



15—Environmental Conservation and Stewardship

Guiding Principle

Increase recycling, conservation, and the use of renewable energy sources, while reducing energy and resource use overall.

Introduction

Local governments are on the forefront of dealing with the volatile cost of energy, the diminishing finite resources, and the effects of climate change. Commerce City aims to become a balanced and green city, in part through this Plan's policies. This chapter also addresses natural resources and environment.

Influencing Factors

Sustainability, Energy and Climate

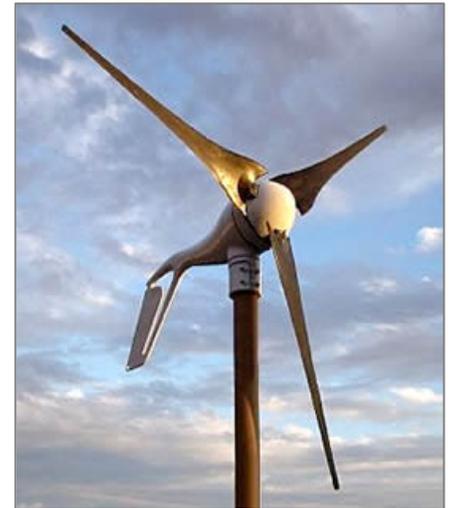
Local mayors and councils nationwide have initiated Climate Action plans and other sustainability measures. Commerce City is doing its part as a leader in maximizing the efficiency of operations and minimizing resource use. The development of a LEED-certified green Civic Center and focusing on city operations are examples. (See description of LEED on page 196.)

Natural Resources and Environment

Commerce City also recognizes the need to address resource use and conservation (e.g., for water, solid waste reduction, and air quality). The city also recognizes the need to avoid placing future development in hazardous areas, such as in airport noise zones, near landfills, and in floodplains.



See Chapters 3, *Future Land Use Plan* and 11, *Parks, Open Space, and Recreation*.



Some "green" ways to address energy

- ✓ **Land Use Patterns:** A focus on infill development is one of the best approaches to reduce future energy use. A compact pattern with mixed-uses that support walking, bicycling, and transit use with open space conservation helps reduce energy consumption.
- ✓ **Buildings:** New and retrofit housing, industries, offices, and commercial developments should be energy-efficient to reduce electricity use, primarily for heating and cooling, but also for other appliances.
- ✓ **Site Planning:** Street-orientation, placement of buildings, and use of shading should contribute to energy-efficiency and the ability to use renewable resources (e.g., solar and wind).
- ✓ **Development Code:** The code should remove barriers, incentivize use of renewable sources and water conservation, and implement the Future Land Use Plan.



Directions and Goals

Commerce City can do much to promote wise energy and water use and reduce waste internally, but the community will need to share the responsibility. Planning and policy direction aimed at the various topics in earlier chapters of this Plan, coupled with efficient use and conservation of resources, can make a big difference in how well a community achieves its goal of becoming sustainable. In addition, how a city grows (land use patterns, site planning, and buildings) can also have positive (or negative) effects on energy use, automobile dependence and miles traveled, and the need for the expansion of public services and streets. This Plan can help shape conservation and stewardship in the future through recommending incentives and regulatory programs.

How Does this Element Relate to Sustainability?

This element contributes to sustainability because reducing energy use, reducing waste, improving water conservation, increasing renewable energy use, and reducing greenhouse gas emissions are vital for environmental quality, economic prosperity, longevity, and community health.

This chapter's goals address:

1. A Sustainability Plan with targets;
2. Energy efficiency and use of renewable sources;
3. Reducing greenhouse gas emissions;
4. Increasing water conservation and protection of water resources;
5. Solid waste reduction and recycling;
6. Air pollutant reduction;
7. Noise impacts; and
8. Hazardous areas.

Sustainability/Related Chapters

This Element Contributes to Sustainability...



Finally, the environmental conservation and stewardship goals are focal to city sustainability and linking other goals in this Plan. This chapter's goals help:



A Robust Economy and Commerce:



- ✓ Reduce costs of providing services, energy, transportation, and utilities.
- ✓ Reduce the need for new landfills (waste reduction).
- ✓ Increase household and business savings through reduced energy costs.

A Quality Environmental Context:



- ✓ Reduce water pollution, air pollution and waste, making air and water cleaner.
- ✓ Curb need for landfill expansion or relocation.

