls handle surface runoff and are important techniques in preventing water pollution, soil loss, wildlife habitat loss and human property loss. University City requires a plan to minimize sediment movement for all projects disturbing land.

Requirements:

- This is a required practice. Any land disturbance activity involving one (1) acre or more of land, or a site involving less than one (1) acre that is part of a proposed development that will ultimately disturb one (1) acre or more require Major Land Disturbance Permits through St. Louis County and the Department of Natural Resources.
- Site grading and erosion control is also required for land disturbance less than 1 acre. See Section 405.140, 405.280, 405.490, 405.510 of the municipal code for details.

Incentives:

- Not Available

Resources:

Metropolitan St. Louis Sewer District (MSD) Stormwater Best Management Practices (BMP) Toolbox	https://www.stlmsd.com/what-we-do/stormwater-management/bmp-toolbox
Metropolitan St. Louis Sewer District (MSD) Landscape Guide for Stormwater Best Management Practice Design	https://www.stlmsd.com/sites/default/files/engineering/442680.PDF
Metropolitan St. Louis Sewer District (MSD) Site Design Guidance	https://www.stlmsd.com/sites/default/files/engineering/474685.PDF
University City Municipal Code, Ordinance 7065 regarding erosion control for Major Land Disturbance (1 acre and over)	https://www.ecode360.com/documents/UN3457/source/LF1020263.pdf
University City Municipal Code, Sections 405.140, 405.280, 405.490, 405.510	https://www.ecode360.com/28295169 https://www.ecode360.com/28295288 https://www.ecode360.com/28295514 https://www.ecode360.com/28295541 (405.510 as edited per ordinance 7060): https://www.ecode360.com/documents/UN3457/source/LF1020258.pdf

1.2 Post-Construction Stormwater Solutions

Post-construction stormwater management in areas undergoing new development or redevelopment is necessary because runoff from these areas has been shown to significantly affect receiving water bodies. Prior planning and design for the minimization of pollutants in post-construction stormwater discharges is the most cost-effective approach to stormwater quality management. Following construction of a new development or re-development, post construction stormwater solutions attempt to reduce pollutants in post-construction runoff.



Requirements:

- This is a required practice for land disturbance projects encompassing more than one acre. Post-Construction Stormwater Solutions shall apply to site design for any project which includes alteration of site drainage or floodplain areas, connection to storm sewer systems or open storm water channels, and all land disturbance projects encompassing one (1) acre or more of land, or a site involving less than one (1) acre that is part of a proposed development that will ultimately disturb one (1) acre or more.
- While specific stormwater solutions are not required for projects less than one (1) acre, every development shall be designed to control stormwater runoff. See section 405.490 – Utilities, Sanitary and Storm Sewers – of the municipal code for more details.

Incentives:

- In Planned Development Districts: Site coverage bonus: The Plan Commission may recommend and the City Council may approve an increase in maximum site coverage from seventy percent (70%) up to ninety percent (90%). In order to qualify for this bonus, the development plan must demonstrate compliance with four (4) or more of the performance criteria. Please see Section 400.780 – Density and Dimensional Regulations and Performance Standards – of the municipal code for more details.
- The Metropolitan Sewer District (MSD) offers a Non-Sewered Water Credit for businesses that divert some of the water they use away from the sewer system. This credit reduces the amount of wastewater services businesses are charged. Please visit MSD's website or click [here](#) for more information on this credit.

Resources:

Metropolitan St. Louis Sewer District (MSD) Site Design Guidance	https://www.stlmsd.com/sites/default/files/engineering/474685.PDF
Metropolitan St. Louis Sewer District (MSD) Landscape Guide for Stormwater Best Management Practice Design	https://www.stlmsd.com/sites/default/files/engineering/442680.PDF
Metropolitan St. Louis Sewer District (MSD) Non-Sewered Water Credit	https://www.stlmsd.com/sites/default/files/engineering/Non-Sewered%20Water%20Credit%20June%202017%20Brochure.pdf
University City Municipal Code, Ordinance 7060 regarding post construction stormwater management for Major Land Disturbance (1 acre and over)	https://www.ecode360.com/documents/UN3457/source/LF1020263.pdf
University City Municipal Code section 400.490	https://www.ecode360.com/28295514
University City Municipal Code section 400.780	https://www.ecode360.com/28293321



Below are also specific strategies to incorporate storm drainage/retention facilities for the site:

1.2.1 Permeable Pavement

Permeable pavements are alternative paving surfaces that allow stormwater runoff to filter through voids in the pavement surface into the underlying soil.

