

Imagine Columbia's Future
Visioning Citizen Topic Group Environment, Subtopic Energy Efficiency

Goal statement

“Columbia will work toward achieving maximum energy efficiency and transition to renewable energy sources.”

Priority Strategy:

1.) Invest in energy efficiency and renewable energy to protect Columbia's economy from energy dollar outflow.

- a. Implement a Public Benefits Fund (PBF). The purpose of this PBF is to provide the financial base needed to implement strategies listed in this visioning statement, as well as others not yet identified, that will help the City of Columbia reach the desired energy efficiency and renewable energy goals. This fund will be generated through a small charge on the electric bill of Water and Light customers. The amount of the charge will be determined after careful analysis of the impact on various rate classes, especially low-income customers.

Community Resources

Who: Water & Light Department, Dan Dasho

Action: Evaluate current department programs for potential to expand and add additional programs including but not limited to those listed in this visioning goal and strategies statement. From this evaluation establish a rate structure to provide the necessary funds to sustain these programs.

Measure of Success: Successful implementation and of goals and strategies listed in this visioning document.

Other Resources

There are currently 20 states that have a public benefits fund program that can be used as a resource. Information on these programs can be found on the Database of State Incentives for Renewables and Efficiency. www.dsireusa.org.

City of Boulder, Colorado

http://www.bouldercolorado.gov/index.php?option=com_content&task=view&id=6136&Itemid=169

<http://www.governing.com/articles/2env.htm>

- b. Utilize the Missouri Department of Natural Resources Revolving Loan Fund to help finance energy efficiency improvements of city buildings.

Community Resources

Who: Columbia Public Works Department

Other Resources

This program provides loans to Missouri public schools and local governments to perform energy-efficiency projects. Example of projects include lighting retrofits, HVAC upgrades, building envelop improvements, and traffic light conversion to LED.

Missouri Department of Natural Resources
Energy Center
Attn.: Energy Loan Program
P.O. Box 176
1101 Riverside Drive
Jefferson City, MO 65102

- c. Increase the targets of the Renewable Energy Ordinance to achieve 20% of retail sales supplied by renewable energy sources by the year 2020.

Community Resources

Who: City Council Members, Mayor, Citizens of Columbia, Water and Light Advisory Board, Environment and Energy Commission

Other Resources

Columbia Renewable Energy Ordinance Report

- d. As part of the landfill gas project the Water & Light Department should work to identify potential industrial customers that could use the waste heat. This should also be done at the power plant. When possible, property around the power plant should be purchased or zoned industrial and then marketed to attract industrial facilities that have a use for this waste heat.

Community Resources

Who: Columbia Water and Light Department
Columbia Chamber of Commerce
Visioning - Development Topic Group
Visioning - Economic Development Topic Group

Other Resources

<http://www.chpcentermw.org/home.html>
<http://www.epa.gov/chp/>
<http://uschpa.admgt.com/>

- e. Purchase only Energy Star equipment and appliances for City use and ensure that the energy saving features are enabled on all computers and other office equipment.

Community Resources

Who: Bill Watkins, City Manager, City Council, Mayor

Action: Develop an ordinance that requires the city to purchase only energy star appliances.

From Bill Watkins: “Needs first to be adopted by City Council - they are not things that the staff can take on without Council direction. So step one is for Council to instruct staff to bring back for their consideration appropriate policy and ordinance changes. With that said, suggestion one would be simple to implement with little cost - we just add that provision to our purchasing policies.”

Measure of Success: Adopt ordinance requiring Energy Star purchasing

Other Resources

www.energystar.gov

City of Honolulu, Energy Star Purchasing Resolution

<http://www.honolulu.gov/refs/cc/pol/99-225.htm>

- f. Increase the average fuel efficiency of municipal fleet vehicles; reduce the number of vehicles; launch an employee education program including anti-idling messages; convert diesel vehicles to bio-diesel.

Community Resources

Who: Bill Watkins, City Manager, City Council, Mayor

Other resources:

Center for Transportation Excellence’s Transit Benefits Calculator:

<http://www.cfte.org/calculator.asp>

The Clean Fleet Guide <http://www.eere.energy.gov/fleetguide>

EPA Green Fleet FAQ <http://www.epa.gov/emissweb/faq.htm>

- g. Establish a local Home Performance with Energy Star Program. To implement this, the City shall work with the MO DNR, Energy Center to provide contractor training and establish a promotional program with incentives to encourage homeowners to participate in the program.

