



Final Report & Recommendations



Environmental Sustainability
Committee
2017-2018

ATTACHMENT 1



WHEAT RIDGE ENVIRONMENTAL SUSTAINABILITY ACTION PLAN — EXECUTIVE SUMMARY

The Wheat Ridge Environmental Sustainability Committee (WRESC) reviewed current environmental sustainability practices across the City and community to draft this forward looking action plan to improve six City Council identified priority areas. The first phase of plan development included engagement with City departments, neighboring cities, community leaders, and businesses owners to gain insight on potential strategies to enhance sustainability within Wheat Ridge. Information gleaned from these meetings, along with a review of nationally recognized best practices, informed and guided phase two of the Committee's work: the development of recommendations in this plan.

The key topic areas, along with recommended goals

are: Energy Efficiency & Green Building

- Goal 1: Reduce WR's municipal energy usage
- Goal 2: Reduce commercial and industrial energy use
- Goal 3: Reduce residential energy use
- Goal 4: Preserve Wheat Ridge's distinct community character, small-town identity, and agricultural history while providing modern amenities and services which increase the City's tax base
- Goal 5: Encourage sustainable design infrastructure elements to support construction and renovation of buildings to create livable communities and promote green building practices

Renewable Energy

- Goal 1: Promote renewable energy policy beyond City
- Goal 2: Promote renewable energy within City
- Goal 3: Implement renewable energy projects.

Water

- Goal 1: Improve stormwater management systems and increase water quality in all major waterways and water bodies in Wheat Ridge
- Goal 2: Increase the adoption of water efficiency and conservation measures to reduce citywide water usage

Transportation

- Goal 1: Maximize development that substantially incorporates mixed use considerations and efficient transportation
- Goal 2: Increase use of multimodal transportation choice
- Goal 3: Increase traveler safety and environmental quality

Solid Waste & Recycling

- Goal 1: Improve waste management behavior by residents, businesses, and institutions
- Goal 2: Reduce negative impacts of waste management on city infrastructure and local environment

Communications & Engagement

- Goal 1: Communicate the Wheat Ridge Sustainability Action Plan to Council, businesses, and residents
- Goal 2: Encourage and grow participation in sustainability activities, approaches, and programs within Wheat Ridge
- Goal 3: Engage the community with implementation of the Wheat Ridge Sustainability Action Plan activities
- Goal 4: Engage Wheat Ridge businesses and organizations
- Goal 5: Create opportunities for feedback and input from community and City for ongoing sustainability initiatives

Each goal includes recommended strategies and action items that will strengthen environmental sustainability in Wheat Ridge. A general assessment of the timeline, cost, and environmental benefit for each item, along with additional discussion on proposed metrics and City resources necessary to enact the recommendations, are also included.

The Committee prepared this Action Plan to provide an expansive list of locally relevant actions for Wheat Ridge that have been successfully implemented across the United States and Colorado. These proven strategies will enhance the environmental sustainability of Wheat Ridge, provide strong financial returns, and bring substantial benefits to public health, community cohesion, and livability. The recommendations included in this plan can play a strong part of moving Wheat Ridge forward and ensure that residents, business owners, and the City are best positioned to meet the challenges and embrace the opportunities of the future.

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WHEAT RIDGE ENVIRONMENTAL SUSTAINABILITY ACTION PLAN — INTRODUCTION

In April 2017, Mayor Joyce Jay and City Council initiated the inaugural Wheat Ridge Environmental Sustainability Committee (WRESC). Between June 2017 and June 2018, the WRESC, comprised of 11 residents with vast expertise and experience in each topic area, dedicated approximately 550 hours meeting twice a month at City Hall as well as extensive time outside of these meetings to develop the following environmental sustainability action plan. The WRESC represented each district in Wheat Ridge. While neighboring cities invested in part- to full-time staff and professional consultation services for the creation of their sustainability plans, this plan for Wheat Ridge was written entirely by the following volunteer committee members.

Karen Berry
Amy DePierre
Dan Graeve
Heather Head
Alex Helling
April Nowak

Joy Opp
Andy Rasmussen
Rob Robinson
Eric Wilson
Adam Wylie

We are proud to have served the City and our community and we intend to continue our service. We represent passionate neighbors who are dedicated to our City, our place in the region, Colorado, and Earth.

The Mayor and City Council charged WRESC with developing recommendations to improve community conditions in six areas of environmental sustainability: green building and energy efficiency, renewable energy, transportation, solid waste and recycling, water, and communication and engagement.

To complete this charge, the prescribed mission of the committee was to:

- Evaluate current City of Wheat Ridge sustainability practices and policies
- Provide advice, support and guidance to Mayor and Council regarding sustainability, climate change, and environmental management issues
- Involve the community at large through engagement and outreach
- Support education, awareness and stewardship
- Identify metrics to track progress
- And, finally, to develop and help implement the strategies within this Action Plan

Together, with assistance of City staff, WRESC first spent several months garnering insight from neighboring and local, Wheat Ridge-based communities, governments, organizations, utilities, and non-governmental organizations. This information gathering process was indispensable in the development of the plan's recommendations for the City Council, the Mayor, and in creating a resource for the City of Wheat Ridge and its

residents. WRESC acknowledges the assistance, support, and contributions of everyone involved in providing supporting information for this plan on the next page. WRESC is grateful for their time and energy put toward our combined efforts.

Following the initial data and information gathering stage, WRESC developed a set of recommendations based upon nationally recognized best practices. The committee made a conscious effort not to reinvent the sustainability wheel during this process, and sought out best practices adopted by other local governments from across the Front Range, Colorado, and United States.

The recommendations developed during this past year include a mix of policy, practices, communication, and behaviors that will promote a more resilient and sustainable City. For the purpose of WRESC and this plan, sustainability is simply defined as *the responsible use of resources as it pertains to the three rungs of sustainability: environmental, social, and economic*. We believe these proposed investments in clean energy, water management, well-designed communities, and efficient transportation will provide environmental, social, and fiscal benefits to the City and its residents. Communities that are well-planned with a variety of housing options, commercial developments, and efficient and convenient transportation choices attract residents and new businesses.

Each of the six areas of environmental sustainability that this plan addresses include aspirational community goals, indicators for tracking progress, recommended strategies for improvement, and estimated resource requirements, timelines, and impacts.

Each topic area contains a Table which provides a truncated view of recommended Goals, Strategies, and Actions. The table and accompanying narrative is organized to match so a reader can easily identify recommendations. The table details are intended to help the City with prioritization, including Timeline, Cost, and Environmental Benefit. These estimates are the Committee's best approximation of resources needed to achieve an outlined goal. The environmental benefit is intended to assist Council with understanding how a strategy supports the protection of our environmental resources.

The following action plan will assist Wheat Ridge with meeting the objectives outlined in the recently completed 2035 Vision Statement:

Wheat Ridge is an attractive and inviting city and community for families. Wheat Ridge has great neighborhoods, is a hub of commerce with a choice of economically viable commercial areas, and has diverse transportation. Wheat Ridge is committed to environmental stewardship and its residents enjoy an active, healthy lifestyle and are proud of their hometown.¹

¹ <http://www.ci.wheatridge.co.us/DocumentCenter/View/26105/City-Council-Vision-Statement>

ACKNOWLEDGEMENTS

The Wheat Ridge Environmental Sustainability Committee (WRESC) Action Plan would not have been possible without the support and dedication of City of Wheat Ridge staff and leadership and the generous support and guidance from local businesses, organization, and neighboring governments. We thank you for your contributions toward a more sustainable Wheat Ridge.

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Former Mayor Joyce Jay

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ENERGY EFFICIENCY & GREEN BUILDING

WHY & BACKGROUND

Green Building is the practice of increasing the efficiency of how buildings and their sites use energy, water, and materials to reduce impacts on health and the environment which, ultimately, leads to an improved quality of life through stewardship of the natural environment, economic prosperity, and an engaged, socially-equitable community.

Wheat Ridge has limited opportunities for horizontal building growth. Approximately 31,000 residents call Wheat Ridge home, making it one of the smaller cities in the Denver metro area by population and geography. Developed mostly as a residential community during the 1960s, 1970s and 1980s, housing stock is primarily single-family ranch style homes on large-sized lots with mature landscaping. While Wheat Ridge is currently experiencing some development and redevelopment, both commercially and residentially, many of its existing structures are still in their original states. Strategic planning to utilize the available buildings and land wisely for new development, infill or redevelopment and renovation is of critical importance.

Overarching themes from previous planning efforts include the following²:

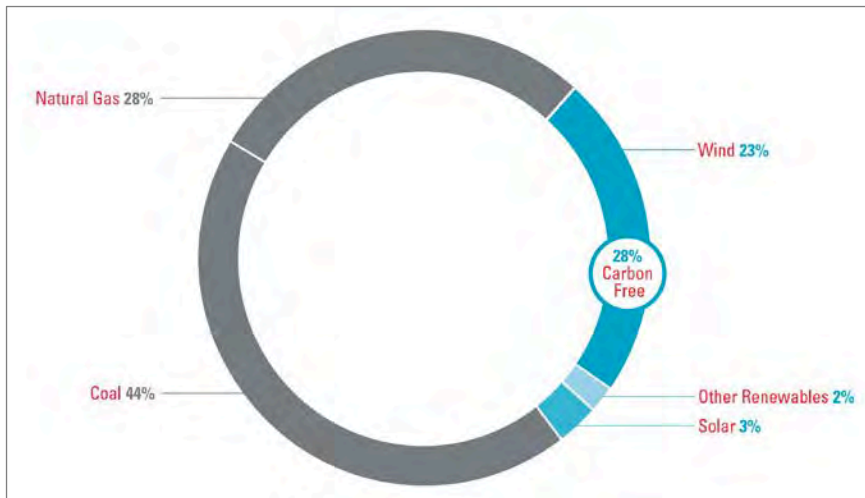
- Commitment to quality development and redevelopment
- Preservation of Wheat Ridge's neighborhoods, parks and open spaces, and community character
- Support for multi-modal transportation options

The focus of this action plan is on high-level guidance based on the principles of sustainable building design to promote vibrant neighborhoods, create a resilient local economy, enhance community character, and ensure a sustainable future.

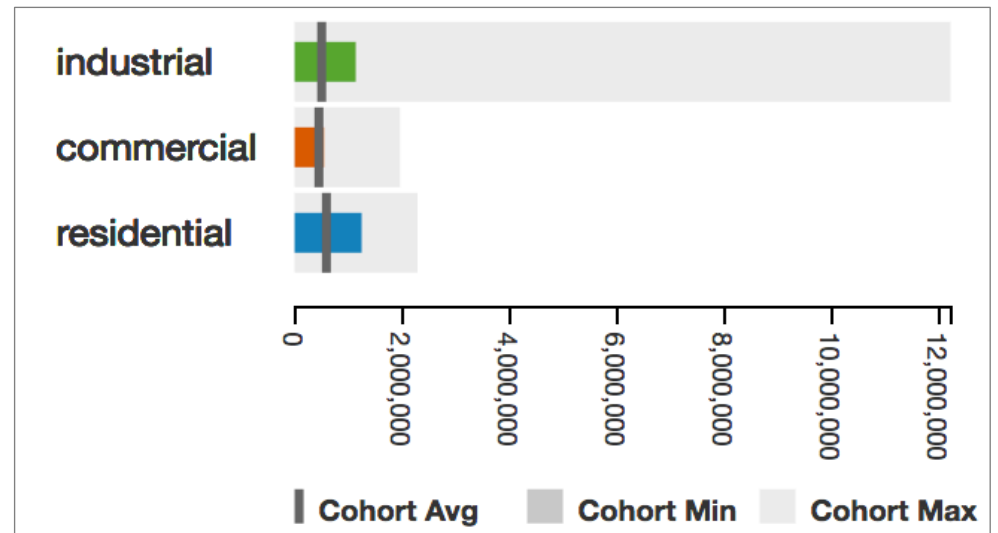
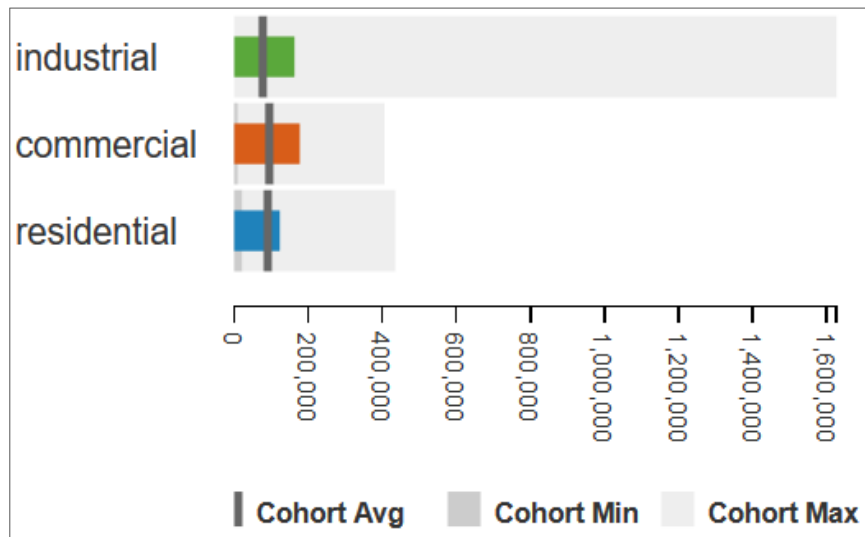
After water and food, shelter is the most important human need. Buildings account for approximately 40% of our community's energy consumption. The amount of energy used in buildings impacts residents' economic security, health, and greenhouse gas (GHG) contributions. Energy waste increases residents' economic instability due to the price volatility of energy, increases health problems caused by indoor and outdoor air pollution, and increases the risk of detrimental effects caused by climate change. Implementing energy-efficiency (EE) measures in WR's facilities and the commercial and residential building sectors is the least expensive option and the recommended first approach to increasing WR's economic stability, and reducing health and environmental risks. The City and its residents can save money while decreasing the health, economic and environmental risks caused by energy waste in buildings through reducing the city buildings' energy consumption and implementing energy efficiency policies and supporting energy efficiency building best practices in commercial and residential sectors. Please see the renewable energy section for increasing non-polluting energy source choices.

² Envision Wheat Ridge Comprehensive Plan, adopted 2009

The challenges facing the City in meeting its energy efficiency goals include lack of City staff time, increased maintenance costs, aging facilities and building stock, competition for capital investments. The City has taken many steps in implementing energy efficiency measures in City buildings. However, eight out of the 22 recommendations from recent energy audits were not implemented due to budget constraints.