Requirements:

- Not specifically required; but may be used to satisfy post construction stormwater requirements. See section 1.2.

Incentives:

- See section 1.2 (Planned Development Districts)

Resources:

Permeable Interlocking Paver Effectiveness Calculator and Permeable Interlocking Paver Cost Calculator	https://pacificpavingstone.com/permeable-calculator/ https://www.remodelingexpense.com/costs/cost-of-permeable-paver/
Metropolitan St. Louis Sewer District (MSD) Site Design Guidance	https://www.stlmsd.com/sites/default/files/engineering/474685.PDF
University City Municipal Code section 400.780	https://www.ecode360.com/28293321

1.2.2 Runoff Landscaping for Parking Lots

The most important function of parking lot landscaping is to provide natural drainage, a water collection network, and stormwater filtration. Landscaping can also enhance the aesthetic quality of the space and help reduce temperatures in the summer by providing shade.

Requirements:

- Not specifically required; but may be used to satisfy post construction stormwater requirements. See section 1.2.

Incentives:

- See section 1.2 (Planned Development Districts)

Resources:

Green Values Stormwater Toolbox and Low Impact Development(LID) Practices Costing Tool	http://greenvalues.cnt.org/ https://sustainabletechnologies.ca/home/urban-runoff-green-infrastructure/low-impact-development/low-impact-development-life-cycle-costs/
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Resources continued:

Metropolitan St. Louis Sewer District (MSD) Site Design Guidance	https://www.stlmsd.com/sites/default/files/engineering/474685.PDF
Metropolitan St. Louis Sewer District (MSD) Landscape Guide for Stormwater Best Management Practice Design	https://www.stlmsd.com/sites/default/files/engineering/442680.PDF
University City Municipal Code section 400.780	https://www.ecode360.com/28293321

1.2.3 Vegetated Roofs

Vegetated roofs are roofs that include a layer of plant species that are used to absorb stormwater and reduce the heat island effect in urban communities. Vegetated roofs require caution to alleviate any damage to the existing roof, and involve high-quality water proofing, a root repellent system, a drainage system, filter cloth, a lightweight growing medium, and plants.

Requirements:

- Not specifically required; but may be used to satisfy post construction stormwater requirements. See section 1.2.

Incentives:

- See section 1.2 (Planned Development Districts)

Resources:

Metropolitan St. Louis Sewer District (MSD) Site Design Guidance	https://www.stlmsd.com/sites/default/files/engineering/474685.PDF
Green Values Green Roof Savings Calculator and Low Impact Development(LID) Practices Costing Tool	http://greenvalues.cnt.org/calculator/calculator.php https://sustainabletechnologies.ca/home/urban-runoff-green-infrastructure/low-impact-development/low-impact-development-life-cycle-costs/
University City Municipal Code section 400.780	https://www.ecode360.com/28293321

1.3 Water Conservation

Fresh, clean water is a limited resource. While most of the planet is covered in water, most is salt water that can only be consumed by humans and other species after undergoing desalination, which is an expensive process. Occurrences such as droughts further limit access to clean and fresh water, meaning people need to take steps to reduce water use and save as much water as possible. In some areas of the world, access to water is limited due to contamination. People who have access to fresh water can take steps to limit their use of water to avoid waste. University City has adopted the International Plumbing Code (IPC) of 2012; along with the ideas and regulations for gray water recycling systems in the IPC, below are a few recommended practices for rainwater recycling systems.

Requirements:

- Not Required.



Incentives:

- The Metropolitan Sewer District (MSD) offers a Non-Sewered Water Credit for businesses that divert some of the water they use away from the sewer system. This credit reduces the amount of wastewater services businesses are charged. Please visit MSD's website or click [here](#) for more information on this credit.

Whole Building Design Guide – Protect and Conserve Water	https://www.wbdg.org/design-objectives/sustainable/protect- conserve-water
Metropolitan St. Louis Sewer District (MSD) Non-Sewered Water Credit	https://www.stlmsd.com/sites/default/files/engineering/Non-Sewered%20Water%20Credit%20June%202017%20Brochure.pdf

1.3.1 Rain Barrels, Rainwater Tanks, and Cisterns

Rain barrels, rainwater tanks, and cisterns all capture and store rainwater for later use.