Community Resources

Who: MO DNR Energy Center, Pat Justis (314) 416-2960, and Columbia W&L Tina Worley (314-874-6307) Columbia Home Builders Association

Measure of Success: Ordinance adopted that promotes the Home Performance with Energy Star Program. Increased # of participants in this program (i.e. Contractors and Homeowners)

Other Resources

http://www.energystar.gov/index.cfm?c=home_improvement.hpwes

- h. Establish an Energy Star Qualified New Homes Program. The program shall include recruitment and training of Home Energy Rating System (HERS) raters, homebuilder training and marketing outreach, and outreach to the home lending institutions to establish an energy efficient loan program. The HERS program shall be based on the Residential Energy Services Network and establish a goal of making homes 30% more efficient than the current standard.

Community Resources

Who: Columbia Home Builders Association, MO DNR Energy Center, Pat Justis (314) 416-2960, and Columbia W&L Tina Worley (314-874-6307)

Measure of Success: Ordinance adopted that promotes the Energy Star Qualified New Homes Program. Increased # of participants in this program (i.e. Contractors and Homeowners)

Other Resources

http://www.energystar.gov/index.cfm?c=new_homes.hm_index
<http://www.resnet.us/>

- i. Work with the Columbia Home Builders Association to establish a Green Home Building Program. The program shall be based on either the LEED for Homes guidelines or the National Association of Home Builders Model Green Home Building Guidelines. Training of the home builders and building trades' professionals should include technical aspects as well as marketing advantages.

Community Resources

Who: Columbia Home Builders Association, City Council, Mayor

Action: Develop policies that create incentives for builders through tax credits, fast track permitting, reduced permitting costs, and/or lowered utility rates

Measure of Success: Lower amount of energy per square foot required to operate homes as compared to existing homes. More satisfied homeowner = More homes sold.

Other Resources

www.usgbc.org
www.nahbrc.org/technical/standards/greenbuilding.aspx
<http://www.eeba.org/>
Austin, Texas - Green Building Program
<http://www.austinenergy.com/Energy%20Efficiency/Programs/Green%20Building/index.htm>

- j. The Columbia Water and Light Department has been a leader in the State of Missouri with energy conservation programs. The City Council should support and encourage W&L to continue to identify and pursue electrical

base load and peak electrical demand management strategies and programs.

Community Resources

Who: City Council and Mayor, Dan Dasho, Director of W&L

Action: Identify existing programs and evaluate expansion of existing programs or development of new programs.

Measure of Success: W&L will provide annual report to City Council showing participation levels in all programs and levels of growth in each. Include estimates of peak load reduction and evaluation of success.

- k. Expand the current Water & Light rebates for energy efficient air conditioners and heat pumps to include rebates for Energy Star appliances.

Community Resources

Who: Dan Dasho, Director of W&L, City Council and Mayor

Action: Gather information on programs at other utilities. Develop program for W&L, including estimate of potential peak and energy reduction.

Measure of Success: Level of participation in program.

- l. Start a low-income utility assistance program that uses the C.A.S.H., H.E.L.P. and LIHEAP funds to pay for weatherization of homes. As part of the Change a Light Program all qualified low-income homes should be provided five Compact Fluorescent Light Bulbs.

Community Resources

Who: Central Missouri Community Action (CMCA). Teresa House, Weatherization Director, phone: 443-8706 ext. 245, email: Teresa-House@showmeaction.org

Action: Identify areas of the community where the need for these services is greatest and promote and provide demonstrations of these services. Contact neighborhood associations and provide incentives through reduced utility bills

Measure of Success: More people requesting these services who are willing to pay for them with the knowledge that the savings will be returned on the investment.

- m. The Columbia Water and Light Department needs to increase the assistance provided to medium and large commercial and industrial customers to identify ways to help reduce energy use and cost. This would

include but not be limited to, identifying consultants that are skilled at addressing specialty energy conservation measures and providing financial incentives.

Community Resources

Who: Dan Dasho, Director of W&L

Action: Identify all programs currently available. Meet with representative group of customers to discuss existing programs and other programs that would be beneficial. Develop identified programs.

Measure of Success: Increased level of participation in existing programs and participation in new programs.

Other Resources

UMC – Industrial Engineering Department – Industrial Assessment Center, Dr. Bin Wu. <http://iac.missouri.edu/>

- n. Fund the installation of Photovoltaic (PV) systems on public buildings, to include city owned buildings, schools, and parking structures.

Community Resources

Who: MO DNR Energy Center, Pat Justis (314) 416-2960, and Columbia W&L Tina Worley, Jay Hasheider (314-874-6307)

Action: Explore options to provide a greater % of energy through Photovoltaics

Measure of Success: Increased usage of PV systems by the city.