In 2017, 44% of the electricity supplied by Xcel Energy to Colorado came from coal, with 28% from natural gas, and 28% from RE resources.³ Because of energy losses from the generation, transmission, and distribution of electricity, every 1 kWh saved in Wheat Ridge corresponds to about 3 kWh savings of fossil fuel energy “at the power plant.”

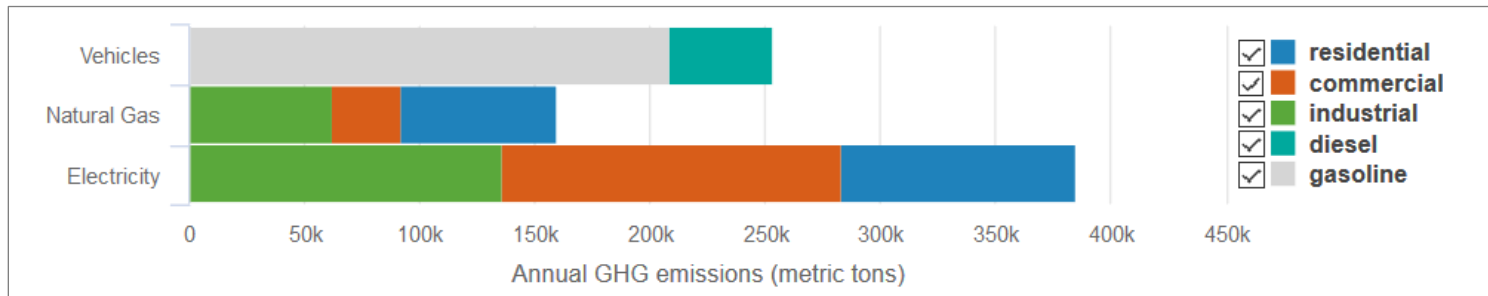


WR's industrial, commercial, and residential sectors use more electricity (left, MWh) and natural gas (right, MCF) than other similarly sized municipalities within the climate zone.⁴

³ https://www.xcelenergy.com/energy_portfolio/electricity/power_generation

⁴ <https://apps1.eere.energy.gov/sled/#/results/elecandgas?city=Wheat%20Ridge&abv=CO§ion=electricity¤tState=Colorado&lat=39.766098&lng=-105.0772063>

The industrial and commercial sectors' electricity and natural gas consumption make up 47% of the City's annual GHG emissions, with hospitals using more electricity than any other commercial activity.⁵ The residential sector is responsible for 21% of emissions, with the remaining 32% coming from gasoline and diesel vehicles.



According to Xcel data, WR businesses consume and contribute 57% of the community's total energy and GHG emissions while residential buildings consume and contribute 42%.

WR Annual GHG Emissions

Electricity	Number of Customers	Energy Consumption (kWh)	% of Energy Consumption	Carbon Emissions (metric tons CO2)	% Carbon Emissions (metric tons CO2)	Revenues Billed
Business *	2,468	125,975,032	57%	75,459	57%	\$12,152,340
Residential	14,671	93,723,441	42%	56,140	42%	\$10,762,658
Street Lighting - Metered	n/a	29,064	0%	17	0%	\$2,729
Street Lighting - Non-Metered/Xcel-Owned	n/a	1,972,303	1%	1,181	1%	\$524,134
Total:	17,139	221,699,840		132,798		\$23,441,860

The City has already completed many energy efficiency improvements. However, there is still much that can be done. The City has recently entered into an agreement with Xcel Energy through its Partner is Energy (PIE) program. The WRESC has been working with Xcel Energy's PIE representatives on developing strategies for implementing energy improvements. The WR PIE plan can be found in Appendix A. Some of the following goals reference the Focus Areas (FA) and their strategies (S) in accordance with the WR PIE plan.

⁵ <https://apps1.eere.energy.gov/sled/#/results/emissions?city=Wheat%20Ridge&abv=CO§ion=electricity¤tState=Colorado&lat=39.766098&lng=-105.0772063>

Energy Efficiency & Green Building

Goal / Action		Timeline*	Cost**	Environmental Benefit***
1	Goal: EE - Reduce municipal energy use			
1-A	Implement an Energy Performance Contract (EPC) to finance energy efficiency investments for city facilities.	Short	Low	High
1-B	Benchmark and track municipal building energy use. (PIE ⁶ FA1-S1)	Short	Low	High
1-C	Evaluate completed audits for facility improvements not included in the EPC and implement energy efficiency measures identified in audits. (PIE: FA1-S1&2)	Mid	Low	High
1-D	Require new or renovated municipal facilities to be zero energy buildings.	Long	High	High
1-E	Complete conversion of all street lights to LED lighting	Short	Low	High
2	Goal: EE - Reduce commercial and industrial energy use			
2-A	Adopt a City ordinance that requires benchmarking and disclosure of energy use of buildings larger than 25,000 square feet.	Short	Medium	High
2-B	Encourage Energy Performance Contract (EPC) for Lutheran Hospital	Short	Low	High
2-C	Encourage energy efficiency upgrades in commercial and industrial facilities using programs available to local businesses through Xcel's PIE including Energy Design Assistance, ENERGY STAR Benchmarking, Building Tune-Ups, outreach materials at time of lease/sale, and various rebate programs. (PIE FA2-S1, S2, S3)	Mid	Medium	High
2-D	Encourage use of Commercial Property Assessed Clean Energy (C-PACE) financing for energy projects.	Mid	Low	High
2-E	Require projects that receive city incentives (e.g., TIF) to meet beyond code energy savings targets.	Short	Low	Medium
2-F	Adopt IECC 2018 building codes and establish regular, automatic adoption of new IECC codes.	Ongoing	Medium	High
3	Goal: EE - Reduce residential energy use			

⁶ Indicates corresponding action in the Xcel Energy Partners In Energy Action Plan, included in Appendix A.

Energy Efficiency & Green Building, continued

Goal / Action		Timeline*	Cost**	Environmental Benefit***
3-A	Build awareness of energy efficiency programs by promoting Xcel's rebate and energy efficiency programs available to residential customers from Xcel, such as the Home Energy Squad and home energy audits, through supporting the PIE's multi-pronged outreach campaign. (PIE FA3-S1)	Ongoing	Low	High
3-B	Promote Xcel Energy's programs for low-income households and rental tenants. (PIE FA3-S2)	Short	Low	Medium
3-C	Promote Weatherization Assistance Program (WAP) and bill assistance (LEAP) with outreach materials	Short	Low	Medium
3-D	Promote the Colorado Energy Office Residential Energy Upgrade (RENU) program and other financing mechanisms for energy projects.	Ongoing	Low	High
3-E	Support the statewide "Green the MLS" initiative by requiring home energy reports when listing a home for sale in Wheat Ridge	Short	Medium	High
3-F	Adopt IECC 2018 Residential building codes and move forward with a regular, automatic adoption of new codes versions.	Ongoing	Medium	High
4	Goal: GB - Preserve Wheat Ridge's distinct community character, small-town identity, and agricultural history while providing modern amenities and services which increase the City's tax base			
4-A	Review and comprehensively update Wheat Ridge Guiding Documents to ensure the distinct character and desirable attributes of Wheat Ridge are maintained and the coordination of sustainability is cohesive and unified throughout and across each plan.	Short	Medium	High
4-B	Consider adopting local business preference ordinance for new development.	Short	Low	High
4-C	Continued City and community support of urban agriculture activities and Colorado Cottage Food Act.	Ongoing	Low	High
5	Goal: GB - Encourage sustainable design infrastructure elements to support construction and renovation of buildings to promote green building practices and create livable communities.			

Energy Efficiency & Green Building, continued

Goal / Action		Timeline*	Cost**	Environmental Benefit***
5-A	Review and update Architectural & Site Design Manual for increased emphasis on sustainability	Short	Medium	High
5-A	Incorporate sustainability into the pre-application process for site plan, architectural elevations and landscape plan (pg. 7)	Short	Medium	High
5-Aii	Expand the overlay areas for sustainability (pg. 9-10)	Short	Medium	High
5-Aiii	Include sustainable design standards and guidelines for Site Design and Building Design (pg. 11-30)	Short	Medium	High
5-B	Review and update Streetscape Design Manual for increased emphasis on sustainability.	Short	Medium	High
5-Bi	Incorporate sustainability into the application process during either Site Plan Review or Building Permit Review (pg. 3)	Short	Medium	High
5-Bii	Include sustainability for each Priority Corridor's Design Goals, Standards and Guidelines where possible (i.e. increase water conservation, decrease light pollution, increase multi-modal amenities and access)	Short	Medium	High
5-C	Introduce ballot measure for green roofs or rooftop solar on all new buildings over 25,000 square feet.	Short-Ongoing	Medium	High
5-D	Require Green Building certification for new construction and major renovations of City buildings (e.g., LEED, WELL)	Ongoing	Low	High
5-E	Consider Green Building certifications for new commercial and multifamily developments	Ongoing	Low	High
5-Ei	Require certification for developments receiving any City incentives (e.g., TIF)	Ongoing	Low	High
5-Eii	Incentivize certification for all new development	Ongoing	Low	High

*Timeline as related to time it would take for action to be established, but not necessarily completed. Short term refers to activities that to be established in less than one year; mid-term refers to activities to be established in 1-3 years; long term activities refer to activities to be established in 3-10 years. An activity established in year one would likely have ongoing associated activities for the City to implement.

** Cost estimate considers some actions requiring actions would require ongoing commitments from the City, which are considered in the assessing cost. For example, necessity for City staff.

***Environmental benefit roughly identifies the impact a recommendation has on the environment, categorized as High, Medium, Low.

WHAT: GOALS AT A GLANCE

GOAL 1: Reduce municipal energy use

GOAL 2: Reduce commercial and industrial Energy use

GOAL 3: Reduce residential energy use

GOAL 4: Preserve Wheat Ridge's distinct community character, small-town identity, and agricultural history while providing modern amenities and services which increase the City's tax base

GOAL 5: Encourage sustainable design infrastructure elements to support construction and renovation of buildings to create livable communities and promote green building practices

HOW: GOAL DESCRIPTIONS & STRATEGIES

GOAL 1: Reduce municipal energy use

Action 1-A: Implement an Energy Performance Contract (EPC) for city facilities

Energy Performance Contracts are a time-tested tool for financing public facility improvements and lowering energy costs. The Colorado Energy Office EPC program will provide the City of WR with support to facilitate the EPC process. The City can contract with a CEO pre-qualified Energy Service Company (ESCO) to conduct an investment-grade audit of all city facilities and implement facility improvements at no costs to the City. Through an EPC, an ESCO guarantees the realized energy, water and associated operations and maintenance savings from the facility improvements. The savings are used to offset the construction costs. Once the financing period is over, all subsequent savings will accrue to the city. For further information, see: <https://www.colorado.gov/pacific/energyoffice/public-energy-performance-contracting>.

Metrics: The costs and energy savings will be calculated, monitored and verified through the EPC.

Action 1-B: Benchmark and track municipal building's energy use

In order to track energy use of the City's facilities, a benchmark or baseline of the City's facilities is necessary. Once the benchmark is set-up, the data can be automatically uploaded on an ongoing basis through Xcel's Partners in Energy (PIE) program, to track the facilities energy use annually.

Metrics: The metrics for the PIE program include total energy savings (MMBtu), electricity savings (kWh), gas savings (therms), and annual cost savings.

Action 1-C: Evaluate completed audits for facility improvements not included in the EPC and implement energy efficiency measures identified in audits

Wheat Ridge has completed energy audits of many of its facilities. We expect that many improvements can be financed with an energy performance contract (EPC), as described in Section 1-A of this document, but any other facility improvements can be addressed via PIE outreach and implementation. (PIE: FA1-S1&2) PIE program analysts estimate \$11,150 in annual cost savings (165,700 kWh and 1,200 therms) with an estimated 2-year payback period (an approximately 50% return on investment).

Metrics: The metrics for the PIE program include total energy savings (MMBtu), electricity savings (kWh), gas savings (therms), and annual cost savings.

Action 1-D: Require new or renovated municipal facilities to be zero energy buildings

Zero energy buildings (ZEB) combine energy efficiency and renewable energy generation to develop or renovate a structure that only consumes as much energy as can be produced on the site with renewable resources. The City should adopt bylaws that require new or renovated municipal facilities to be ZEBs. The ZEB bylaw would demonstrate that Wheat Ridge is a pioneer in combating climate change and is fiscally responsible since the added costs of the ZEB design and construction would be recouped within 20 years.

For more information:

<https://www.energy.gov/eere/buildings/zero-energy-buildings>

“Strategies for Procuring High-Performance Buildings on Typical Construction Budgets” <https://www.nrel.gov/docs/fy14osti/61571.pdf>

Metrics: Each building’s reduced energy, cost and GHG savings will be calculated in the design and planning stages.

Action 1-E: Complete conversion of all street lights to LED lighting

Public street lighting can account for up to 40% of electricity consumed by a municipality. Since LEDs use less than half the energy consumed by traditional lights and last significantly longer, replacing traditional street lights to LED will save the city money and reduce its climate change impact. Wheat Ridge has already begun converting street lights to LED. WRESC recommends that the conversion continue until complete.

Metrics: The metrics for the PIE program include total energy savings (MMBtu), electricity savings (kWh), gas savings (therms), and annual cost savings.

GOAL 2: Reduce commercial and industrial energy use**Action 2-A: Adopt a City ordinance that requires benchmarking and disclosure of energy use of buildings larger than 25,000 square feet**

Benchmarking the energy performance of buildings is the first step to understanding and reducing energy consumption, because you can’t manage what you don’t measure. Benchmarking enables the market to better value energy efficiency, similar to the MPG ratings for cars or nutrition labels on food. Other cities with benchmarking and transparency requirements have seen [2-3 percent energy savings](#) each year by covered buildings. See

information on Denver’s ordinance here: <https://www.denvergov.org/content/denvergov/en/environmental-health/environmental-quality/Energize-Denver/CommercialMultifamilyBuildingBenchmarking.html>.

Metrics: The metrics include total energy savings (MMBtu), electricity savings (kWh), gas savings (therms), and annual cost savings.