Required:

- Not specifically required; but may be used to satisfy post construction stormwater requirements. See section 1.2.

Incentives:

- Not available

Resources:

Rainwater Collection Potential Calculator and Low Impact Development(LID) Practices Costing Tool	https://www.watercache.com/resources/rainwater-collection-calculator https://sustainabletechnologies.ca/home/urban-runoff-green-infrastructure/low-impact-development/low-impact-development-life-cycle-costs/
Metropolitan St. Louis Sewer District (MSD) Site Design Guidance	https://www.stlmsd.com/sites/default/files/engineering/474685.PDF

1.3.2 Rain Gardens

Rain gardens are gardens of native shrubs, perennials, and flowers planted in a small depression designed to temporarily hold and soak in rainwater runoff.

Required:

- Not specifically required; but may be used to satisfy post construction stormwater requirements. See section 1.2.

Incentives:

- See section 1.2 (Planned Development Districts)



Resources:

Rain Garden Alliance Calculator	http://raingardenalliance.org/right/calculator
Metropolitan St. Louis Sewer District (MSD) Site Design Guidance	https://www.stlmsd.com/sites/default/files/engineering/474685.PDF
Metropolitan St. Louis Sewer District (MSD) Landscape Guide for Stormwater Best Management Practice Design	https://www.stlmsd.com/sites/default/files/engineering/442680.PDF
University City Municipal Code section 400.780	https://www.ecode360.com/28293321

1.3.3 Indoor Water Efficiency

A great deal of potable water is used indoors, with Americans using about 70% of their water inside their homes, according to the US EPA. In fact, the American Water Works Research Foundation performed a 1999 study in which they found that Americans use 26.7% of indoor water in the toilet, 21.7% in the clothes washer, 16.8% in the shower, and 15.7% from faucets. Nearly 14% is attributed to leaks and 5.3% is from other sources. Water-efficient plumbing fixtures (ultra low-flow toilets and urinals, waterless urinals, low-flow and sensed sinks, low-flow showerheads, and water-efficient dishwashers and washing machines) are some ways to increase water conservation.

Required:

- Not Required

Incentives:

- Not Available

Resources:

Water Footprint Calculator Guide to Reducing Indoor Water Use	https://www.watercalculator.org/water-use/indoor-water-use-at-home/
Improving Water Efficiency Guide	https://www.buildings.com/article-details/articleid/6461/title/improving-water-efficiency-in-your-building
The Federal Energy Management Program Estimating Methods for Determining End-Use Water Consumption	https://www.energy.gov/eere/femp/estimating-methods-determining-end-use-water-consumption
ENERGY STAR Portfolio Manager – track your water usage	https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/save-energy/save-water-save-energy
EPA WaterSense	https://www.epa.gov/watersense



2. ENERGY AND EMISSIONS

2.1 Renewable Energy

Renewable energy is energy that is collected from renewable resources that are naturally replenished, such as sunlight, wind, and geothermal heat. The energy code as laid out in the International Energy Conservation Code (IECC) of 2012 is in effect for University City. Below are some examples, resources, and available incentives.

2.1.1 Solar Power

Solar power is the conversion of energy from sunlight into electricity, either directly using photovoltaics or indirectly using concentrated solar power.

Required:

- Not required.

Incentives:

- The Bipartisan Budget Act of 2018 extended the federal tax credit for renewable energy, and federal tax credits are available for solar power. Please see the Bipartisan Budget Act of 2018 for information on renewable tax credits.
- Ameren Missouri's solar programs will be updated in the form of solar rebates and utility owned solar effective on and after January 1, 2019. Please see Senate Bill 564 for more information.
- Property Assessed Clean Energy (PACE) funding is available for energy efficiency and renewable energy projects to eligible property owners.

Resources:

2012 International Energy Conservation Code	https://codes.iccsafe.org/public/document/toc/286/
Solar Panel Cost Calculator	https://www.solar-estimate.org/solar-panel-calculators
Wholesale Solar's Off Grid Calculator	https://www.wholesalesolar.com/solar-information/start-here/offgrid-calculator
Ameren Energy Efficiency Programs	https://www.ameren.com/missouri/energy-efficiency
Bipartisan Budget Act of 2018 Energy Investment Tax Credit Summary	http://programs.dsireusa.org/system/program/detail/658
PACE Funding Opportunities for University City Properties	http://www.mo-esp.com/ https://www.mced.mo.gov/ http://www.showmepace.org/



2.1.2 Wind Power

Wind power is the ability to make electricity using the air flows that occur naturally in the Earth's atmosphere.