Other Resources

Mo DNR, Energy Center
Missouri Schools Going Solar program

- o. Fund the installation of solar water heating systems on city-owned buildings, to include the renovation and addition of the Daniel Boone Building and other city buildings.

Community Resources

Who: Public Works Department, John Sudduth

- p. Public works needs to immediately convert all traffic lights and city traffic devices (e.g. school flashing lights), to Light-Emitting Diodes (LEDs) which are 90% more efficient.

Community Resources

Who: Bill Watkins, City Manager; Public Works department; Water and Light Dept., City Council and Mayor

Action: From Bill Watkins: “This is already underway. Again a Council policy direction would be appropriate and there would require some additional funding.

Measure of Success: Policies adopted and enforced through city ordinance

Other Resources What City of Ann Arbor, MI is doing with LEDs:
<http://www.ci.ann-arbor.mi.us/PublicServices/SystemsPlanning/Energy/LEDLighting.html>

- q. Upgrade streetlights to more efficient lighting technology such as high-pressure sodium or LEDs. Identify and remove streetlights that are not needed for public safety.

Community Resources

Who: Bill Watkins, City Manager; City Council, Mayor; Connie Kacprowicz, Water and Light Dept., Public Works Dept.

Action: Develop a standard of illumination by which all future street lights will be required to perform.

From Bill Watkins: I think it would be realistic to approach it by suggesting all new lights meet some specific standards and that the Council consider a program to make the conversion over say 3-5 years to make costs more tolerable.. The real issue is what is adequate lighting which is very subjective. It might be difficult to actually remove lighting but a standard might also address priorities.

From Connie Kacprowicz: “All new street lights or any replacements are high-pressure sodium. According to our engineer, Dan Clark, who plans street lighting, he has not seen any commercial LED street lights to purchase.

Other Resources:

The City of Ann Arbor, MI is in the process of converting street lights to LEDs. See: <http://www.ci.ann-arbor.mi.us/PublicServices/SystemsPlanning/Energy/LEDLighting.html>

- r. Audit and recommission city buildings to ensure that all efficiency upgrades are considered and that the buildings are operating as they were designed. Examples of measures that should be considered include: improvements in building envelope, upgrading HVAC systems and

controls, improving lighting efficiency, adding lighting controls and ensure that the energy savings features of office equipment is properly enabled.

Community Resources

Who: City Manager Bill Watkins, Public Works Department John Glascock, John Sudduth, Kent Branson

Measure of Success: Lower amount of energy per square foot required to operate compared to previous energy use.

Other Resources

California Energy Commission

<http://www.energy.ca.gov/commission/index.html>

<http://www.ecw.org/mwbuildings/index.php>

<http://www.sbicouncil.org/>

ACEEE Buildings Guide

<http://www.aceee.org/buildings/index.htm>

Green Building Initiative, City of Portland, Oregon

<http://www.portlandonline.com/osd/index.cfm?c=41481>

Green Building Program - Austin, Texas

<http://www.austinenergy.com/Energy%20Efficiency/Programs/Green%20Building/index.htm>

Scottsdale Arizona Green Building Program

<http://www.scottsdaleaz.gov/greenbuilding/>

- s. Evaluate opportunities to increase pump efficiency of water and wastewater systems; recover wastewater treatment methane for energy production

Community Resources

Who: Columbia Wastewater Treatment Plant, Joel Gambill, Superintendent. Columbia Water and Light Department

Other Resources

Wisconsin Division of Energy – Focus on Energy, Water and Wastewater program

<http://www.focusonenergy.com/page.jsp?pageId=370>

<http://www.pumpsystemsmatter.org/>

City of Lawrence, KS:

http://www.pennnet.com/display_article/291635/41/ARTCL/none/none/News-Drives-Help-Protect-Power-System,-Increase-Efficiency/

Consortium for Energy Efficiency – National Municipal Water and Wastewater Facility Initiative

<http://www.cee1.org/ind/mot-sys/ww/ww.php3>

- t. Adopt true Net Metering billing and a simplified interconnection agreement to help encourage private individuals to invest in renewable energy systems that are inter-connected to the City's electric utility system.

- u. Investigate use of Biomass for alternative energy resources.

Community Resources

Who: Dan Dasho, Director of W&L

Action: Include evaluation of Biomass in any evaluation of long-term power supply. Include cost-benefit analysis of biomass resource over the life of a power plant, at various fuel mix ratios.

Other Resources

UMC Agriculture and Forestry Departments

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Priority Strategy:

2.) Educate public in areas of energy conservation, renewable energy resources, climate change, and, economic implications of energy use.