Action 2-B: Encourage Energy Performance Contract (EPC) for Lutheran Hospital

Lutheran Hospital is the largest consumer of energy in Wheat Ridge. The City should work with Lutheran hospital on implementing an Energy Performance Contracts (EPC), which will have no upfront cost to Lutheran and will result in a positive cash flow (annual energy bill savings outweigh loan/EPC payments). This will improve the economic sustainability of one of the largest employers in Wheat Ridge. PIE analysts estimate annual savings of 300,000 kWh and \$27,000 is possible in the hospital and industrial facility sector in Wheat Ridge (payback varies by measure).

Action 2-C: Encourage energy efficiency upgrades in commercial and industrial facilities using programs available to local businesses

Programs through Xcel’s PIE including Energy Design Assistance, ENERGY STAR Benchmarking, Building Tune-Ups, outreach materials at time of lease/sale, and various rebate programs are available. (PIE FA2-S1, S2, S3): Typical upgrades include improving efficiency of process heating, installing renewable energy, waste heat recovery, high efficiency motors, and developing programs that continuously look for energy reductions. Include outreach materials with every lease or purchase agreement that advertises available programs. PIE analysts estimate incremental annual savings of \$53,950 (774,500 kWh and 7,500 therms) for existing businesses in Wheat Ridge (estimated 4-year payback, which is a 25% return on investment). For new construction, incremental participation in the Energy Design Assistance program is estimated to save \$54,700 (532,700 kWh and 13,400 therms), with an immediate (< 1 year) payback.

Metrics: The metrics for the PIE program include total energy savings (MMBtu), electricity savings (kWh), gas savings (therms), and annual cost savings.

Action 2-D: Encourage use of C-PACE⁷ financing for energy projects

C-PACE is a financing tool that allows commercial and multifamily property owners to finance qualifying energy efficiency, water conservation, and other clean energy improvements on existing and newly constructed properties, with repayment of the financing through a voluntary assessment on their property tax bill. This can help make Wheat Ridge businesses more economically competitive by reducing energy costs and increasing self-reliance by insulating against energy cost fluctuations.

Metrics: As part of C-PACE, each energy project will calculate the cost, energy and GHG emission reductions.

Action 2-E: Require projects that receive city incentives (e.g., TIF) to meet beyond code energy savings targets

While there are not many new developments in Wheat Ridge, newly constructed buildings will likely last at least 50 years, so it is in the community’s interest to make these buildings high quality. Retrofitting an existing building is less economical than designing a building to be energy efficient in the first place, so it is critical to encourage wise investments at the time of construction. One way the City can encourage such investment is by requiring construction projects that receive city incentives, such as tax increment financing (TIF), to meet energy savings targets that go beyond code requirements. Going beyond code does not have to increase the cost of construction,⁸ but even if it does, it will provide

⁷ <https://www.colorado.gov/pacific/energyoffice/commercial>

⁸ See “Strategies for Procuring High-Performance Buildings on Typical Construction Budgets” <https://www.nrel.gov/docs/fy14osti/61571.pdf>

dividends, in the form of lower utility costs, to the tenants for years to come. This ultimately benefits the community by attracting high quality businesses, jobs, and keeps more money in the local economy.

There are a variety of approaches to beyond code programs. Resources for designing programs include: Going Beyond Code: A Guide for Creating Effective Green Building Programs for Energy Efficient and Sustainable Communities

<https://www.energycodes.gov/sites/default/files/documents/GoingBeyondCode.pdf>

Metrics: Each project will calculate the cost, energy and GHG emission reductions.

Action 2-F: - Adopt IECC 2018 Commercial building codes and establish regular, automatic adoption of new IECC Commercial codes

The International Environmental Conservation Codes establish minimum requirements for energy-efficient buildings using prescriptive and performance-related provisions. Building codes will save tenants thousands of dollars over a building's lifetime. Establishing a regular adoption process means that the Wheat Ridge community will always be on track to benefit from energy codes. Some states and local jurisdictions have established automatic adoption, so adoption does not need to be debated every 3 years.

Metrics: Energy costs and GHG emission reductions.

GOAL 3: Reduce residential energy use

Action 3-A: Promote Xcel Energy's residential rebate and direct install programs to Wheat Ridge residents. (See PIE FA3-S1)⁹

The PIE program includes a multi-pronged outreach campaign for residential programs, with a focus on promoting Home Energy Squad. Home Energy Squad is a direct install program that allows homeowners to pay \$75 for a crew to swap out traditional bulbs for LEDs, install a programmable thermostat, weather-strip a drafty door and install energy-efficient showerheads and aerators (a \$200 value). Xcel Energy also provides rebates for home energy audits (60% discount), evaporative coolers, high efficiency air conditioners, insulation, air sealing, refrigerator and freezer recycling, as well as a comprehensive whole-home upgrade program (Home Performance with ENERGY STAR). Although not currently being organized by Xcel, Wheat Ridge could organize home energy audit house parties to spread the word about energy saving opportunities. PIE analysts estimate that incremental participation in these programs would result in \$27,800 annual cost savings (201,700 kWh and 11,700 therms) for Wheat Ridge residents, with an estimated payback of 5 years (20% rate of return).

Metrics: The metrics for the PIE program include total energy savings (MMBtu), electricity savings (kWh), gas savings (therms), and annual cost savings.

Action 3-B: Promote Xcel Energy's programs for low-income households and rental tenants (PIE FA3-S2)

Qualified Wheat Ridge residents can receive free help to reduce energy bills through Xcel Energy's Income Qualified Weatherization Program, which leverages the federal programs described below. The program is administered by Energy Outreach Colorado.

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

⁹ https://www.xcelenergy.com/programs_and_rebates/residential_programs_and_rebates

https://www.xcelenergy.com/programs_and_rebates/residential_programs_and_rebates/affordable_energy/income-qualified_weatherization_program

Metrics: The metrics for the PIE program include total energy savings (MMBtu), electricity savings (kWh), gas savings (therms), and annual cost savings.

Action 3-C: Promote Weatherization Assistance Program (WAP) and bill assistance (LEAP) with outreach materials

Colorado Energy Office (CEO) offers a free Weatherization Assistance Program (WAP) to Colorado's low-income residents, and the LEAP program is a federally funded state-supervised, county-administered system and is designed to assist with winter heating costs for a home primary heating system.^{10 11}

Metrics: The metrics for the WAP and LEAP program are calculated through the Colorado Energy Office.

Action 3-D: Promote Colorado Energy Office (CEO) RENU financing¹² and other financing mechanisms for energy projects (see PIE)

The CEO has worked with Elevations Credit Union to establish a loan program for homeowners to purchase new Energy Star Appliances, install new energy improvements to their home, or if they have an emergency with a home appliance and need immediate help in financing a replacement. For more information, please visit <https://www.colorado.gov/pacific/energyoffice/renu-loan-customers>

Action 3-E: Support the statewide “Green the MLS” initiative by requiring home energy reports when listing a home for sale

One of the biggest barriers to home energy upgrades is that homeowners may not stay in the home long enough to recoup their investment, and the market lacks a mechanism for valuing such investments, as the upgrades are often “invisible” to potential buyers. Home energy scores are a market-based solution for conveying energy performance information—similar to miles-per-gallon ratings for cars or nutrition labels on food—that allow energy efficiency investments to be recouped in the form of a higher home energy score that fetches a premium in the market. Positive steps have already been taken in Colorado to “Green the MLS” by adding optional fields to the MLS that allow sellers to advertise green features. Some cities, such as Portland, Oregon, now require sellers to disclose home energy scores before putting homes on the market, which provides true market transparency.

RESOURCES

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

https://www.elevateenergy.org/wp/wp-content/uploads/Moving-the-Market_-Energy-Cost-Disclosure-in-Residential-Real-Estate-Listings.pdf

<https://www.pdxhes.com/>

¹⁰ https://www.xcelenergy.com/billing_and_payment/understanding_your_bill/energy_assistance_options

¹¹ <https://www.colorado.gov/pacific/phillipscounty/low-income-energy-assistance-program-leap>

¹² <https://www.colorado.gov/pacific/energyoffice/renu-loan-customers>

Action 3-F: Adopt IECC 2018 Residential building codes and move forward with a regular, automatic adoption of new IECC Residential codes

See G.2.H. for description of IECC. Adopting the latest energy codes will save homeowners and renters money. For example, adoption of the 2012 IECC Residential codes was found to have a 16–17-month payback and would net homeowners \$750 over five years.¹³

RESOURCES

<https://www.nrdc.org/experts/pierre-delforge/ca-2020-building-code-draft-zero-net-electricity-new-homes>

GOAL 4: Preserve Wheat Ridge’s distinct community character, small-town identity, and agricultural history while providing modern amenities and services which increase the City’s tax base

Action 4-A: Review and comprehensively update Wheat Ridge Guiding Documents to ensure the City’s distinct character and desirable attributes are maintained and the coordination of sustainability is unified throughout each plan.

Guiding Documents include:

- [Zoning and Development Code](#)
- [Envision Wheat Ridge Comprehensive Plan](#)
- [Subarea Plans](#)
- [Urban Renewal Plans](#)
- [Neighborhood Revitalization Strategy](#)
- [Architectural Design and Site Manual \(ADSM\)](#)
- [Streetscape Design Manual](#)

Action 4-B: Consider adopting local business preference ordinance for new development.

Support independent local businesses that provide the distinctive, small town appeal of Wheat Ridge and avoid the trend toward nationwide standardization. One way to protect independent entrepreneurs and ensure a diverse commercial district is to draft an ordinance¹⁴ that limits formula, or chain, businesses (i.e., restaurants, retail) by capping their number, making them conditional use subject to a case-by-case review and approval by planning board or City Council, or prohibiting them altogether in certain zones. This type of ordinance would foster a business community that is responsive to the needs of the surrounding neighborhood.

Action 4-C: Continued City and community support of urban agriculture and [Colorado Cottage Food Act \(copy of the bill\)](#)

- [Jefferson Conservation District Guide for Urban Agriculture](#)

¹³ <http://bcapcodes.org/wp-content/uploads/2015/11/Denver-2012-IECC-True-Cost.pdf>

¹⁴ <https://ilsr.org/rule/formula-business-restrictions/>

Wheat Ridge is a suburban community with clear agricultural roots. As Wheat Ridge developed houses and businesses co-mingled with fields of carnations and apple orchards. Wheat Ridge continues to maintain a robust array of small- to mid-sized farms. Residents show great support of a local food system, both by growing food themselves and purchasing it from local producers. There is growing evidence that connecting with a local food system has community health benefits by supporting healthy eating, community resilience, and food literacy.¹⁵

Four important directives from the case-study completed by LiveWell Wheat Ridge in 2014 are still relevant and necessary to continue and further expand urban agriculture within the community fabric of Wheat Ridge:

- Strengthen the urban agriculture community and provide increased connectivity between producers, processors and consumers
- Ensure policies continue to incentivize Urban Agriculture through the preservation and maintenance of space for local food production
- Establish public-private partnerships to support local food production, create opportunities for educational programming and host community events
- Support creative programming to strengthen Wheat Ridge's reputation as an urban agriculture-friendly community

GOAL 5: Encourage sustainable design infrastructure elements to support construction and renovation of buildings to create livable communities and promote green building practices

Action 5-A: Review and update Architectural & Site Design Manual for increased emphasis on sustainability

The number one goal of the ASDM is “creative site and building design that creates unique and sustainable places.”

Other goals included in the ASDM that are closely connected to this Action Plan include:

- Balance traffic needs with pedestrians and adjacent land uses
- Encourage pedestrian activity through building and site design with a consistent edge to street and sidewalk and convenient access from public right-of-way to each business
- The use of architectural elements to create buildings that are human scale and visually interesting

5-Ai. Incorporate sustainability into the pre-application process for site plan, architectural elevations and landscape plan

At the outset of any new development or major renovation project, weight should be given during the initial review of the proposed site plan, architectural elevations and landscape plan to projects that strongly incorporate principles of sustainable design. These preliminary design documents should include explicit means for the preservation and enhancement of existing tree canopy and native vegetation to avoid harming habitat, open space, and water bodies. Ultimately, development should create regenerative spaces that connects occupants to light, air, food, nature, and community.

¹⁵ <https://co-wheatridge-old.civicplus.com/DocumentCenter/View/21687/LiveWell-Urban-Agriculture-Case-Study>

5-Aii. Expand the overlay areas for sustainability (pg. 9-10)

- Encourage development of transit-supportive, higher-density, mixed-use, pedestrian-oriented areas that are human scale, rather than car centric (i.e. Clear Creek Crossing, The Corners, Wadsworth Corridor)
- Support transit oriented development (TOD) that includes a mix of commercial, industrial and residential uses and is designed for multi-modal access (pedestrians, bicycles, vehicles, public transit)

5-Aiii. Include sustainable design standards and guidelines for Site Design and Building Design (pg. 11-30)

Consider the following sustainable design recommendations:

- Integrate the site with local and regional ecosystems and preserve the biodiversity that natural systems rely on
- Provide ample connection to existing natural environment, trails and greenways
- Ongoing maintenance plan for low or no chemical use and reduced water use
- Consider using land for agricultural purposes
- Restrict development footprint to lessen damage to site ecology
- Protect open space and sensitive areas
- Preserve existing wildlife habitat (i.e. floodplains, wetlands)
- Avoid light pollution
- Reduce the use of dark, non-reflective materials to combat the creation of urban heat islands

Action 5-B: Review and update Streetscape Design Manual for increased emphasis on sustainability

5-Ei. Incorporate sustainability into the application process during either Site Plan Review or Building Permit Review (pg. 3)

At the outset of any new development or major renovation project, weight should be given during the initial review of the proposed site plan, architectural elevations and landscape plan to projects that strongly incorporate principles of sustainable design. These preliminary design documents should include explicit means for the preservation and enhancement of existing tree canopy and native vegetation to avoid harming habitat, open space, and water bodies. Ultimately, development should create regenerative spaces that connect occupants to light, air, food, nature and community.