Required:

- Not required.

Incentives:

- The Bipartisan Budget Act of 2018 extended the federal tax credit for renewable energy, and federal tax credits are available for wind power. Please see the Bipartisan Budget Act of 2018 for information on renewable tax credits.
- Property Assessed Clean Energy (PACE) funding is available for energy efficiency and renewable energy projects to eligible property owners.

Resources:

Wind Power Cost and Efficiency Calculators	http://www.energygroove.net/energy-cost/wind-turbine-calculator/ http://www.energyefficientchoices.com/resources/wind-power-system-sizing-calculator.html
PACE Funding Opportunities for University City Properties	http://www.mo-esp.com/ https://www.mced.mo.gov/ http://www.showmepace.org/
Bipartisan Budget Act of 2018 Energy Investment Tax Credit Summary	http://programs.dsireusa.org/system/program/detail/658

2.1.3 Geothermal Power/Heating and Cooling

Geothermal power is the ability to make electricity using heat from underneath the surface of the Earth. Heat pumps use the fact that a few feet below the surface, the ground is a constant temperature year round. Heat pumps allow the release of heat to the earth from a building in the summer and absorption of heat in the winter.

Required:

- Not required.

Incentives:

- Ameren Missouri program offers cash incentives for virtually any cost-effective energy efficiency project.
- The Bipartisan Budget Act of 2018 extended the federal tax credit for renewable energy, and federal tax credits are available for geothermal power. Please see the Bipartisan Budget Act of 2018 for information on renewable tax credits.
- Property Assessed Clean Energy (PACE) funding is available for energy efficiency and renewable energy projects to eligible property owners.



Resources:

Clean Energy Emission Reduction(CLEER) Tool	https://www.cleertool.org/
Ameren Energy Efficiency Programs	https://www.ameren.com/missouri/business/energy-efficiency
PACE Funding Opportunities for University City Properties	http://www.mo-esp.com/ https://www.mced.mo.gov/ http://www.showmepace.org/
Bipartisan Budget Act of 2018 Energy Investment Tax Credit Summary	http://programs.dsireusa.org/system/program/detail/658

2.2 Energy Efficiency (per 2012 IECC)

University City has committed to complying with the International Energy Conservation Code (IECC) of 2012, which details multiple strategies for increasing energy efficiency for any building.

Required:

- This is a required practice. As University City has adopted the 2012 IECC, projects must be energy efficient per the 2012 IECC.

Incentives:

- Ameren Missouri program offers cash incentives for virtually any cost-effective energy efficiency project.
- Spire offers rebates for energy efficiency measures as well as Energy audits.
- Property Assessed Clean Energy (PACE) funding is available for energy efficiency and renewable energy projects to eligible property owners.
- The Energy Efficient Home Credit is a federal tax credit extended by the Bipartisan Budget Act of 2018, and is used to claim a credit for each qualified energy efficient home sold or leased to another person.

Resources:

Clean Energy Emission Reduction(CLEER) Tool	https://www.cleertool.org/
Ameren Energy Efficiency Programs	https://www.ameren.com/missouri/business/energy-efficiency
Spire Rebates and Offers	https://www.spireenergy.com/rebates-offers
PACE Funding Opportunities for University City Properties	http://www.mo-esp.com/ https://www.mced.mo.gov/ http://www.showmepace.org/
Energy Efficient Home Credit	https://www.irs.gov/forms-pubs/form-8908-energy-efficient-home-credit



2.2.1 Efficient Building Envelope

An efficient building thermal envelope (assuming all other thermal insulation/conductance issues are satisfied) is one that has the fewest gaps possible through which air can flow. To minimize the amount of gaps, builders may install insulation, sealed duct shafts, air sealing between a garage and conditioned spaces, and more. The 2012 IECC (Residential only) has a checklist called Table R402.4.1.1 “Air Barrier and Insulation Installation” that provides information on this aspect of an efficient building thermal envelope.

Required:

- Building envelopes must be energy efficient per the 2012 IECC.

Incentives

- Ameren Missouri program offers cash incentives for virtually any cost-effective energy efficiency project.
- Spire offers rebates for energy audits.
- Property Assessed Clean Energy (PACE) funding is available for energy efficiency and renewable energy projects to eligible property owners.