- a. The Chamber of Commerce will use its Annual Economic Outlook Conference to educate its membership on the impact of energy use on the local economy.

Community Resources

Who: Chamber of Commerce, Williams Keepers, Inc.

Action: Evaluate the impact of rising energy prices – gasoline, natural gas, and electricity – on the disposable income of citizens and translate that into economic impact. Dedicate next Annual Economic Outlook Conference to educating the business community on this issues and methods for mitigating the impact, which will create local jobs and economic investment.

Measure of Success: Ask participants to document investments/actions that improve energy efficiency (or reduces usage) with estimates of payback. Report results at next conference.

Other Resources

Columbia Water & Light Department – Dan Dasho, Director

- b. The public schools administration will encourage and assist teachers to incorporate teaching of energy efficiency and renewable energy sources into the curriculum, wherever possible.

Community Resources

Who: Sarah Torres, Science Coordinator, 214-3945; Boone Electric and City Water and Light Dept. (Partners in Ed. With Science Dept.); Cheryl Cozette, Assistant Superintendent for Curriculum and Instruction, 214-3413; Steve Cooper, Head of Science Dept., Smithton Middle School; Individual Science Teachers

Action: Ms. Torres believes they are doing an acceptable job in this area, and does not feel the need for additional resources or help at this point. They presently have educational programs through Boone Electric and Water and Light. Teachers are in

charge of implementing “extras” into core enrichment, so they would be the ones able to add more things to what is already happening in this area.

Measure of Success: Pre and post assessments given to students, reporting between administration and partners in education.

Other Resources: NEEAP (National Environmental Education Advancement Project)

NAEEEP (National Association of Energy and Environmental Education Professionals)

National Environmental Education Training Foundation

Jan Weaver @ UMC, Chair of Environmental Studies

www.gogreeninitiative.org

www.earthforce.org

www.epa.gov/enviroed/

<http://www.dnr.mo.gov/energy/education.htm>

<http://www.energyquest.ca.gov/index.html>

<http://www.the-environment.org/FEE/e3.html>

- c. Create a Citywide Energy Awareness Program. The program shall encompass all sectors of the city including city government, residential, commercial, industrial, schools and colleges and cover both buildings and transportation needs. The program shall provide citizens information on setting energy usage benchmarks along with conservation measures that can be used in the home as well as at work. Sectors to establish benchmarks should include but not be limited to: residential, rental property, office, restaurants, and retail businesses. As the benchmarks are determined annual energy reduction goals should be set and revised on an annual basis. To encourage participation activities shall be created for each sector and an incentive and awards system shall be developed.

Community Resources

Who: City Manager; Mayor; City Council; Water and Light; City Environment and Energy Committee, Churches; Chamber of Commerce; Schools - Public, Private, and Colleges.

Action: From Bill Watkins: “This is actually under discussion through our Water and Light utility. I personally think we've got a good group of programs and incentives.”

From Connie Kacrowicz: “To view a full listing of our residential and commercial energy efficiency programs see:

<http://www.gocolumbiamo.com/WaterandLight/> and click on the left-side link labeled 'Conservation' for residential programs.

Business programs can be viewed by clicking on the link labeled

'Business'. Water and Light would welcome any public involvement to help promote these programs.

Other Resources

Federal Energy Management Program (FEMP) – You have the Power Campaign.

http://www1.eere.energy.gov/femp/services/yhttp/create_campaign.html

Rocky Mountain Institute – Community Energy Workbook

<http://www.rmi.org/sitepages/pid105.php>

- d. Promote and improve transportation options such as bicycle trails, commute trip reduction programs, incentives for car pooling and public transit. The City shall continue to support PedNet and its programs including trail development, bike to work program, and the walking school bus program.

Community Resources

Who: City Council, Mayor, PedNet

Action: Continue to develop policies that encourage or assist in implementing these programs.

Other Resources:

City of Boulder, CO has an excellent system of bike and pedestrian paths:

http://ci.boulder.co.us/index.php?option=com_content&task=view&id=4985&Itemid=1189

<http://www.dnr.mo.gov/energy/transportation/transportation.htm>

<http://www.vtapi.org/documents/walking.php> ;

<http://www.bikewalk.org>

Transportation Resources

Center for Transportation Excellence's Transit Benefits Calculator:

<http://www.cfte.org/calculator.asp>

EPA's COMMUTER Model: Examining the Benefits of Transportation and Air Quality Programs Focused on Commuting.

http://www.epa.gov/otaq/stateresources/policy/pag_transp.htm#cp

Safe Routes to Schools

<http://www.saferoutestoschools.org>

- e. Offer energy awareness workshops for prospective homeowners, renters. This could be part of a city wide energy awareness program. (strategy 2c)

Community Resources

Who: Columbia Water & Light Department, Realtor Agencies, Financial Institutions

Action: Taylor education programs to specific audiences – renters, homebuyers, realtors and lending agencies. The goal would be to raise awareness of what renters and homebuyers should look for when looking at potential homes. Realtors would be able to market energy efficiency features and lending agencies should look more favorably on home with energy efficient systems.