5-Eii. Include sustainability for each Priority Corridor's Design Goals, Standards and Guidelines where possible (i.e. increase water conservation, decrease light pollution, increase multi-modal amenities and access)

Focus on infrastructure that is safe and comfortable for pedestrians (i.e. sidewalks, all-weather-surface footpaths, crosswalks) and bicyclists (i.e. bicycle lanes, off-street bicycle paths or trails, streets with low target vehicle speed)

Encourage alternative transportation by providing:

- Bicycle storage
- Alternative-fuel facilities
- Preferred parking for green vehicles

Highlight and expand Amenity Zones contribution to sustainable design (i.e. walkability, landscape, furnishings)

Reassess Street Furnishings and their materials for sustainability and durability:

- Conserve raw materials and resources, support a life-cycle approach that improves performance and promotes efficiency at every step (i.e. extraction, processing, transport, maintenance, and disposal or reuse)
- Choose environmentally preferable products from sustainable suppliers, designers and manufacturers (i.e. responsibly harvested wood, bio-based materials, locally or regionally produced products) whenever possible

Action 5-C: Introduce ballot measure for green roofs or rooftop solar on all new buildings over 25,000 square feet

Fashion a green roof or rooftop solar ordinance after Denver's Green Roof Ordinance, based on Toronto's Green Roof Ordinance with specific attention to Wheat Ridge's particular climate challenges and plant hardiness zone.

There are many benefits of green roofs: enhanced stormwater management, reduced urban heat island effect, reduced energy costs, improved air quality, decreased noise pollution, enhanced biodiversity for bees and birds, in addition to city beautification. Studies show that these benefits lead to a better quality of life and workplace environment.¹⁶

DENVER GREEN ROOF ORDINANCE HIGHLIGHTS INCLUDE:

Buildings over 25,000 square feet (ft²) must dedicate a percentage of a building's roof to green, vegetative space:

<i>Gross Floor Area (Size of Building)</i>	<i>Coverage of Available Roof Space (Size of Green Roof)</i>
<i>25,000 – 49,999 ft²</i>	<i>20%</i>
<i>50,000 – 99,999 ft²</i>	<i>30%</i>
<i>100,000 – 149,999 ft²</i>	<i>40%</i>
<i>150,000 – 199,999 ft²</i>	<i>50%</i>
<i>200,000 ft² or greater</i>	<i>60%</i>

- *A building may cover their entire roof with solar to be exempt from this building code.*
- *Green roofs and solar work in tandem. Solar panels give shade to vegetation and the plants keep the roof cooler.*
- *Only buildings that exceed 25,000 ft² and residential buildings over 4 stories and greater than 25,000 ft²*

¹⁶ <http://www.denvergreenroof.org/the-basics/>

Action 5-D: Require Green Building certification for new construction and major renovations of City buildings (e.g., LEED, WELL)

Action 5-E: Consider Green Building certifications for new commercial and multifamily developments

5-Ei. Require certification for developments receiving any City incentives (e.g., TIF)

5-Eii. Incentivize certification for all new development

Join the ever-growing list of cities requiring and supporting Green Building certifications for sustainable development to create livable cities.¹⁷

All newly constructed, extensively modified non-residential, and specific multi-family residential buildings that have or will have at least 10,000 sf of gross floor area must achieve a Silver rating in the appropriate LEED rating system.

COMMUNICATION & ENGAGEMENT

Ensure that Energy Efficiency is included in the proposed Wheat Ridge Green Business recognition by City Council

Provide a targeted pamphlet with sustainable guidelines for development/redevelopment projects, to include but not limited to the following:

- Use energy, water and materials efficiently
- Conservation and creative reuse of water for indoor use, outdoor use, specialized use and metering (i.e. efficient fixtures and appliances, greywater reuse, rainwater harvesting)
- Reuse existing building components and infrastructure systems
- Conserve raw materials and resources, support a life-cycle approach that improves performance and promotes efficiency at every step (i.e. extraction, processing, transport, maintenance, and disposal or reuse)
- Divert demolition waste by seeking channels/opportunities for reuse, salvage and recycling
- Choose environmentally preferable products from sustainable suppliers, designers and manufacturers (i.e. responsibly harvested wood, bio-based materials, locally or regionally produced products)

RESOURCES

Implementing the above recommendations will require staff time, but energy cost savings from some of the actions can help offset this cost. The PIE program alone has estimated cost savings of almost \$200,000 per year. In some cases, volunteers can assist with outreach and other implementation efforts. Many energy efficiency improvements can be financed so that they are cash flow positive—the energy cost savings outweigh loan payments starting in year one. The actions above describe various financing mechanisms available.

¹⁷ <https://www.everbluetraining.com/blog/cities-requiring-or-supporting-leed-2015-edition>

RENEWABLE ENERGY

WHY & BACKGROUND

A stable climate, clean air, healthy people, low-cost energy, and a resilient economy are goals all citizens of Wheat Ridge can get behind. To reach these goals, we must collectively pursue a lofty, yet practical and achievable, set of strategies for Wheat Ridge with the greatest potential for positive change. The recommendations below deal with the source of energy provided to residents, businesses, municipal facilities, and other energy users. Every building, vehicle, and piece of infrastructure in the City of Wheat Ridge uses energy. In turn, every person is impacted by the pollutants released from the production and use of that energy.

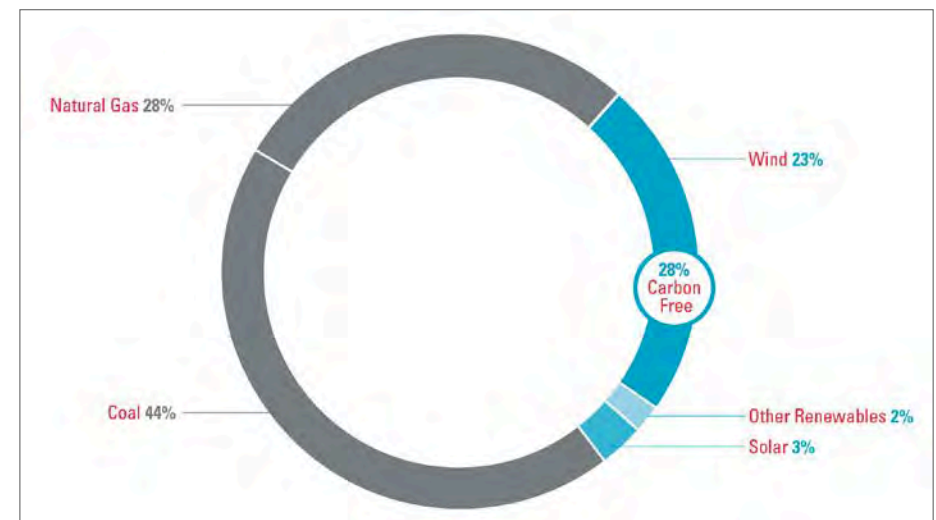
This plan proposes a target of 100% renewable energy for all uses, including buildings and transportation, by 2050. In order to reach the target, this Plan also proposes the following interim targets (as percentages of total annual primary energy):

- 1) 25% by 2025
- 2) 50% by 2033
- 3) 75% by 2041
- 4) 100% by 2050

For reference, about 10% of all energy (including transportation) comes from a renewable source in 2017.

Xcel Energy (Xcel), an investor owned utility, supplies electricity and natural gas to Wheat Ridge residents and businesses. In 2017, Xcel's electricity supply in Colorado was sourced from 44% coal, 28% natural gas, 23% wind, 2% hydropower, and 3% solar—or 28% renewable sources in total.¹⁸ Xcel plans to further expand renewable energy to 55% of its electricity generation by 2025¹⁹. Xcel currently has no plans to replace its natural gas supply with methane generated from renewable sources, nor does it have plans to encourage consumer fuel switching from natural gas to electricity.

Xcel's programs that allow users to opt into renewable electricity, and subsidies and financial incentives offered by state and federal governments mean that renewable energy is increasingly an option for communities interested in utilizing clean and less costly sources of energy.



¹⁸ Xcel Energy, 2016. (no title). "Annual community energy report." Accessed https://www.xcelenergy.com/working_with_us, Feb. 15, 2018.

¹⁹ Svaldi, Aldo, 2017. "Xcel Energy plans to retire two coal fired plants in Pueblo, increase renewables." The Denver Post, August 29, 2017.

Fifty-five percent renewable electricity is a solid foundation, but we must join with other communities to make substantial strides in increasing the use of nonpolluting energy sources as clean air is a shared resource. Thus far, five cities in the USA have reached 100% renewable electricity, including Aspen, CO, and over 50 cities have pledged 100% renewable electricity including five in Colorado. In addition, Governor Hickenlooper has committed Colorado to a 26% reduction of greenhouse gases by 2025.²⁰ This Colorado target encompasses all sources of greenhouse gas emissions, not just electricity generation.

This section of the Plan addresses renewable energy sources for stationary uses by city facilities, residences, and businesses. See the Transportation section of the Plan for reduction of greenhouse gases from transportation, and the Green Building and Energy Efficiency section for energy use in buildings.

Renewable Energy

Goal / Action		Timeline*	Cost**	Environmental Benefit***
1	Goal: Promote renewable energy policy beyond City			
1-A	Represent City renewable energy goals to Public Utility Commission	Ongoing	Low	High
1-B	Endorse/propose county, state, and federal policy that support City goals for renewable energy	Ongoing	Low	High
1-Bi	Endorse a market solution to carbon pollution with a federal tax on carbon production or a carbon fee and dividend	Short	Low	High
1-Bii	Join the Compact of Colorado Communities	Short	Low	Medium
1-Biii	Promote statewide adoption of Community Choice Aggregation	Ongoing	Low	Medium
1-Biv	Form partnerships with neighboring communities and Jefferson County in promoting renewable energy.	Ongoing	Low	Medium
2	Goal: Promote renewable energy within City			
2-A	Engage the community in setting and implementing renewable energy goals	Ongoing	Low	Low
2-B	Promote renewable energy sourcing options and other programs, on the City website and other venues	Ongoing	Medium	Low
2-C	Work with the Colorado Energy Office and Department of Local Affairs for project and financial assistance in renewable energy	Ongoing	Medium	High
2-D	Partner with neighboring cities and Jefferson County in developing renewable energy programs and services that the City alone does not have the resources to offer	Ongoing	Medium	Medium

²⁰ Hickenlooper, John W., 2017. "Supporting Colorado's clean energy transition". State of Colorado, Executive Order D 2017015, Jul. 11, 2017; Colorado Energy Office et al, 2018. Colorado Climate Plan, updated 2018.

2-E	Work with Xcel to promote renewable energy			
2-Ei	Participate in Xcel's Partners in Energy program	Ongoing	Medium	Medium
2-Eii	Remove Xcel's limit of 120 percent maximum of energy consumption on distributed renewable energy.	Short	Medium	High
2-Eiii	Prepare for renewable energy demands in the next round of municipal franchise negotiations	Medium	Medium	High
2-F	Host a renewable energy bulk purchasing program	Short	Medium	High
2-G	Streamline the permitting process and any regulatory disincentives for renewable energy	Short	Medium	High
2-H	Adopt "solar ready" provisions in building codes	Short	Medium	High
2-I	Require all new and extensively modified commercial construction have either a solar, garden, or reflective roof	Mid	Low	High
2-J	Require onsite solar energy for new developments that receive municipal incentives	Short	Low	High
2-K	Ban new fossil fuel infrastructure	Short	Low	High
3	Goal: Implement renewable energy projects			
3-A	Procure onsite solar for all municipal facilities	2025	Medium	High
3-B	Incentivize onsite solar for both commercial and residential buildings			
3-Bi	Waive permitting/inspection fees	Short	Medium	High
3-Bii	Provide system installation rebates, energy production-based rebates, and grants	Short	Medium	High
3-Biii	Provide assistance to low-income households	Short	High	High
3-Biv	Property and sales tax incentives	Short	High	High
3-Bv	Use various financing tools offered by Colorado Energy Office	Short	Medium	High
3-Bvi	Offer a municipal loan program more favorable than those offered by traditional lending institutions	Short	High	High

* Timeline - Short term 2 years, Mid-term 5 years, Long Term continuous or >5 years, or year to be implanted by, such as 2025 in Goal 3.

**Low Cost - does not require additional City staff. Medium Cost require additional staff and administrative expenses for implementation. High Cost - may require financing by the City if alternative financing cannot be found.

***Environmental Benefits: Low - does not provide a direct benefit. Medium – does provide an indirect benefit. High – does provide direct benefit.

WHAT: GOALS AT A GLANCE

Goal 1: Promote renewable energy policy beyond City

Goal 2: Promote renewable energy within City

Goal 3: Implement renewable energy projects.

HOW: GOAL DESCRIPTIONS & STRATEGIES

GOAL 1: Promote Renewable Energy Policy Beyond City

Action 1-A: Represent City renewable energy goals to relevant hearings of the Colorado Public Utility Commission

The Colorado Public Utilities Commission (PUC) regulates utility monopolies for safe, reliable, and reasonably priced services consistent with economic, environmental, and social values. The PUC sets energy supply policy and regulations in public hearings, and it is important for the City to participate in these hearings together with other communities and the public to insure progress toward renewable energy goals. One of the utilities regulated by the PUC is Xcel who supply electricity and natural gas to Wheat Ridge. Xcel recently completed their Colorado Energy Plan, which undertakes 55 percent renewable electricity by 2026. In addition, Xcel offers [Partners in Energy](#) and other [renewable energy and rebate programs](#) for residents and business that promote both renewable energy and energy efficiency in buildings that save consumption of both electricity and natural gas.

Action 1-B: Endorse and propose county, state, and federal policy that support City goals for renewable energy

1-Bi. Endorse a market solution to carbon dioxide pollution with a federal tax on carbon production or a carbon fee/dividend. Carbon Fee and dividend legislation puts a fee on the amount of carbon dioxide in fossil fuels. This fee is assessed at the source of the fuel: at the mine, oil or natural gas well, or port of entry. The fee starts out low and increases annually in a predictable manner until carbon dioxide reaches a safe level of emissions. Funds collected with the fee are returned to households to compensate for the increased cost of fuel. The carbon fee/dividend is revenue neutral.

1-Bii. Join the [Compact of Colorado Communities](#) currently 26 Colorado counties and cities are partnering to strengthen the voice for renewable energy. Membership requires training of one elected official and one senior staff, and an annual fee of about \$1,600 based for a city the size of Wheat Ridge.

1-Biii. Promote statewide adoption of and work with other local communities to achieve [Community Choice Aggregation \(CCA\)](#). CCA is an alternative to the power utility monopoly (Xcel Energy) in which local entities aggregate the buying power of individual customers in order to secure alternative energy sources that have a higher percentage of renewable energy than available from Xcel. The CCA chooses the power generation source on behalf of members.

1-Biv. Form partnerships with neighboring communities in promoting renewable energy. Jefferson County, Lakewood, Golden, and Arvada have all made various commitments to environmental sustainability, and a joint voice would be greater than their individual voice with the PUC, state, and federal legislators and government staff.