Resources:

Cost of Metal Building Insulation Calculator	https://www.remodelingexpense.com/costs/cost-metal-building-insulation/
Cost to Install Wall Insulation Calculator	https://www.homewyse.com/services/cost_to_install_wall_insulation.html
Ameren Energy Efficiency Programs	https://www.ameren.com/missouri/business/energy-efficiency
Spire Rebates and Offers	https://www.spireenergy.com/rebates-offers
PACE Funding Opportunities for University City Properties	http://www.mo-esp.com/ https://www.mced.mo.gov/ http://www.showmepace.org/

2.2.2 Energy-Efficient Lighting Strategies

Efficient lighting is to use as little energy as possible in order to adequately light a space. Strategies such as replacing existing lighting bulbs to LED and using energy-efficient windows that allow for more natural light will increase the efficiency of lighting practices in a business or residency.

Required:

- Lighting must be energy efficient per the 2012 IECC.



Incentives:

- Ameren Missouri offers a wide range of incentives and rebates related to replacements of interior lighting.

Resources:

Electricity Usage of a CFL Light Bulb Calculator	http://energyusecalculator.com/electricity_cflightbulb.htm
Lightbulb Energy Savings Calculator	https://www.bulbs.com/learning/energycalc.aspx
Ameren Energy Efficiency Programs	https://www.ameren.com/missouri/business/energy-efficiency

2.3 Energy Efficiency (exceeding 2012 IECC)

The minimum requirements by University City for new developments or major renovations is to follow the 2012 IECC, but by exceeding the requirements outlined by the 2012 IECC, projects can earn incentives that help reduce costs, streamline permitting applications, and more.

NOTE: There is a federal energy efficiency credit for household contractors!

The Energy Efficient Home Credit is a federal tax credit extended by the Bipartisan Budget Act of 2018, and is used to claim a credit for each qualified energy efficient home sold or leased to another person.

2.3.1 Energy-Efficient HVAC

HVAC units are one of the most energy-intensive systems in a building. Retrofitting existing HVAC systems to more efficient units could drastically improve energy efficiency in a conditioned space. Please see the International Mechanical Code of 2012 (adopted by University City) for regulations of HVAC systems.

Required:

- HVAC must be energy efficient per the 2012 IECC.

Incentives:

- The Energy Efficient Home Credit is a federal tax credit extended by the Bipartisan Budget Act of 2018, and is used to claim a credit for each qualified energy efficient home sold or leased to another person.
- Ameren offers multiple incentives for HVAC equipment, ranging from refrigeration, electric water heating, and steam cookers.
- Spire offers rebates ranging from saving \$500 on HVAC system and components to saving \$15,000 on boiler heating systems and components.



Resources:

Energy- and Cost-Savings Calculators for Energy-Efficient Products	https://www.energy.gov/eere/femp/energy-and-cost-savings-calculators-energy-efficient-products
Ameren Energy Efficiency Programs	https://www.ameren.com/missouri/business/energy-efficiency
Spire Rebates and Offers	https://www.spireenergy.com/rebates-offers
Energy Efficient Home Credit	https://www.irs.gov/forms-pubs/form-8908-energy-efficient-home-credit

2.3.2 Cool Roofs

A cool roof is a roof that has been designed in such a way as to reflect more sunlight and absorb less heat than a standard roof. Cool roofs can be made of a highly reflective type of material, a sheet covering, or highly reflective tiles and shingles. Cool roofs are instrumental in reducing the heat island effect in urban communities.

Required:

- Not required.

Incentives:

- Ameren offers custom rebates for any energy saving measures at the commercial level, and these incentives may include cool roofs.
- Spire offers rebates for measures taken that reduce the heating load.

Resources:

Oak Ridge National Laboratory Roof Savings Calculators	https://web.ornl.gov/sci/buildings/tools/cool-roof/ https://rsc.ornl.gov/
Ameren Energy Efficiency Programs	https://www.ameren.com/missouri/business/energy-efficiency
Spire Rebates and Offers	https://www.spireenergy.com/rebates-offers

2.4 Monitoring/Commissioning

University City recommends that all projects maintain a suitable monitoring/commissioning process to ensure the development is meeting the design, whether systems are installed and operating correctly, and whether the development meets the requirements laid out before construction.

Required:

- Not required.

Incentives:

- Spire offers rebates for savings up to \$750 on energy audits.
- Ameren Missouri custom incentives may apply for commissioning or installing building controls.