A Resilient Community:



- ✓ Safeguard resources for future generation use (i.e., our children and their children).
- ✓ Improve community health through cleaner air and water.



These Goals in Related Chapters

The environmental conservation and stewardship goals relate to other Plan elements as noted in Table 15.1.

Table 15.1: Environmental Conservation and Stewardship Goals and Related Chapters

Plan Element/Ch. #:	 4	 5	 6	 7	 8	 9	 10	 11	 12	 13	 14	 15
	Land Use, Growth	Economic Dev.	Fiscal Stability	Housing/Neighbor	Redevelopment	Transportation	Safety, Wellness	Parks, Open Space	Public Facilities	Appearance	Cultural Facilities	Environmental
Goals												
1. Prepare Sustainability Plan	✗	✗	✗			✗		✗	✗			✗
2. Energy efficiency, renewable energy	✗			✗	✗	✗			✗			✗
3. Greenhouse gas emission reduction	✗	✗		✗		✗						✗
4. Water conservation and protection								✗	✗			✗
5. Reduce solid waste disposal												✗
6. Reduce air pollutants						✗						✗
7. Limit noise impacts	✗			✗			✗					✗
8. Avoid hazards	✗			✗								✗



What is “LEED-certified”?

The acronym LEED stands for “Leadership in Energy and Environmental Design.” The certification program, run by the U.S. Green Building Council, concentrates on improving building performance in five areas:

1. health,
2. energy efficiency,
3. indoor quality and materials,
4. sustainable site development, and
5. water savings.

Environmental Conservation and Stewardship Goals and Policies

Goal EC 1—Develop a Sustainability Plan that balances economic, environmental, and community needs

The city will develop a Sustainability Plan that considers and monitor this Plan’s goals, and implements the concept of sustainability to balance interdependent trends and needs.

Citywide Policies:

EC 1.1—Sustainable Community Score Card (Plan Monitoring)

Use indicators and a *Community Score Card* to consider interdependent trends rather than isolated strengths and weaknesses, for on going assessment of progress toward plan goals.

EC 1.2—Project Review and Green Business Score Card

Adapt indicators for use as a *Project Review Score Card* to evaluate how well large projects (e.g., Master Planned Developments), city facilities, or businesses meet this Plan’s sustainability goals and achieve the community’s vision.

Goal EC 2—Improve communitywide energy efficiency and increase renewable energy use

Commerce City will support renewable energy production, efficiency, and energy conservation in city programs and private developments. Measures should be cost-effective and meet other community goals.

Citywide Policies:

EC 2.1—Energy Efficiency—City Enterprise

Lead by example in city buildings, programs, and operations to reduce waste and energy use, improve indoor air quality and environmental quality.

EC 2.2—Land Use Patterns to Reduce Energy Requirements

Support land use patterns and buildings in Commerce City and its neighborhoods that conserve resources and minimize waste and avoid sprawl.



See Chapters 3 and 4, *Future Land Use Plan and Land Use and Growth*.



EC 2.3—Communitywide Energy Efficiency

Support “green” buildings (LEED buildings), LEED-ND (Neighborhood Design), and Star Community Initiatives to promote energy efficiency throughout Commerce City.

EC 2.4—Renewable Energy—Green Building Techniques

Support local and community use of renewable energy sources in residential, commercial, and industrial operations (e.g., solar, wind, geothermal, bio-based, and other emerging technologies).

Goal EC 3—Reduce greenhouse gas emissions

The city will support internal practices and community growth aimed at reducing greenhouse gas emissions in the future.

Citywide Policies:

EC 3.1—Develop a Sustainability Plan and Targets

To address greenhouse gas emissions, develop a Sustainability Plan to address Climate Action. Include consideration of local government practices, regulations, incentives, and programs to assist the community in reducing greenhouse gas emissions and its carbon footprint.

EC 3.2—Energy-Efficient Development

Promote energy-efficiency in new development of homes and businesses to reduce greenhouse gas emissions.

EC 3.3—Transportation Alternatives

Promote transportation alternatives in new and developed areas to reduce vehicle trips and overall use.



See Chapters 4, 7, and 9: *Land Use and Growth, Housing and Neighborhoods, and Transportation*, for policies related to land patterns, transportation and energy use, and energy-efficiency in homes.