GOAL 2: Promote Renewable Energy Within City

Action 2-A: Engage the community in setting and implementing renewable energy goals

Convene, facilitate, and support public discussions with the community on the City's renewable energy goals, outreach to policy makers, changes to City policy, and renewable energy resources. See the Communication and Education section.

Action 2-B: Promote renewable energy sourcing options and other programs on the City website and through other communication venues

Sourcing options include:

- 1) Distributed energy refers to a variety of technologies that generate electricity at or near where it will be used, such as solar panels and combined heat and power. The advantages of distributed energy are a more secure energy source, and installation on otherwise unused space such as rooftops and over parking lots. Consumers without suitable space for distributed energy can acquire renewable energy through renewable energy certificates, community solar gardens, and other programs offered by Xcel.
- 2) Net metering is a system in which onsite solar panels or other renewable energy generators are connected to a public utility power grid, and surplus power is transferred onto the grid, allowing customers to offset the cost of power drawn from the utility. Surplus energy, measured by an electric meter, is netted from the amount passing from the utility to the customer.
- 3) Renewable energy and energy efficiency contracts with energy service providers. An energy service provider (ESCO) is a commercial or nonprofit business providing a broad range of energy solutions including designs and implementation of energy savings projects, retrofitting, energy conservation, energy infrastructure, power generation and energy supply, and risk management. In some cases, the energy services can be financed with the energy savings.
- 4) Renewable energy certificates also known as green energy certificates or tradable renewable certificates are proof that energy has been generated from renewable sources such as solar or wind power.
- 5) Battery storage of onsite renewable energy for bridging generation and consumer demand peaks.
- 6) Community solar gardens are centrally located solar power systems that provide electricity to participating subscribers. Home and business owners and renters can participate in community solar gardens if their site is shaded by trees or otherwise not suitable for onsite solar power. Community solar gardens have the disadvantage of being yet another industrial facility taking up open space or infringing on the view shed.

Action 2-C: Work with the Colorado Energy Office and Department of Local Affairs for project and financial assistance in renewable energy

The [Colorado Energy Office](#) promotes innovative energy production and efficient energy consumption practices that are beneficial to the economic and environmental health of the state. Financing is available for energy efficiency improvements, renewable energy, energy conservation, and technology commercialization. A number of energy efficiency programs are available in the commercial, residential, and agricultural sectors. The Office also has low-income weatherization and solar installation assistance. The [Colorado Department of Local Affairs](#) assists communities to plan for climate resilience through their Climate Ready Communities Program. This program offers guides and planning support, and consulting services in partnership with the Geos Institute.

Action 2-D: Partner with neighboring cities and Jefferson County in developing renewable energy programs and services for economies of scale and services that the City alone does not have the resources to offer

Action 2-E: Work with Xcel Energy to promote renewable energy

2-Ei. Participate in Xcel's Partners in Energy program to receive assistance in promoting Xcel's renewable energy and energy efficiency programs, see Appendix A: Energy Efficiency.

2-Eii. Remove Xcel's limit of 120 percent maximum of energy consumption on distributed renewable energy.

2-Eiii. Prepare for renewable energy demands in the next round of municipal franchise negotiations with Xcel. Municipal franchise agreements represent a contract between municipal governments and private electric and natural gas utilities. The municipality receives a fee from the utility that allows the utility gain access to distribution of power. The municipality could use these fees to provide supplemental compensation on top of utility net-metering rates to solar energy generators, provide a loan loss reserve for renewable energy and energy efficiency loan programs, and provide funding for efficiency initiatives for existing infrastructure such as electricity lines.

Action 2-F: Host a solar energy bulk purchasing program²¹ for cost savings in installation of onsite solar energy, energy storage batteries, and so on

In order to incentivize residents to adopt renewable energy, this program should be initiated by year-end 2018, and renewed periodically until reaching the renewable energy goals.

Action 2-G: Streamline the permitting process and any regulatory disincentives for renewable energy

Pursue SolSmart certification (recognizes cities, counties, and small towns for making it faster, easier, and more affordable to install solar energy) as has Jefferson County, Golden, Lakewood and other communities throughout Colorado. Establish an internal municipal policy requiring the evaluation of the impact of any major proposed plan, regulation, investment or operational decision on the renewable energy goals. An early start on these recommended policy changes would jump start the city toward the renewable energy goals.

²¹ Irvine, L., A. Sawyer, J. Grove, 2015. *The solarize guidebook: a community guide to collective purchasing of residential PV systems*. National Renewable Energy Laboratory, accessed <https://www.nrel.gov/docs/fy12osti/54738.pdf> on Mar. 15, 2018.

Action 2-H: Adopt “solar ready” provisions in building codes. Solar ready design can make future solar energy installation more cost-effective by reducing the need for infrastructure upgrades, ensuring solar technical feasibility, and planning for system optimization

The National Renewable Energy Laboratory has a [planning guide and implementation suggestions](#) for solar ready provisions that includes site layout and building orientation, roof design and specifications, solar equipment and installation, and zoning laws and permitting requirements.

Action 2-I: Require all new and extensively modified commercial construction have either solar power on the roof, a green or reflective roof

A green roof or living roof is a roof of a building that is partially or completely covered with vegetation and a growing medium, planted over a waterproofing membrane. Green roofs clean the air, reduce a buildings energy consumption, are the best practice to manage stormwater, create biodiversity for plants, bees, birds and other insects. A reflective roof is one that has been designed to reflect more sunlight and absorb less heat than a standard roof. These roofs can be made of a highly reflective type of paint, a sheet covering, or highly reflective tiles or shingles. Denver is the latest city to mandate rooftop gardens or solar installations on new, large buildings, joining San Francisco, New York, Paris, London and others.

Action 2-J: Require onsite solar energy for new developments that receive municipal incentives

Municipal incentives for new developments promote the economic sustainability of the city, adding a solar energy requirement for these developments promotes the City’s environmental sustainability.

Action 2-K: Ban new fossil fuel infrastructure

Commit to ban the any new construction or facilities that would produce, transport, store, or use coal, methanol, natural gas, or oil. Carbon based fuels conflict with the goal of renewable energy. Every new gas-fired furnace or water heater installed today will burn fossil fuels for up to 20 years into the future.

GOAL 3: Implement Renewable Energy Projects²²

Action 3-A: Procure solar energy for all municipal facilities

Install solar power on all available municipal sites including rooftops, carports, parking lots, rights-of-way, brownfields, and other suitable sites. Maximize energy efficiency of municipal buildings. Switch all natural gas appliances to electricity. Together the solar power, energy efficiency, and fuel switching should achieve zero greenhouse energy emissions. Various financing mechanisms are available including tax exempt bonds, third party financing with power purchase agreements, energy services company (ESCO) investments on behalf of the municipality and investment is repaid out of the energy savings, and purchase with municipality’s general funds.

Action 3-B: Incentivize onsite solar for both commercial and residential buildings, including:

3-Bi. Waive permitting/inspection fees.

3-Bii. Provide system installation rebates, energy production-based rebates, and grants.

²² U.S. Department of Energy, 2011. Solar powering your community: guide for local governments, 2nd ed., accessed <https://www.nrel.gov/docs/fy11osti/47692.pdf>, June 2, 2018, 172 pp.

3-Biii. Provide assistance to low-income households.

3-Biv. Property and sales tax incentives.

3-Bv. Use various financing tools offered by Colorado Energy Office, see Action 2-C, that include financing for residential, business, and low-income households. Nationwide the Commercial Property Assesses Clean Energy (CPACE) has financed billions of dollars of renewable energy projects.

3-Bvi. Offer a municipal loan program more favorable than those offered by traditional lending institutions. The loan program could provide long-term, fixed rate loans with below-market interest rates, and reduced consumer transaction costs. Municipal loans allow a wider array of individuals and business to qualify for financing as municipalities may rely on alternative mechanisms for securing loans, such as property liens.

PROPOSED METRIC

Annually, municipal staff should report to City Council progress toward achieving interim goals for renewable energy and actions taken to achieve goals. If any interim goal is not achieved, the City should revise actions to meet the ultimate 2050 renewable energy goal.

IMPLEMENTATION

The above table provides goals and strategies for how Wheat Ridge can work toward the 100% renewable energy target. Because air pollution is a shared resource, the first goal requires City Council to work with energy providers and neighboring communities in urging policy action by the county, state, and federal governments. These actions would incur little time and cost on the part of the City. The second goal involves community organization and education, changes and additions to the City building codes and their administration, and facilitation of energy conversions for municipal facilities, residents, and businesses. These actions would require municipal commitment to staff time and administrative costs. The third goal calls for upgrading municipal facilities to onsite solar energy, fuel switching for any appliances from natural gas to electricity, and building energy efficiency for zero emissions of greenhouse gas emissions, and investing in communitywide renewable energy projects. These actions would require additional staff time to facilitate and manage energy conversion projects. Project financing for renewable energy projects is available through the Colorado Energy Office, energy service providers, and grants. In addition, the municipality could provide financing to further incentivize development of renewable energy sources.

The largest stationary consumers of power in Wheat Ridge are hospitals in the commercial sector, nonmetallic mineral product and paper manufacturing in the industrial sector, and residential. Hospitals consume 5 times the electricity and 7 times the natural gas of the next highest commercial category. The mineral and paper products category consumes 23 times the electricity and 43 times the natural gas as the combined consumption of all other businesses in the industrial sector.² These business sectors are obvious opportunities for early switching to renewable energy.

The residential sector is, of course, more dispersed. Municipal leadership in converting its own facilities to renewable energy would help to energize residents to convert their own buildings to renewable energy. In addition, City building code updates, and policy and financial incentives would help residents, particularly low income residents, to switch to renewable energy. A place to initiate action would be the larger residential buildings such as multifamily units greater than say 25,000 square feet. See also the Green Building and Energy Efficiency section of this Plan.

When prioritizing solar energy projects, municipal policy should give onsite solar preference over greenfield sites such as community solar gardens and industrial scale installations. Onsite solar generally has no negative additional environmental side-effects beyond the already existing impacts of developed land. However, large scale ground-mounted solar panels preclude native plants and wildlife including most birds, mammals, and reptiles. There is considerable potential within Wheat Ridge for onsite solar. Suitable City rooftops have the potential to generate 67,889 Mwh²³ compared to the solar energy produced in Wheat Ridge in 2016 of only 3 Mwh²⁴.

For additional information on what cities can do to develop renewable and efficient energy see reports by the Meister Consultants Group²⁵, Department of Energy and National Renewable Energy Laboratory²⁶, and Rocky Mountain Institute²⁷ from which many of the preceding recommendations were taken.

RESOURCES

Costs to the City of conversion to renewable energy are, of course, a concern. However, other cities have more than offset the cost by energy savings. From 2015 to 2017, Fort Collins businesses saved \$9.5 million while reducing greenhouse gas emissions by 12%. In Rifle, the city government saves half a million dollars a year in energy costs from its solar installations.²⁸

Third party financing for energy conversion projects is available from the Colorado Energy Office, energy service providers, and numerous grants from state and private sources. Grid Alternatives is an organization of volunteers that install solar panels for low-income families and affordable housing. In addition, the Colorado Department of Local Affairs, NREL, and Xcel offer program support.

²³ Department of Energy, Integrated Deployment office, 2017. "State and local energy data, buildings and industry summary for Wheat Ridge, Colorado". Accessed <https://apps1.eere.energy.gov/sled/#/results/buildingsandindustry?city=Wheat%20Ridge&abv=CO§ion=electricity¤tState=Colorado&lat=39.766098&lng=105.0772063>, Feb. 15, 2018.

²⁴ Xcel Energy, 2016. (no title). "Annual community energy report." Accessed https://www.xcelenergy.com/working_with_us, Feb. 15, 2018.

²⁵ Laurent, C., J. Crowe, R. Coombs, (undated). "Pathways to 100, an energy supply transformation primer for U.S. cities". Meister Consultants Group, Boston.

²⁶ O'Shaughnessy, E., J. Heeter, D. Keyser, P. Gagnon, A. Aznar, 2016. "Estimating the national carbon abatement potential of city policies: a data driven approach". Technical Report NREL/TP6A2067101, October 2016.

²⁷ Calhoun, K., J. Corvidae, J. Creyts, M. Jungclaus, J. Mandel, E. O'Grady, P. Bronski, 2017. "The carbonfree city handbook". Rocky Mountain Institute, Basalt, Colorado, accessed rmi.org/carbonfreecities, Feb. 2, 2018.

²⁸ Colorado Energy Office et al, 2018. Colorado Climate Plan, updated 2018, p. 9192.

TRANSPORTATION

WHY & BACKGROUND

WRESC defines Transportation as *public and private vehicular and active transportation*.

Recognizing that approximately 33% of residents do not or cannot drive a car²⁹, the vision statement of Wheat Ridge's Comprehensive Plan, *Envision Wheat Ridge* says, "Wheat Ridge will offer convenient transportation options..." and one of the Plan's Key Values is to increase Transportation Connections and Options. As detailed in Chapter 7 of *Envision Wheat Ridge*, the city has recognized and highlighted the need for integrated transportation choices and options that support all modes of travel within and through our city.

A well-connected transportation system with multi-modal options:

- Provides mobility for residents of all ages and encourages and facilitates healthy living
- Reduces dependence on personal automobiles which improves air and water quality and reduces greenhouse gas emissions
- Provides flexibility for travelers and potentially reduces costs

Wheat Ridge's location between Colorado's largest and capital city and the Rocky Mountain playground for residents and tourists alike presents unique opportunities and challenges for our community. While nearly 150,000 vehicles pass through the city daily on I-70³⁰, the surface streets lack a standard grid system that would simplify intra-city commuting and allow more users to avoid the interstate. As a result, 78% of commuters travel in single-occupancy vehicles vs 74.6% in the Denver metropolitan region.³¹ However, the region's transit and active transportation infrastructure has greatly improved in recent years so opportunities are plentiful to adopt and implement measures to decrease dependence on single-occupancy vehicles. Ensuring that businesses, services, and recreation are accessible to all residents regardless of ability establishes Wheat Ridge as a City that values equity.