Resources:

Building Commissioning Guide	https://www.gsa.gov/real-estate/design-construction/commissioning/commissioning-program
U.S. Green Building Council – Missouri Gateway Chapter Benchmarking Case Studies	http://www.usgbc-mogateway.org/betterbuildingsstl/
Energy Star – Benchmarking Guide	https://www.energystar.gov/buildings/about-us/how-can-we-help-you/benchmark-energy-use/benchmarking
Ameren Energy Efficiency Programs	https://www.ameren.com/missouri/business/energy-efficiency
Spire Rebates and Offers	https://www.spireenergy.com/rebates-offers

2.5 Electric Car Solutions

An electric vehicle charging station is an element in an infrastructure that supplies electric energy to recharge electric vehicles, and is similar to charging a handheld device. There are three different levels of car charging stations that vary in how long it takes to recharge an electric vehicle and some electric vehicles may not be able to recharge at all three. Electric vehicle charging stations could make a sponsoring business more attractive to electric vehicle users as electric vehicle sales continue to climb.

Required:

- Not required.

Incentives:

- Ameren is now offering incentives for businesses seeking to install EV charging stations at workplaces, multifamily apartment buildings, and in publicly accessible locations. The maximum incentive is up to 50% of total project cost. Link below.
- There is a Federal Tax Credit of 30% of the cost of residential charging equipment, up to \$1,000.

Resources:

Vehicle and Infrastructure Cash-Flow Evaluation Model	https://www.afdc.energy.gov/vice_model/
St Louis Regional Clean Cities	http://stlcleancities.org/index.php/about-us/
Ameren Charge Ahead EV Program	http://ameren-ev.programprocessing.com/programapplication/
Federal Tax Credit	https://www.irs.gov/businesses/plug-in-electric-vehicle-credit-irc-30-and-irc-30d



3. TRANSIT ORIENTED DEVELOPMENT (TOD)

3.1 Integrated Transit

Integrated transit aims to develop roads that promote public and pedestrian transportation by eliminating dependence on private vehicles for an area and instead make a pedestrian-oriented and public-use vehicle community.

Required:

- Not required.

Incentives:

- Businesses located within five hundred (500) feet of a public transit stations and stops will have their off-street parking requirements reduced by ten percent (10%). The Loop Trolley stops and stations shall not be included. See Section 400.2130 of the municipal code for more details.
- In Planned Development Districts: Site coverage bonus: The Plan Commission may recommend and the City Council may approve an increase in maximum site coverage from seventy percent (70%) up to ninety percent (90%). In order to qualify for this bonus, the development plan must demonstrate compliance with four (4) or more of the performance criteria. Please see Section 400.780 – Density and Dimensional Regulations and Performance Standards – of the municipal code for more details.

Resources:

St. Louis County Policy Brief: Transportation	https://www.stlouisco.com/Portals/8/docs/document%20library/planning/strategicplan2013/Transportation%20Final.pdf
University City Municipal Code section 400.2130	https://www.ecode360.com/28294464
University City Municipal Code section 400.780	https://www.ecode360.com/28293321

3.2 Bicycle and Pedestrian Access and Amenities

A bicycle and pedestrian access and amenities plan attempts to encourage bicycle users to make stops at businesses with bicycle storage and changing facilities as well as bike sharing sponsorships. University City is committed to assisting bicycle users and has incentivized businesses that plan for bicycle storage and changing facilities.

3.2.1 *Bike Storage and Changing Facilities*

Bicycle parking, storage, and changing rooms are important ways to provide convenience and security for cyclists at businesses and other destinations.



Required:

- Bicycle racks shall be provided in accordance with tables listed in Section 400.2145 of the municipal code.
- University City has Bicycle Rack Construction and Bicycle Rack Site requirements. See Section 400.2145 of the municipal code for information regarding these requirements.

Incentives:

- Not Available.

Resources:

Information and minor cost analysis of bike storage facilities	http://www.pedbikeinfo.org/planning/facilities_bike_bike_parking.cfm
University City Municipal Code section 400.2130	https://www.ecode360.com/28294464

3.3 Site Layout

Site layout plans are prepared by contractors as part of their mobilization activities before work on site commences. By taking a transit-oriented development approach to site layout, such as are the construction of separate-grade pedestrian and bicycle paths, businesses can benefit from increased traffic from pedestrians and public-use vehicles.

Required:

- Not required.