What are Greenhouse Gases?

Rising concentrations of greenhouse gases produce an increase in the average surface temperature of the earth, producing changes in precipitation patterns, storms, and sea level. This is known as “climate change.”

In the U.S., greenhouse gas emissions come primarily from burning fossil fuels in energy use. Energy-related **carbon dioxide** emissions, resulting from combustion of gas, coal, and natural gas represented 82% of U.S. man-made greenhouse gas emissions in 2006. **Methane** is another gas that comes from landfills, coal mines, oil and gas operations, and agriculture, which represented 9% of emissions. Other gases account for the remainder. (U.S. Energy Information Administration, U.S., 2009)

Cities can help by reducing fossil fuel use, reducing electricity and other energy use, and reducing waste that goes into landfills.



Solar, a form of renewable energy, is becoming increasingly affordable.



Long-Term Water Predicament



The outlook of Western U.S. long-term water scarcity means that communities will need to be creative and conserve. The long-term prediction of water scarcity is due to many factors, including population growth and development in the Rocky Mountain region, climate change, limited storage sites, lack of distribution facilities, diminishing snow pack, and competition for water from other states and communities. (Natural Resources Conservation Service)



What Do these Terms Mean?

Solid Waste

- ✓ **“Source reduction:** Altering the design, manufacture, or use of products and materials to reduce the amount and toxicity of what gets thrown away.
- ✓ **Recycling:** Sorting, collecting, and processing materials to manufacture and sell them as new products.
- ✓ **Composting:** Decomposing organic waste, such as food scraps and yard trimmings, with microorganisms (mainly bacteria and fungi) to produce compost. Compost is organic material that can be used as a soil amendment or as a medium to grow plants.”
(U.S. EPA, 2009)

Goal EC 4—Increase water conservation and protection of water resources

Commerce City is not the lead agency that provides water to customers. However, the city will encourage water conservation by promoting drought-tolerant landscaping, exploring other water recycling and dual-system use, and sponsoring other measures.

Citywide Policies:

EC 4.1—Community Water Use Reduction

Focus on programs and partnerships to highlight the value of water conservation by reducing water use in homes, businesses, and for landscaping. Promote low-water xeric landscaping for new or retrofit projects. Partner with South Adams County Water and Sanitation District in programs that encourage conservation, dual system supply (to irrigate parks, the golf course, and other city facilities, with non-potable water supply).

EC 4.2—Stormwater Best Management Practices

Promote stormwater Best Management Practices for site design to reduce impervious surfaces (increasing porous pavement), emphasize natural filtration for stormwater, and reduce run-off of pollutants in rivers, streams, and wetlands.

EC 4.3—Former Arsenal Water Protection Monitoring

Preserve and protect groundwater throughout the city. Collaborate with involved agencies to continue the groundwater monitoring program at the former Rocky Mountain Arsenal until all treatment goals have been met.

EC 4.4—Safe Drinking Water

Ensure that all potable water meets the requirements of the federal Safe Drinking Water Act.

Goal EC 5—Reduce solid waste disposal

The city will promote programs to reduce per capita solid waste disposal through waste recycling, reduction, and re-use.

Citywide Policies:

EC 5.1—Waste Reduction, Recycling, and Re-use

Support programs for city and community facilities (in key locations) that focus on source reduction, recycling, composting, and construction materials waste diversion for reuse and exchange of materials. The city, within its operations and buildings, will encourage recycling.



This Plan promotes recycling and reducing solid waste.



EC 5.2—Partnerships with Private Companies to Reduce Waste

Support partnerships with private companies to promote waste reduction, recycling, re-use, composting, and the overall goal of reducing solid waste disposal.

Goal EC 6—Reduce generation of air pollutants and promote non-polluting activities

The city will promote reducing air pollution and non-polluting activities to minimize impacts to human health, sustain or improve the economy of the city, and improve air quality.

Citywide Policies:

EC 6.1—Tree Planting and Preservation

Encourage tree planting to achieve a widespread urban canopy on private and public properties and along streets. Planting trees improves air quality, contributes to a positive image, and provides shade and cooling.

EC 6.2—Indoor Air Quality

Encourage the use of green products in construction or renovations and ensure that buildings slated for renovation are evaluated for lead-related risks and mitigated as appropriate.