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Priority Strategy:

3.) Enact regulation and adopt policies to implement greater efficiency and better technologies.

- a. Create an Energy Efficiency and Environmental Quality Department within City Government. This department will be in charge of coordinating programs across other city departments, the county, schools, residential, commercial, and industrial sectors. Staff shall include a director, engineering and other technical staff, public information, and financial staff. The financial staff shall also be responsible for pursuing federal, state and private grants and partnerships. This new department shall work directly with the W&L Department to assist in the implementation and promotion of current and future energy conservation programs. It shall also work directly with the Public Works Department and the Division of Protective Inspection to provide plan review, building inspections, and designer and contractor training as it relates to City adopted energy codes.

Community Resources

Who: City Manager, Mayor, City Council, Director of Water and Light, Director of Planning and Zoning, Director of Public Works

Action: Create a city department whose job it is to coordinate energy and environmental programs across other city departments and the private sector.

Other Resources

Rocky Mountain Institute

<http://www.rmi.org/>

City of Austin Texas

<http://www.austinenergy.com/Energy%20Efficiency/Programs/index.htm>

City of Seattle, WA Office of Sustainability and Environment

<http://www.seattle.gov/environment/>

Green Building Initiative, City of Portland, Oregon

<http://www.portlandonline.com/osd/index.cfm?c=41481>

- b. Columbia's Planning Department Housing Rehabilitation Program will enact Home Performance with Energy Star ratings for all new rehabilitation projects.

Community Resources

Who: Tim Teddy, Director of Planning

Action: Develop energy standards for housing rehabilitation program. If unable to fully implement the Home Performance standard, develop program that requires a baseline of energy standards with a plan for moving to full implementation.

Measure of Success: Development of program and participation in rehabilitation program.

- c. Require that all new city buildings, major renovations and leased space be designed to meet LEED principles with a goal of LEED Silver Level or higher. Specific attention should be given to the computer energy modeling of the building design; life cycle cost analysis of measures incorporated into the design, and commissioning of the building from design review through construction and final occupancy.

Community Resources

Who: City Council, Mayor, Planning and Zoning, Public Works, Water and Light

Action: Develop a Green Building Ordinance

Other Resources

<http://www.usgbc.org/>

<http://www.sbicouncil.org/>

<http://www.wbdg.org/>

Green Building Initiative, City of Portland, Oregon

<http://www.portlandonline.com/osd/index.cfm?c=41481>

Green Building Program - Austin, Texas

<http://www.austinenergy.com/Energy%20Efficiency/Programs/Green%20Building/index.htm>

Scottsdale's Green Building Program

<http://www.scottsdaleaz.gov/greenbuilding/>

- d. Adopt the 2006 International Energy Conservation Code (IECC); revise and update at least every three years. . A program should be developed to ensure that architects, engineers, building trade professionals and others involved in residential and commercial construction are knowledgeable about the 2006 IECC and ASHRAE Standard 90.1 Energy Standard for Buildings.

Community Resources

Who: City Council, Mayor Hindman, Planning and Zoning, Public Works, Water and Light

Action: Develop a Model Energy Code Ordinance

Other Resources

<http://www.energycodes.gov/>

<http://www.ncsbcs.org/>

<http://www.bcap-energy.org/home.php>

<http://www.iccsafe.org/>

<http://www.resnet.us/>

Guidelines for Energy Efficient Construction, City of Burlington, VT <http://www.burlingtonelectric.com>

- e. Adopt time-of-sale minimum standards for rental housing to improve the energy efficiency of rental properties.

Community Resources

Who: City Council, Mayor, Planning and Zoning, Public Works, Water and Light

Action: Develop a Time-of-Sale Ordinance

Measure of Success: Adopt and implement the Time-of-Sale Ordinance

Other Resources

<http://www.burlingtonelectric.com/EnergyEfficiency/tos3.htm>

- f. All Government entities will use life cycle cost analysis when buying equipment, appliances, vehicles, and building components.

Community Resources

Who: City Council, Mayor, Planning and Zoning, Public Works, Water and Light

Other Resources

Society of Environmental Toxicology and Chemistry, A Technical Framework for Life-Cycle Assessments, Washington: SETAC, 1991.