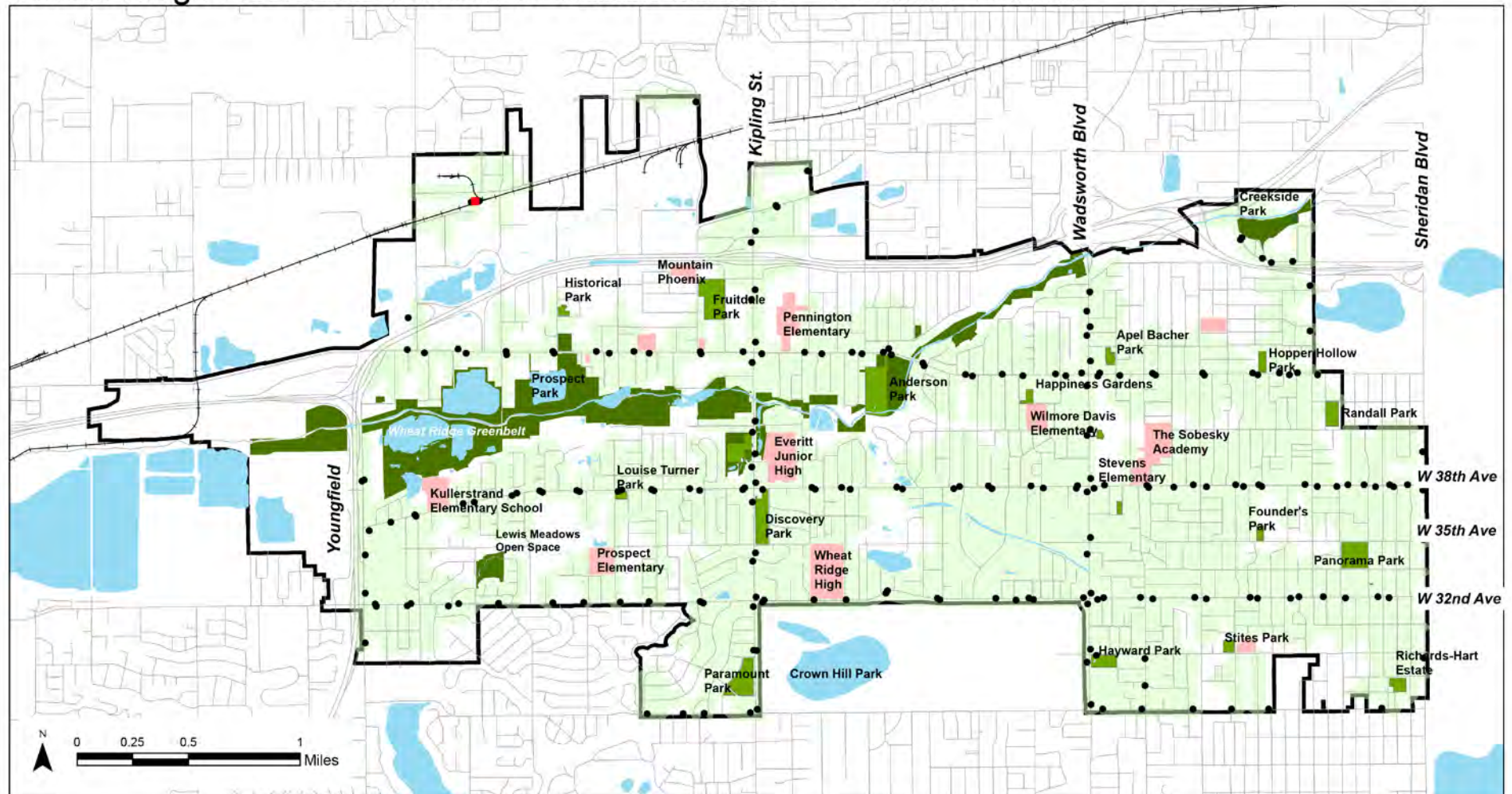
Wheat Ridge is already served well by public transportation options, so adoption (and reduced Vehicle Miles Traveled "VMT") is likely more related to education and comfort level with RTD. The map below, provided by the City, shows that 73% of city residents live within ¼ mile of a bus stop. With the W rail line just to the south and the forthcoming G rail line just to the north, Wheat Ridge residents have many options to choose from.

²⁹ The 2009 National Household Travel Survey estimated 208 million Americans have driver's licenses out a total population of 307 million, or about 2/3 of the population. Report available at: <http://nhts.ornl.gov/2009/pub/stt.pdf>

³⁰ <http://gis.drcog.org/trafficcounts>. Data recorded June 2010 on I-70 just east of Kipling Street.

³¹ <https://drcog.org/services-and-resources/denver-regional-visual-resources/community-profiles>

Wheat Ridge Residents' Access to Transit Service - 1/4 Mile Distance



The road network was used to create a network to model transit accessibility in Wheat Ridge by creating service areas. Service areas show the extent a traveller can reach along roads within a specified impedance, in this case distance.

Service areas of 1/4-mile were created for the bus stops and transit station in Wheat Ridge. Based on estimates, 24,607 out of 33,673 (73%) residents live within 1/4 mile of a transit stop.

Legend

- | | | |
|----------------------|------------------------|-------------------|
| ■ Light Rail Station | ■ Transit Service Area | ■ Open Space |
| ● Bus Station | ■ Schools | ■ Parks |
| — Railroads | ■ Lakes/Rivers | ■ City Boundaries |

Transportation

Goal / Action		Timeline*	Cost**	Environmental Benefit***
1	Goal: Encourage land use that leverages the positive social and environmental impacts of all forms of transportation including shared mobility			
1-A	Incentivize zoning, building, and subdivision codes; design standards, variances and special use permits	Short /Ongoing	Low	High
1-Ai	Comp Plan/FLUM Incorporation: Maximize incorporation of mixed-use considerations/requirements, areas appropriate for increased density, and other land use regulations that promote efficient, alternative forms of transportation into next Comp Plan and Official Land Use Map.	Ongoing	Low	High
1-Aii	Implement policies aimed at easing zoning and other regulations and parking minimums to promote transit, cycling, walking and shared mobility in new developments.	Short	Low	Medium
1-Aiii	Adopt parking lot requirements that allow reduction of parking spaces when bicycle or shared mobility spaces are provided.	Short	Low	Low
1-Aiv	Implement policies that increase the mobility of all citizens. Encourage diverse housing options and commercial choices where users of all ages and abilities have access to bicycle, pedestrian, and transit as integral elements of the transportation system.	Ongoing	Low	High
1-Av	Adopt strategies, policies, and incentives to encourage developers and property owners to reduce travel demands and vehicle trips (VMT) in new and existing developments. For example, bonuses for the inclusion of bicycle parking, bicycle lockers, shared mobility, and preferential parking for carpools and vanpools.	Short	Low	Medium
1-B	Prioritize capital investments in projects that leverage the positive social and environmental impacts of all forms of transportation including shared mobility	Mid	High	High
1-Bi	Prioritize the recommendations of the Bicycle/Pedestrian Master Plan 2017 revision.	Short	Low	Medium
1-Bii	Adopt regulatory strategies, such as density bonuses for affordable or green buildings, that incentivize and permit increased residential and employment densities and diverse uses.	Short	Medium	Medium
1-C	Make resources available to residents, community groups, and businesses about the importance of compact, mixed-use development	Mid	Low	Medium

Transportation, continued

1-Ci	Research other communities' best practices to gather support of residents for increasing density while retaining community character.	Short	Low	Medium
2	Goal: Increase Use of Multimodal Transportation Choices			
2-A	Encourage use of trip planning tools	Ongoing	Low	High
2-Ai	Provide trip-planning resources in partnership with City, RTD, and other community-based organizations for transit, cycling, walking, and smart commuting.	Short	Low	Medium
2-Aii	Provide multimodal and active transportation trip planning information at City events.	Ongoing	Low	Medium
2-Aiii	Provide resources, including local publications and social media regarding alternatives to automobile travel such as walking, biking and transit. Include that these benefit community, including improving air quality, economic activity and public health. Travel alternatives are especially important in maintaining mobility for seniors, people with disabilities, and lower-income residents.	Ongoing	Low	Medium
2-B	Work with regional partners and local businesses to encourage multimodal travel, including having resources for multimodal commuters and education efforts	Mid	Low	Medium
2-Bi	Investigate options for DRCOG assistance.	Short	Low	Medium
2-Bii	Engage DRCOG to expand WayToGo Communication and Education in the City and coordinate a City-wide WayToGo smart commute challenge.	Short	Low	Medium
2-Biii	Identify and empower an Active Transportation Contact at the City.	Short	Low	Low
2-Biv	Track current efforts to form a west metro Transportation Management Organization similar to the North Area Transportation Alliance, and engage fully in the process.	Ongoing	Low	Low
2-Bv	Offer/support educational and training events to make people more comfortable using alternative transportation including: bike shop map, transit tools, discount book. Possibly show a photo of their friendly neighborhood bike mechanic.	Ongoing	Low	Medium
2-Bvi	Incentivize large employers to increase use of alternative transportation for their workforce.	Ongoing	Medium	Medium
2-C	Pursue Bicycle Friendly Community status via the League of American Bicyclists	Mid	Low	Medium
2-Ci	Organize team with city staff and volunteers, assign tasks, and establish a deadline for application.	Short	Low	Low

Transportation, continued

2-Cii	Organize and communicate resources for Bicycle Friendly Businesses and Schools.	Short	Low	Low
3	Goal: Increase Traveler Safety and Environmental Quality			
3-A	Develop and implement a Vision Zero plan	Mid	Low	High
3-Ai	Become a Certified Partner in CDOT's 'Moving Towards Zero Deaths' initiative or adopt a local commitment to Vision Zero.	Short	Low	Low
3-Aii	Educate residents about existing Neighborhood Traffic Management Program in City.	Short	Low	High
3-Aiii	Identify accident hot spots in the community to support targeted accident reduction efforts.	Ongoing	Low	High
3-Aiv	Normalize/Reduce vehicle travel speeds in areas where pedestrians/cyclists interact with vehicles.	Mid	Medium	Medium
3-Av	Partner with community groups to support annual programs that encourage active transportation/safety.	Ongoing	Low	Medium
3-Avi	Adopt an ordinance according to SB18-144, Bicycle Operation Approaching Intersection to ensure consistency with state law.	Short	Low	Low
3-B	Promote adoption of alternative fuel vehicles in the local government and City as a whole	Mid	High	Medium
3-Bi	Require shift to hybrid, electric, and other alternative fuel vehicles for city government fleet.	Long	High	High
3-Bii	Install electric vehicle charging stations strategically throughout the community.	Long	High	Medium
3-C	Implement No idling requirement and campaign City-wide	Mid	Low	Low
3-Ci	Educate community members regarding air quality and economic/safety impacts of idling vehicles	Short	Low	Medium
3-Cii	Develop and implement real enforcement mechanisms for idling vehicles.	Short	Low	Low
3-Ciii	Develop commercial diesel ordinances in accordance the with Colorado State idling law, HB 11-1275.	Short	Low	Low

* Timeline is as related to time it would take for action to be established, but not necessarily completed. Short term refers to activities that to be established in less than one year; mid-term refers to activities to be established in 1-3 years; long-term activities refer to activities to be established in 3-10 years. An activity established in year one would likely have ongoing associated activities for the City to implement.

** Cost estimate considers Some actions requiring ongoing commitments from the City, which are considered in the assessing cost. For example, necessity for City staff. Perhaps 3 levels are: 1) staff time, 2) staff time plus, 3) significant investment (still need to be defined)

*** Environmental Benefit - high medium low.

WHAT: GOALS AT A GLANCE

GOAL 1: Maximize development that substantially incorporates Mixed Use considerations and Efficient Transportation

GOAL 2: Increase Use of Multimodal Transportation Choices

GOAL 3: Increase Traveler Safety and Environmental Quality

HOW: GOAL DESCRIPTIONS & STRATEGIES

GOAL 1: Maximize development that substantially incorporates Mixed Use considerations and Efficient Transportation

Action 1-A: Incentivize zoning, building, and subdivision codes; design standards, variances and special use permits.

Metrics: Vehicle Miles Traveled (VMT), % of homes and businesses accessible via transit

1-Ai. Comp Plan/FLUM Incorporation: Maximize incorporation of mixed-use considerations/requirements, areas appropriate for increased density, and other land use regulations that promote efficient, alternative forms of transportation into next Comp Plan and Official Land Use Map.

1-Aii. Implement policies aimed at easing zoning and other regulations and parking minimums to promote transit, cycling, walking and shared mobility in new developments.

1-Aiii. Adopt parking lot requirements that allow reduction of parking spaces when bicycle or shared mobility spaces are provided.

1-Aiv. Implement policies that increase the mobility of all citizens. Encourage diverse housing options and commercial choices where users of all ages and abilities have access to bicycle, pedestrian, and transit as integral elements of the transportation system.

1-Av. Adopt strategies, policies, and incentives to encourage developers and property owners to reduce travel demands and vehicle trips (VMT) in new and existing developments. For example, bonuses for the inclusion of bicycle parking, bicycle lockers, shared mobility, and preferential parking for carpools and vanpools.

Action 1-B: Prioritize capital investments in projects that leverage the positive social and environmental impacts of all forms of transportation including shared mobility.

Metrics: Number of Bicycle/Pedestrian Master Plan recommendations completed, number of available incentives for development, miles of bicycle infrastructure

1-Bi. Prioritize the recommendations of the Bicycle/Pedestrian Master Plan 2017 revision.

1-Bii. Adopt regulatory strategies, such as density bonuses for affordable or green buildings, that incentivize and permit increased residential and employment densities and diverse uses.

Action 1-C: Make resources available to residents, community groups, and businesses about the importance of compact, mixed-use development.

Metrics: City survey question and results about compact and mixed-use zoning.

1-Ci. Research other communities' best practices to gather support of residents for increasing density while retaining community character.

GOAL 2: Increase Use of Multimodal Transportation Choices

Action 2-A: Encourage use of trip-planning tools

Metrics: number of visitors to trip planning booths/tables at city events, number of trip planning outreach touch points, whether smart commuting options are provided to city employees.

Trip planning tools and resources can encourage individuals to consider walking or cycling, rather than driving. The Wheat Ridge 2035 Vision includes Wheat Ridge is a community for families, in which: *Services encourage families to feel safe and secure*. Establishing processes to provide trip-planning resources to residents and employers/employees can lessen barriers preventing considering walking or cycling. It is important for individuals to feel physically safe, as well as comfortable with how to prepare for a successful non-car trip. For example, if a person typically drives to the grocery store less than two miles for a few items, this trip may be possible by walking or cycling. Knowing the best route, as well as planning for carrying items, would be necessary.

2-Ai. Provide trip-planning resources in partnership with City, RTD, and other community-based organizations for transit, cycling, walking, and smart commuting.