Incentives:

- In Planned Development Districts: Site coverage bonus: The Plan Commission may recommend and the City Council may approve an increase in maximum site coverage from seventy percent (70%) up to ninety percent (90%). In order to qualify for this bonus, the development plan must demonstrate compliance with four (4) or more of the performance criteria. Please see Section 400.780 – Density and Dimensional Regulations and Performance Standards – of the municipal code for more details.

Resources:

Designing Example of Transit-Oriented Development	https://www.cata.org/Portals/0/EasyDNNNews/CATA-TOD-Handbook-2nd-Edition.pdf
University City Municipal Code section 400.2130	https://www.ecode360.com/28294464
University City Municipal Code section 400.780	https://www.ecode360.com/28293321



4. MATERIALS

4.1 Construction/Demolition Waste Diversion (50%)

Construction and demolition waste diversion attempts to eliminate as much waste as possible during the construction phase or demolition phase of a project. Multiple outlets for recycling are in or nearby University City.

Required:

- Not required.

Incentives:

- Not Available

Resources:

LEEDv4 Construction and Demolition Waste Diversion Calculator	https://www.usgbc.org/resources/construction-and-demolition-waste-calculator
Concrete and Asphalt Recycling Facility Location	6515 Page Ave, St. Louis, MO 63133
Cardboard and Single Stream Recycling Location	975 Pennsylvania, University City, MO 63130
Metals Recycling Location	6540 Dr. Martin Luther King Dr., St. Louis, MO 63133
LEDR Construction and Demolition Recycling Facility Location	60 MB Corporate Park Ct, St Charles, MO 63301

4.2 Environmentally Preferable Building Materials

An environmentally preferable building material plan attempts to use sustainably sources materials during the construction phase of a project.

Required:

- Not required.

Incentives

- Not Available

Resources:

Green Building Materials Database	https://www.greenbuilt.org/resources/green-building-materials/
Product Information Search Engine	https://spot.ul.com/



4.3 Sustainable Maintenance Practices

After a project has been constructed, it is important to have sustainable maintenance practices as the building is occupied and being used. Below are some of the strategies available to commit to sustainable maintenance practices:

4.3.1 Waste Disposal and Recycling

Planning for efficient and effective waste disposal and recycling process can help a business or residency maintain cleanliness while also removing waste in a sustainable and appropriate manner. It is important to make sure infrastructure is in place prior to construction for efficient trash and recycling collection and disposal during construction and for the life of the development.

Required:

- Not required

Incentives:

- Not Available

Resources:

Managing and Reducing Wastes: A Guide for Commercial Buildings	https://www.epa.gov/smm/managing-and-reducing-wastes-guide-commercial-buildings
University City Solid Waste	https://www.ucitymo.org/690/Trash-Recycling-Yardwaste-Leaf-Collectio

4.3.2 Low-Emitting Materials

Low-emitting materials help reduce the concentrations of chemical contaminants that can damage air quality, human health, productivity, and the environment. Reducing the amount of materials that emit volatile organic compounds keeps a business and the surrounding environment healthy.

Required:

- Not required

Incentives:

- Not Available

Resources:

Low Emitting Materials Calculator	https://www.usgbc.org/resources/low-emitting-materials-calculator
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4.3.3 Green Cleaning/Janitorial Supplies

A large part in keeping a healthy atmosphere for a business or residency is using sustainable and healthy cleaning and janitorial supplies.

Required:

- Not required

Incentives:

- Not Available

Resources:

Safer Choice Standard Supplies Database	https://www.epa.gov/saferchoice/products
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5. BIO-DIVERSITY

5.1 Preservation of Native Species

Preservation of native plant habitats is an important part of maintaining biodiversity. By selecting native plants when making landscaping decisions helps preserve native species that support functioning ecosystems and wildlife. Native plants are often superior to exotic plants in terms of stormwater management because they usually have deeper and more extensive root systems that prevent erosion and provide extra filtration. Since natives also require little to no fertilizer or chemical applications, both of which can harm stream ecosystems, they are also superior for improving water quality.

Required:

- Not specifically required; but may be used to satisfy post construction stormwater requirements. See section 1.2.

Incentives

- Allowance is made in the Municipal Code for height of native plants. See section 220.290.