EC 6.3—Transportation and Air Quality

Explore programs to reduce vehicle trips and miles driven, including better connectivity in street system, compact development patterns, transit, alternative transportation modes, Transportation Demand Management Programs, and the like. Work with public entities and private businesses to sponsor alternative transportation and carpooling.

EC 6.4—Industry Air Emissions

Strive to make improvements in air quality by coordinating with existing businesses to improve air emissions. The city will emphasize attraction of clean, non-polluting businesses and work to retain clean industries in the city.



Trees throughout the city provide shade, improve air quality, and mitigate stormwater flooding and water quality.



See Chapter 9, *Transportation*.



Residential development should not occur in airport noise impact zones.

Goal EC 7—Limit noise impacts

Commerce City will identify areas with significant noise impacts related to the airport, industry, and rail lines, and will avoid or reduce these impacts through the location and design of future development.

Citywide Policies:

EC 7.1—DIA Noise Impacts Limited and Mitigated

Avoid placing residential development in noise impact zones near DIA.

EC 7.2—Railroad Noise Impacts Mitigated

Mitigate railroad and industrial noise near residential development.

EC 7.3—Highway Noise Impacts Mitigated

Avoid placing residential development near high-volume highways.

Goal EC 8—Decrease future development near hazards

New development will be located in places other than floodplains and other hazardous areas, such as airport zones and landfills. The city will promote the remediation and redevelopment of Brownfield sites to eliminate or reduce the number of sites with potential environmental hazards.

Citywide Policies:

EC 8.1—Airport Hazards

Require that development around DIA is consistent with the safety policies and land use compatibility guidelines contained in the adopted DIA Master Plan. All development shall comply with federal regulations regarding approach and departure zones. No residential development shall be constructed within three-quarters of a mile of any existing or planned runway. New development will be required to provide disclosure statements and additional architectural/energy/noise buffering.

EC 8.2—Flood Hazard Risks Minimized

Retain flood map information and prohibit future residential development in flood hazard areas. Maintain and enforce development standards related to the flood zone, to minimize financial and property loss due to flooding.

EC 8.3—Brownfield Locations

Pursue an active program to identify Brownfield locations that may be opportunities for infill development, if remediated.



EC 8.4—Landfills

Avoid developing residential uses near existing or former landfill sites to protect residents from methane gas and other negative landfill externalities. Non-residential developments also should include measures to protect workers from methane gas.

EC 8.5—Hazardous Materials Routes and Disposal

Require use of designated routes for transporting hazardous materials within the city to prevent contamination in developed areas. Business and household hazardous waste shall be disposed of properly to prevent contamination.

EC 8.6—Former Arsenal Pollution Plumes Avoidance

Keep residential development out of contaminated pollution plumes associated with former Rocky Mountain Arsenal activities.

Environmental Conservation and Stewardship Strategies

This section contains a list of strategies to implement the environmental conservation and stewardship goals. Table 15.2 coincides with the goals of this chapter and identifies specific actions.



See Chapter 16, Implementation, for the Priority Action Plan summarizing key strategies for the city to accomplish in the next several years. Appendix E contains a full list of all the chapters' strategies.

Table 15.2: Environmental Conservation and Stewardship Strategies

Goal/ Strategies	Related Goal/Strategies
Goal EC 1	Sustainability Plan
EC 1a	Sustainability Plan/Climate Action Plan Develop a Sustainability Plan and/or Climate Action Plan (with incentives, targets for reduction, strategies, and regulations).
EC 1b	Municipal Code Audit/Amendments Perform an audit of the Municipal Code, including LDC and Engineering Standards; determine barriers to sustainability; amend accordingly.
EC 1c	Prioritize Indicators – Score Cards Prioritize and adapt indicators for a <i>Community Score Card</i> and <i>Project Review Score Card</i> and begin monitoring program.
EC 1d	Regional Collaboration Collaborate regionally to share information and avoid duplicative efforts on Sustainability Planning.
Goal EC 2	Improved energy efficiency/renewable energy use
EC 2a	Energy Conservation Awareness Program Programs to promote energy conservation awareness (coordination with local utility providers and in-state programs to reduce energy consumption).
EC 2b	Point System – New Building Energy Conservation Provide an incentive or point system for new buildings.
EC 2c	Transportation Demand Management Support Transportation Demand Management, encouraging public and private businesses to implement employee use of carpooling programs, public transportation, and/or alternatives to motorized transportation.