The City actively participates in Bike to Work Day and currently has two dedicated city employee organizers. The event is integrated into the City's Wellness program and includes a coordinated ride from Wheat Ridge to Golden. The City should further enable employee leadership on encouraging active transportation among employees through exploring how to expand Wellness Program incentives, and provide secure bike parking.

The City does not currently offer City employees an opportunity to obtain an RTD Eco Pass with City assistance. The RTD website lists the following options for ECO passes:

- *Employer-paid* - Employer pays the entire cost of each EcoPass
- *Employee-paid* - Employees can use pre-tax dollars to purchase each EcoPass, reducing both taxable income and payroll taxes
- *Employer/employee cost sharing* - The costs are split between the employer and employee.

2-Aii. Provide multimodal and active transportation trip planning information at City events.

2-Aiii. Provide resources, including local publications and social media regarding alternatives to automobile travel such as walking, biking and transit. Include that these benefit community, including improving air quality, economic activity and public health. Travel alternatives are especially important in maintaining mobility for seniors, people with disabilities, and lower-income residents.

Action 2-B: Work with regional partners and local businesses to encourage multimodal travel, including having resources for multimodal commuters and education efforts

Metrics: whether DRCOG assistance options were researched fully, number of employees that use WayToGo tools, whether an active transportation city contact is assigned, number of trip planning outreach touch points.

2-Bi. Investigate options for DRCOG assistance.

The City could utilize marketing materials offered on the DRCOG website to promote Way to Go programs. The City should use social media to educate residents on Way to Go Commuter services, including carpooling from Wheat Ridge.

In terms of funding opportunities, DRCOG offers Stations Area and Planning Funds through their [Transportation Improvement Project](#) (TIP). This is an effort of “locating 50 percent of all new housing units and 75 percent of all new jobs in regionally designated urban centers between 2005 and 2035”, in accordance with their Metro 2035 plan. Both local governments and nonprofits are eligible. Nonprofits must have a local jurisdiction sponsor.

2-Bii. Engage DRCOG to expand WayToGo Communication and Education in the City and coordinate a City-wide WayToGo smart commute challenge.

The City should make an effort to utilize resources offered by the Denver Council of Regional Governments (DRCOG) [Employer Services](#) for City employees and should promote to Wheat Ridge Businesses which have a desire to reassess their potential in offering alternative transportation options for their employees as well.

DRCOG also offers the online MyWAYTOGO tool, where anyone can enter trip details and see if there are available carpooling or vanpooling opportunities for their commute. Additionally, DRCOG provides trip planning, transit and bike route information on their website in an easy to use format. This feature also provides CO2 emissions info for each method of travel option.

2-Biii. Identify and empower an Active Transportation Contact at the City.

The City actively participates in the DRCOG sponsored Bike to Work Day and currently has two dedicated city employee organizers. The event is integrated into the City’s Wellness program and includes a coordinated ride from Wheat Ridge to Golden. The City should further encourage the employees to expand their coordination of active transportation activities and programs. This may include developing

informational materials for City employees, coordinating carpooling among employees, and other low-cost efforts to expand active and alternative transportation by City employees.

2-Biv. Track current efforts to form a west metro Transportation Management Organization similar to the North Area Transportation Alliance, and engage fully in the process.

It would benefit the City to partner with both neighboring public and local private organizations to form a Transportation Management Organization in order to advance transportation solutions which are in the interest of Wheat Ridge and its residents. Being strategically located between Denver and Golden and encompassing a roughly 9-mile stretch of Interstate 70, Wheat Ridge is well positioned to spearhead cooperation among various stakeholders to ensure that the West Metro area has a unified voice in conversations around transportation planning. The City is represented on the Gold Corridor Working Group as part of the Sustainable Communities Initiative, a long term planning project overseen by the Denver Regional Council of Governments. The City should consider creating a permanent organization in order to be best prepared to address future transportation challenges that affect our area.

2-Bv. Offer/support educational and training events to make people more comfortable using alternative transportation including: bike shop map, transit tools, discount book. Possibly show a photo of their friendly neighborhood bike mechanic.

The WRESC Transportation team has envisioned an effort in coordination with the City and with nonprofit partners to educate residents on increasing use of transit or bike commuting. This effort would entail volunteers knowledgeable about trip planning and bike commuting being available for resident conversation through use of resources including maps, bike gear demonstrations, and trip planning tools. In addition to transit and bicycling, the resident could be informed about existing rideshare resources, including Way to Go car and van pooling. We feel that engaging residents may open the door for addressing questions and concerns which WRESC may be unaware of which are preventing residents from considering alternative transportation.

2-Bvi. Incentivize large employers to increase use of alternative transportation for their workforce.

Action 2-C: Pursue Bicycle Friendly Community (BFC) status via the League of American Bicyclists

Metrics: Whether an application is submitted in the next application period, status level for the city, number of bicycle friendly schools and businesses.

Bicycling is more than a practical, cost-effective solution to many municipal challenges. It's an opportunity to make Wheat Ridge a vibrant destination for residents and visitors — a place where people don't just live and work, but thrive. The City first engaged with the League of American Bicyclists (LBC) in 2014 and hosted a bicycle tour with an LBC representative at that time. Today, Wheat Ridge's bordering communities are certified BFCs and are among 450 nationwide. Learn more at <http://bikeleague.org/community>.

2-Ci. Organize team with city staff and volunteers, assign tasks, and establish a deadline for application.

The City first engaged with the League of American Bicyclists (LBC) in 2014 and hosted a bicycle tour with an LBC representative at that time. The groundwork is already laid to pick up this work and achieve BFC status within two years.

2-Cii. Organize and communicate resources for Bicycle Friendly Businesses and Schools.

GOAL 3: Increase Traveler Safety and Environmental Quality

Action 3-A: Develop and implement a Vision Zero plan

Metrics: whether the City becomes a partner in CDOT's initiative, number of vehicle - pedestrian/bicycle crashes over time, whether the city adopts SB18-44.

3-Ai. Become a Certified Partner in CDOT's 'Moving Towards Zero Deaths' initiative or adopt a local commitment to Vision Zero.

Learn more at <https://www.codot.gov/safety/cdot-launches-moving-towards-zero-deaths>.

3-Aii. Educate residents about existing Neighborhood Traffic Management Program in City.

3-Aiii. Identify accident hot spots in the community to support targeted accident reduction efforts.

3-Aiv. Normalize/Reduce vehicle travel speeds in areas where pedestrians/cyclists interact with vehicles.

3-Av. Partner with community groups to support annual programs that encourage active transportation/safety.

3-Avi. Adopt an ordinance according to SB18-144, Bicycle Operation Approaching Intersection to ensure consistency with state law.

Signed into law in May 2018, the bill permits a municipality or county to adopt a local ordinance or resolution regulating the operation of bicycles approaching intersections with stop signs or illuminated red traffic control signals.

Action 3-B: Promote adoption of alternative fuel vehicles in the local government and City as a whole

Metrics: percentage of the city fleet consisting of alternative fuel vehicles

3-Bi. Require shift to hybrid, electric, and other alternative fuel vehicles for city government fleet.

3-Bii. Install electric vehicle charging stations strategically throughout the community.

Action 3-C: Adopt local anti-idling ordinance City-wide

Metrics: whether enforcement mechanisms exist for vehicle idling, number of vehicle idling touch points.

3-Ci. Educate community members regarding air quality and economic/safety impacts of idling vehicles.

3-Cii. Develop and implement real enforcement mechanisms for idling vehicles.

3-Ciii. Develop commercial diesel ordinances in accordance the with Colorado State idling law, HB 11-1275.

METRICS

The metrics associated with this section vary greatly from goal to goal, but some key metrics and indicators will be useful, such as:

- VMT - *Vehicle Miles Traveled* by residents, city employees, etc.
- Single Occupancy Vehicle Rate (%)
- Smart Commute Rate (%)
- Proximity to and number of mobility options available
- Number of citizens utilizing trip planning services
- Miles of bike infrastructure
- % of homes and businesses accessible via transit
- Number of Bicycle/Pedestrian Master Plan recommendations completed
- Number of available incentives for development, miles of bicycle infrastructure
- City survey question and results about compact and mixed-use zoning
- Number of visitors to trip planning booths/tables at city events
- Number of trip planning outreach touch points
- Whether smart commuting options are provided to city employees
- Whether DRCOG assistance options were researched fully
- Number of employees that use WayToGo tools
- Whether an active transportation city contact is assigned
- Number of trip planning outreach touch points
- Whether a BFC application is submitted in the next application period
- BFC status level for the city
- Number of bicycle friendly schools and businesses
- Whether the City becomes a partner in CDOT's initiative
- Number of vehicle - pedestrian/bicycle crashes over time
- Whether the city adopts SB18-44
- Percentage of the city fleet consisting of alternative fuel vehicles
- Whether enforcement mechanisms exist for vehicle idling, number of vehicle idling touch points

IMPLEMENTATION

Most, if not all, of the tasks described above have been implemented elsewhere and often in other communities in the Denver Metropolitan area. Wheat Ridge should refer to those nearby case studies and examples for additional tools and guides for implementation.

RESOURCES

A variety of resources and organizations are available to the city and its residents, including:

- Denver Regional Council of Governments
- Colorado Department of Transportation's Moving Towards Zero Deaths Program
- City and County of Denver's Vision Zero
- League of American Bicyclists
- Wheat Ridge Active Transportation Advisory Team

SOLID WASTE & RECYCLING

WHY & BACKGROUND

Solid waste management is critical to all cities and communities. Everyone interacts with waste on a daily basis and we all share some responsibility for ensuring that waste is properly managed. Currently, solid waste management in Wheat Ridge (WR) is relatively unregulated. Waste haulers only need to apply and pay \$20 for a business license to operate in the City, without restrictions or policy regarding operations. Currently, companies servicing our community have overlapping truck routes on any given day. This current approach negatively impacts the environment and roadways. Further, existing conditions do not adequately promote recycling, reuse, and composting. Current methods may be costly for residents and is inefficient. Negative externalities of the existing ad hoc approach include wear on our transportation infrastructure and contribute to local air and noise pollution. On the other hand, current conditions allow residents unrestricted choice among any haulers who service their neighborhood when ordering service.

Like many municipalities, Wheat Ridge does not have landfills within its boundaries. Therefore, it may be more susceptible to increased costs and changing market conditions. Wheat Ridge is dependent on external landfills that serve as the end-point for Wheat Ridge waste. While these conditions will likely not change, Wheat Ridge residents, businesses, and institutions can influence how solid waste is currently managed. Preventing waste from entering our landfills through recycling and, more importantly, through waste reduction, must be the primary objective when looking at improving our current waste disposal practices.

This plan outlines recommendations for the City to take action on improving current waste management in Wheat Ridge. The City has an opportunity to update current conditions and leverage this to reduce wastefulness.

It is worth noting that the City of Wheat Ridge previously gathered information and outlined benefits to establishing municipal trash service, or changing the current conditions. The following excerpt is from a March 2010 Trash Collection Memo from the City:

Limiting trash service to one provider for the City, or one provider for each specifically defined areas of the City, would result in the following benefits:

- Trash collection on only one day in each neighborhood
- Trash containers would be visible at the curb only one day each week
- Fewer large trucks in the neighborhoods would provide a safer environment for pedestrians and other vehicles
- Fewer trucks in the neighborhoods would result in less air pollution
- Fewer trucks in the neighborhoods would reduce noise
- Limiting the number of large trucks will reduce the street maintenance required
- The cost of trash collection would be reduced

Overall, neighborhoods would be safer, more aesthetically pleasing, experience less noise, have cleaner air and incur less pavement damage.

The WRESC is in support of the City moving towards contracting with a single hauler for residential trash service. This being said, we did not include this as a recommendation in this section of our report. We recognize the substantial financial and staff time burden of an effort of this scale, as this would require a vote of the people and considerable outreach preceding such a vote. Our committee determined that our recommendations would be better directed towards more creative and obtainable objectives aimed at alleviating the negative effects of the existing conditions.

Residential composting has the greatest potential for local control in waste reduction of household food waste, which according to the National Resource Defense Council accounts for 25% of household food purchased³². Residents can reduce their waste volumes considerably through learning how to compost at home or by finding other entities that can use household organic waste, such as a commercial compost hauler. Additionally, residents can be informed of tips on how to avoid food spoilage. The Institute for Local Self-Reliance 2018 Report states that for every 10,000 homes, composting upwards of 5,000 tons can be diverted from curbside collection annually³³. This would typically go to a landfill.

Composting at home not only reduces household waste, it also offers a valuable and free soil amendment for a vegetable garden, flower beds, or even the lawn. Some materials may not be suitable for residential-scale composting. Businesses and institutions produce larger quantities of waste, and likely require commercial-scale composting operations. The commercial-scale composting sector is growing, and there are existing haulers servicing Wheat Ridge businesses. A comprehensive waste management solution for Wheat Ridge may include diversified services for residences, businesses, and institutions. It will also require assessing our behavioral and personal choices. All recommended solutions need to recognize external costs to the environment and infrastructure, while considering economic, environmental, and social impacts and benefits.

Sustainability Benefit

Managing waste sustainably has environmental, social, and economic benefits. Environmental benefits include reduced greenhouse gas emissions from methane produced in landfills, reduced greenhouse gas emissions from waste hauling transportation, reduced impact to surface water from escaped trash, and improper disposal of household waste including household hazardous waste such as chemicals and solvents. Also, landfills pose a risk to nearby groundwater during both proper and improper management. Regional weather includes high winds that can result in overturned waste bins awaiting pickup. This allows for escaped trash to enter the environment and can be a risk to humans, animals, and plants. Reducing demands on natural resources is another benefit for sustainably managing waste.

Managing waste sustainability can also benefit the local economy by reducing costs. Current pricing conditions do not relate to waste quantity generated from households. Smaller households, including older residents, likely generate less waste, however they are charged the same rates from haulers based on a large volume. Conservative waste generating households are thus subsidizing high waste generating households. Solid

³² Gunders, Dana (2012) Wasted: How America Is Losing Up to 40 Percent of Its Food from Farm to Fork to Landfill. Retrieved from https://assets.nrdc.org/sites/default/files/wasted-food-IP.pdf?_ga=2.81132183.1030328179.1527029107-350547553.1527029107

³³ Platt, Brenda and Fagundes, Colton (2018, May). *Yes! In My Backyard: A Home Composting Guide for Local Government*. Retrieved from <https://ilsr.org>.

waste is not treated like a utility as it is in other communities. If a household is a low electricity user, the electricity bill is lower. There is an incentive to reduce energy waste, as it reduces costs. There is currently no incentive to reduce waste generated based on cost. City operations can also financially benefit from a system that is based on fee for waste generated.