Resources:

Invasive Species List for Missouri	https://www.invasive.org/species/list.cfm?id=52
Native Plants Database and Suppliers Directory	https://www.wildflower.org/collections/collection.php?collection=MO
Metropolitan St. Louis Sewer District (MSD) Landscape Guide for Stormwater Best Management Practice Design	https://www.stlmsd.com/sites/default/files/engineering/442680.PDF
University City Municipal Code Section 220.290	https://www.ecode360.com/28291021

5.2 Introduction of Native Species

Native plants are typically easy to take care of because they have evolved in local soils and climates to be resistant to local diseases and pests, require significantly less fertilizer, supplemental watering, and pesticides. Introducing native plants to the surrounding environment helps reduce the costs that go into maintaining the surrounding environment.

Required:

- Not specifically required; but may be used to satisfy post construction stormwater requirements. See section 1.2.

Incentives

- Allowance is made in the Municipal Code for height of native plants. See section 220.290.



Resources:

Introduction to Planting Native Plants	http://www.plantnative.org/how_intro.htm
Forest ReLeaf of Missouri	http://moreleaf.org/about/mission-impact/
University City Municipal Code Section 220.290	https://www.ecode360.com/28291021
Metropolitan St. Louis Sewer District (MSD) Landscape Guide for Stormwater Management	https://www.stlmsd.com/sites/default/files/engineering/442680.PDF

5.2.1 Pollinator-friendly Plants

When making landscaping decisions on plants, it is very beneficial to the surrounding environment to use pollinator-friendly plants. Pollinators are vital to maintaining healthy ecosystems and are essential for plant reproduction, keeping commercial and residential gardens healthy and minimizing the cost of replacing plants.

Required:

- Not required

Incentives:

- Not Available

Resources:

Pollinator-friendly Plants Database and Resources	http://xerces.org/pollinators-south-central-region/
Missouri Botanical Garden List of Pollinator-friendly Plants	http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/help-for-the-home-gardener/advice-tips-resources/visual-guides/native-plants-to-attract-bees.aspx

5.3 Wildlife-friendly Building Design

When in the designing phase of a project, it is important for the preservation of wildlife to design the building in a way that complements the surrounding ecosystem and wildlife. Designs such as bird-friendly windows and sites friendly to nests help minimize the impact on the surrounding wildlife.

Required:

- Not required

Incentives:

- Not Available

Resources:

Bird-friendly Windows	https://abcbirds.org/get-involved/bird-smart-glass/
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6. OTHER

6.1 Tenant and Employee Education

Education of tenants and employees on sustainable practices is an integral part in making sure that maintenance facilities are being properly used and that sustainable actions are being taken appropriately. Things such as educational signage, meetings on sustainability and online modules are some effective ways of educating employees and tenants.

Required:

- Not required

Incentives:

- Not Available

Resources:

8 Great Ways to Increase Employee Engagement in Sustainability	https://www.cultivatingcapital.com/ways-increase-employee-engagement-sustainability/
5 Ways to Get the Sustainability Conversation Started in Your Facility	https://www.buildings.com/news/industry-news/articleid/21106/title/5-ways-to-get-the-sustainability-conversation-started-in-your-facility

6.2 Indoor Air Quality

Understanding and controlling common pollutants indoors can reduce the risk of indoor health concerns. Keeping buildings adequately ventilated, reducing volatile organic compounds, removing microbial contaminants, and source control are all strategies that can be used to improve indoor air quality in buildings.

Required:

- Not required

Incentives:

- Not Available

Resources:

Minimum Indoor Air Quality Performance Calculator	https://www.usgbc.org/resources/minimum-indoor-air-quality-performance-calculator
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6.3 Dark-Sky Friendly Lighting

Making outdoor lighting choices that minimize glare, unnecessary brightness, and shield the light source help reduce the harmful effects of light pollution and complement the dark sky. Making sustainable outdoor lighting choices also helps reduce the amount of energy used and increases energy efficiency.

Required:

- Not required

Incentives:

- Not Available

Resources:

Dark Sky-friendly Lighting Database	http://darksky.org/fsa/fsa-products/
Dark Sky Society Lighting Costs Calculator	http://www.darkskysociety.org/lightcost/index.php

6.4 Advanced Certifications

These advanced certifications exceed our sustainable development standards, but offer great public relations rewards and officially certifies your building by internationally recognized organizations. Please consider visiting the resources listed below if you are interested in getting official certification for your building.

Resources:

LEED	https://new.usgbc.org/leed-v41
Passive House	https://www.phius.org/phius-certification-for-buildings-products/project-certification/overview
Living Building Challenge	https://living-future.org/lbc/
Green Globes	https://www.thegbi.org/green-globes-certification/