Goal/ Strategies	Related Goal/Strategies
Goal EC 3	Greenhouse gas emissions reduced (See strategies for Goals 1 and 2, above.)
Goal EC 4	Water conservation and protection of water resources
EC 4a	Water Quality South Adams County Water and Sanitation District provides water quality testing and ensures safety and quality of drinking water.
EC 4b	Low-Impact Stormwater Standards Develop standards for low-impact development stormwater practices. (See Public Facilities and Infrastructure strategies.)
Goal EC 5	Solid waste disposal reduced
EC 5a	Municipal Solid Waste Reduction Plan Develop a Municipal Solid Waste Reduction Plan and revisit existing landfills and their function.
EC 5b	Recycling Promote city recycling program (city facilities and events) and possibly yard waste composting.
Goal EC 6	Air pollutants/activities reduced
EC 6a	Tree Preservation Standards Expand tree preservation standards that exist in LDC.
EC 6b	Street Tree Planting and Maintenance Promote street tree planting and maintenance program.
EC 6c	Regional Air Quality Planning Cooperate with local and regional agencies to develop an effective approach to regional air-quality planning and management and pollution prevention. Solicit and consider comments from agencies on proposed projects that affect air quality.
Goal EC 7	Noise impacts limited
EC 7a	Residential Buffering Require buffers between industrial and residential, and between residential and the airport. (See Future Land Use Plan.)
EC 7b	Residential Noise Mitigation Require residential noise mitigation for all residential development east of E-470.
Goal EC 8	Future development near hazards reduced
EC 8a	Building Codes Administer building codes related to abandoned structures and hazardous materials.
EC 8b	Standards for Sand and Gravel Develop standards for sand and gravel mining operations.
EC 8c	Flammable Gas Overlay District Develop a flammable gas overlay district to protect against methane gas buildup in structures.
EC 8d	Protect Groundwater As warranted, work with responsible entities and agencies to evaluate potential groundwater pollution from historic activities or current practices. Ensure remediation is required.



Monitoring Environmental Conservation and Stewardship

This section identifies possible performance indicators for monitoring progress toward achieving the environmental conservation and stewardship goals.



See Chapter 16, *Implementation*, for a description of Plan Monitoring. That chapter describes how to narrow down and select appropriate performance indicators, and how to fine-tune and set targets.

Table 15.3: Environmental Conservation and Stewardship Indicators

Related Goal	Target	Possible Indicators
EC 1—Sustainability Plan	Develop and follow plan with targets for topics below	<ul style="list-style-type: none"> ▪ (Note: Indicators related to carbon emissions, greenhouse gas emissions, city energy use, etc., to be developed in the Sustainability Plan.)
EC 2—Energy efficiency	Reduced communitywide energy use per capita	<ul style="list-style-type: none"> ▪ Communitywide energy use (measured by utilities). ▪ Permits issued for renewable energy projects (e.g., wind, solar panels).
EC 3—Greenhouse gas emission reduction	Reduce greenhouse gas emissions over time	<ul style="list-style-type: none"> ▪ See indicators for EC 2, above.
EC 4—Water	<ol style="list-style-type: none"> Reduce water use per capita Improve quality of stormwater runoff 	<ul style="list-style-type: none"> ▪ Water use per capita. ▪ Number of new xeriscape projects. ▪ Amount of impervious surface in new development and redevelopment; projects with low impact stormwater treatment.
EC 5—Solid waste disposal	Reduce waste per capita	<ul style="list-style-type: none"> ▪ Solid waste quantity (i.e., solid waste, recyclables, compost material) per capita.
EC 6—Air pollution	Contribute to better air quality in the region	<ul style="list-style-type: none"> ▪ See transportation indicators and indicators for EC 2, above. ▪ Number of street trees planted.
EC 7—Noise impacts	Avoid placing residences within noise restricted areas of DIA; limit residences near DIA	<ul style="list-style-type: none"> ▪ Number of residences built within 60 DNL noise contour and within three-quarter of a mile of future runways.
EC 8—Hazards/Avoidance	Development avoids hazards	<ul style="list-style-type: none"> ▪ Number of structures in floodplain.