A social benefit includes efforts for community involvement. Potential examples include community composting efforts/education, resource sharing avenues³⁴, creating jobs for recycling, composting, and waste management. SustainABILITY in Arvada is a local company that provides recycling, including difficult to recycle items, and employs individuals who have intellectual/developmental disabilities. Not only does this business keep waste out of the landfill, it promotes three facets (environmental, economic, and social) of sustainability.

Solid Waste & Recycling

Goal / Action		Timeline*	Cost Estimate**	Environmental Benefit***
1	Goal 1: Improve waste management behavior by residents, businesses, and institutions			
1-A	Develop waste reduction information for residences, businesses, and institutions			
1-Ai	Develop informational materials on the following areas: composting at home, waste reduction consumer tips, household chemical alternatives and proper disposal.	Short	Low	Low/Medium
1-Aii	Identify partners, resources, funding opportunities to support waste management in Wheat Ridge	Mid	Medium	Low
1-B	Update City website regarding Waste and Recycling Resources			
1-Bi	Compile information and update city website page regarding local recycling and hazardous waste disposal sites	Short	Low	Medium
1-Bii	Update City website with active residential licensed waste haulers and information	Mid	Low	Medium
2	Goal 2: Reduce negative impacts of waste management on city infrastructure and local environment			
2-A	Reduce overlapping servicing routes			
2-Ai	Explore waste hauling service zones or route restrictions for residential trash and recycling collection	Mid	Medium	Medium
2-B	Update City municipal code to incorporate progressive solid waste management standards			
2-Bi	Create requirement that all residential properties must have solid waste management service by 2020.	Mid	Medium	High

³⁴ Denver, The Sharing Economy: Reduce Waste and Save Money [web log post]. Retrieved June 4, 2018 from <https://www.denvergov.org>

Solid Waste & Recycling, continued

Goal / Action		Timeline*	Cost Estimate**	Environmental Benefit***
2-Bii	Implement ordinance that establishes pay-as-you-throw (also known as unit pricing or variable-rate pricing (PAYT)) to be implemented by 2022 for waste haulers servicing city for residential services, including single- and multi-family.	Mid	High	High
2-Biii	Develop and implement waste hauler ordinance, including compliance objectives for any current/future licensed waste haulers operating in City, for compliance by 2021.	Mid	Medium	Medium

*Timeline as related to time it would take for action to be established, but not necessarily completed. Short term refers to activities that to be established in less than one year; mid-term refers to activities to be established in 1-3 years; long term activities refer to activities to be established in 3-10 years. An activity established in year one would likely have ongoing associated activities for the City to implement, for example updated City licensed waste haulers.

** Cost estimate considers some actions requiring actions would require ongoing commitments from the City, which are considered in the assessing cost. For example, necessity for City staff.

***Environmental benefit roughly identifies the impact a recommendation has on the environment, categorized as High, Medium, Low.

WHAT: GOALS AT A GLANCE

GOAL 1: Improve waste management behavior by residents, businesses, and institutions

GOAL 2: Reduce negative impacts of waste hauling on city infrastructure and local environment

HOW: GOALS DESCRIPTIONS & STRATEGIES

GOAL 1: Improve waste management behavior by residents, business, and institutions.

Comprehensive baseline data does not currently exist for residences, businesses, or institutions within Wheat Ridge. Although this information does not exist, efforts can be made to improve waste reduction and diversion from landfills.

Proposed Metrics: Residential and commercial waste volume and composition are currently not measured (to any degree of accuracy) within the city. Large businesses and institutions may have some baseline data on waste. Lutheran Hospital, Kroger stores, Jefferson County Public Schools, and the City of Wheat Ridge may have some waste data. Although there may not be existing baseline data, businesses and residents can be

provided resources on how to track waste and develop baselines. Resources to develop baselines for food waste may be obtained from the US Environmental Protection Agency³⁵. Often, waste haulers have resources to get started on a waste audit.

Action 1-A: Develop waste reduction informational materials for residences, businesses, and institutions

1-Ai. Develop informational materials on the following areas: composting at home, waste reduction consumer tips, household chemical alternatives and proper disposal.

We recommend the City make an effort to educate residents and businesses about improving their waste habits. The City has an interest in protecting public health, ensuring clean city spaces, and encouraging environmental awareness. We created first drafts of fact sheets relating to Household Composting and Household Waste Reduction which are noted in (Appendix B). These resources should be posted on the City website and made available for download. Additionally, these could be sent via social media outlets. The City could increase its reputation as a leader in allowing residents to make responsible decisions aimed at diverting landfill bound waste. Having a set of materials produced by the City would also help the City improve brand imaging and reputation on environmental awareness. This is a very low-cost action for the City.

Backyard Composting

A home composting program has potential to prevent a significant volume of waste from entering the waste stream. In addition to promoting home composting through preparing and disseminating informational materials, the City should also consider a City sponsored home composting program.³⁶ This program would be eligible for grant funding assistance and may be as simple as providing reduced rate composting bins for residents to purchase to providing compost education opportunities, either in person or online.

Resources: This recommendation would require labor from employees in the Communications Division of the City, but would align with their existing efforts to educate residents on City programs.

1-Aii. Identify partners, resources, funding opportunities to support waste management in Wheat Ridge

The City can identify partners including residents, businesses, institutions, and non-profit organizations to support implementation of waste management practices. It is recommended the City find a businesses or institutional champion, such as Wheat Ridge High School. Non-profit organizations such as Keep America Beautiful can support campaigns to end littering as well as increasing recycling. Community organizations such as Localworks can support volunteering and education to support the community in learning about waste management. The Colorado State University Extension has expertise and resources for composting. The Colorado Department of Public Health and the Environment has resources for outreach to residents.

Partnerships will be useful in furthering behavior change for diverting waste from landfills in Wheat Ridge. A multifaceted approach can support needs of different sectors and establish a City-wide approach to reduce waste.

³⁵ US Environmental Protection Agency. *Sustainable Management of Food* [web log post]. Retrieved from <https://www.epa.gov/sustainable-management-food>

³⁶Platt, Brenda (2018, May 22). *Yes! In My Backyard: A Home Composting Guide for Local Government* [web log post]. Retrieved from <https://ilsr.org/yimby-compost/>

Resources: City staff time would be required to establish and maintain partnerships.

Action 1-B: Update City website regarding Waste and Recycling Resources

1-Bi. Compile information and update City website regarding local recycling and hazardous waste disposal sites

The current website would benefit from updated information regarding recycling services, household hazardous waste and difficult to recycle waste. The website layout should be updated to be easier to read and find useful information.

Resources: City staff time will be needed to gather information and update website, with an annual updating as well. However, this should be easily incorporated into existing website administration.

1-Bii. Update City website with active residential licensed waste haulers and information

Currently, new and existing residents have difficulty navigating the website to find information about up to date residential waste hauling options. The City website contains broken links and outdated information on existing waste hauler contact information. The City should provide an up to date list of reputable haulers servicing city neighborhoods with accurate contact information. In order to ensure that this information is accurate, the City should develop a process to identify haulers who are serving the city through its Business Licensing Division.

As a result of a request from the WRESC, the City's recent corrections and changes to the Recycling page of the City website is an improvement. Additional updates should ensure that the page contains an exhaustive and accurate list of resources offered in our community, including information on Clean Up days offered by the City and its partners. In addition to updating and dedicating appropriate space for recycling content, we recommend the City redesign its Trash section of the website. During our research on residential trash collection, we contacted the four companies identified as servicing Wheat Ridge and collected information (Appendix B). If the City intends to allow for multiple haulers to service residences, it should develop a way to track which companies are operating in the city and provide their updated contact information, and should consider including selected data provided (Appendix B).

Resources: City staff time to identify existing licensed haulers and create webpage for this information.

GOAL 2: Reduce negative impacts of waste management on city infrastructure and local environment

Proposed Metrics: The City has been able to develop baseline data and provided an update to waste goals set for City operations as part of the June 2017 Update to the City's Sustainability Policy and Plan. We commend the accomplishments the City has achieved thus far in reducing paper usage and in increased recycling in both parks and city buildings. However, baseline data is lacking with regard to current waste produced by residents and businesses (actual record of waste reduction as a result of our recommendations may be difficult to obtain). Metrics used to track progress on improving systems related to waste and recycling include 1) reporting dissemination of physical and digital informational materials, 2)

tracking website traffic and soliciting feedback on revised content, and 3) incorporation of reporting requirements by waste haulers as part of the drafting of City waste ordinances.

Additionally, the City may be able to extrapolate baseline data on infrastructure based on expenses paired with broader available data on trash truck impacts on streets. The City could undeniably save money on maintenance by reducing trash truck traffic, however specific savings could be difficult to surmise due to the unavailable data on truck routes and number of trucks operating in the City. The same could be said for air quality impacts. The two largest waste companies serving residences, Republic and Waste Management provide information on their aggressive transition to CNG trucks from Diesel³⁷.

Action 2-A: Reduce overlapping servicing routes

2-Ai. Explore waste hauling service zones or route restrictions for residential trash and recycling collection.

Waste Hauler Zones

The City could address challenges associated with overlapping service routes by developing service zones. This approach has been instituted in large and mid-sized municipalities as a reasonable option at reforming unregulated residential collection.³⁸ Once waste zones are established, the City could restrict service in certain zones to certain days of the week or have one company obtain exclusive rights to provide service to a zone. The City of Los Angeles recently divided their City into eleven (11) zones and put out a Request for Proposals (RFP) for 10-year contracts for exclusive service in each zone, providing service for commercial and large apartment buildings. Additionally, some of the zones were designated as “small” to allow for smaller companies to better compete for bids.³⁹ Exploring the concept further may allow the City to consider an approach less contentious and easier to implement than contracting with a single hauler for the entire City.

Impact on City Infrastructure and Air Quality

Existing residential trash and recycling service in Wheat Ridge is nearly unregulated. Multiple trash and recycling trucks service neighborhoods seven days a week, leading to increase wear on city roadway infrastructure, as well as exposing residents to substantial noise and air pollution. Taxpayers pay the cost of street maintenance and replacement. According to public outreach messaging from the City of Golden, “(L)arge solid waste and recycling trucks cause as much damage to asphalt with each trip as 1,200 passenger vehicles traveling over the same asphalt. Excessive heavy truck traffic in residential areas shortens useful life of residential roads.”⁴⁰

³⁷ Republic states that 18% of its fleet runs on CNG, whereas WM states they have, “largest heavy-duty natural gas fleet in the country” numbering 2000 vehicles. The two smaller operators do not provide data on how much, if any, of their fleet runs on CNG.

³⁸ Burns McDonnell. (2017) *Trash and Recycling Collection Study: Submitted to City of Springfield, Missouri*. Retrieved from https://springfieldmo.gov/DocumentCenter/View/30780/Trash-and-Recycling-Collection-Study-Final-Report_041717

³⁹ Gerlat, Allan. (2014, Nov 4). Los Angeles Gets 15 Hauler Proposals for Waste Zone Franchising Plan. *Waste360*. Retrieved from: https://www.google.com/url?q=http://www.waste360.com/state-and-local/los-angeles-gets-15-hauler-proposals-waste-zone-franchising-plan&sa=D&ust=1526923682637000&usg=AFQjCNF7Z6zB4I9UMiHHCf_ummsbs4PxXA

⁴⁰ “Welcome and Let’s Talk Trash”. City of Golden. <https://www.cityofgolden.net/media/LetsTalkTrash.pdf>. Retrieved 05.18.2018.

In addition to wear on streets, large waste hauler trucks create diesel air emissions which compromise local air quality. According to the State of Washington, “exposure to diesel exhaust is associated with increased incidence and prevalence of respiratory and cardiovascular diseases as well as lung cancer and possibly other types of cancers such as cancers of the bladder and soft tissues.”⁴¹ However, some waste haulers servicing Wheat Ridge are aggressively transitioning their truck fleets to compressed natural gas (CNG). According to environmental reporter Elizabeth McGowen, “a vehicle fueled by CNG will emit 100 percent fewer sulfur oxides, 75 percent fewer nitrogen oxides and particulate matter, and 20 percent fewer greenhouse gases than a similar diesel truck”.⁴² There are still air quality impacts from trucks running on CNG, including emissions of nitrous oxides. There are also those impacts related to methane emissions of the natural gas extraction and storage process. There is no replacement for reducing trash truck miles travelled in terms of improving immediate air quality in our community.

The City of Wheat Ridge Code *Section 16-103. - Unreasonable noise; disturbing the peace* includes restrictions pertaining to current waste hauling operations that include limitations on noise pollution. This existing code can be included in future recommendations for operations in the City.

Resources: The City would need to first identify operating/licensed waste haulers in the City, coordinate with each company to identify current service patterns. The City would need to negotiate with haulers to develop zones, as well as have companies inform customers about potential for service changes. The City would need to create outreach materials, inform the public, and provide opportunity for feedback/input. This would require City staff time as well as printing/outreach materials and events.

2-Aii. Inform residents of opportunities for reduced rates through referrals and group sign up

Group Discounts

Many waste companies offer reduced rates for group contracts. This is most often in the case of special rates and incentives for HOAs. This benefit may be available to neighbors who work together to approach haulers collectively. When we spoke with trash companies servicing the City, most expressed an interest and willingness to discuss details of such an arrangement. If neighbors on the same block all selected the same company, they may be able to eliminate overlapping routes from multiple haulers and save on the cost of service, all without the direct intervention of the City.

Resources: The City could update website and publicly provide tips via website, social media, regarding how to save money on waste management pickup with current hauler.

Action 2-B: Update City municipal code to incorporate progressive solid waste management standards.

⁴¹ Ammann, Harriet & Kadlec, Matthew. (2008, December 3). *Concerns about Adverse Health Effects of Diesel Engine Emissions White Paper*. Publication No. 08-02-032. Retrieved from <https://fortress.wa.gov/ecy/publications/documents/0802032.pdf>

⁴² McGowan, Elizabeth. (2015, April 17). EPA Grants Help Trash Haulers with Diesel Diet. *Waste360*. Retrieved from <http://www.waste360.com/fuel/epa-grants-help-trash-haulers-diesel-diet>

2-Bi. Create requirement that residential properties must have solid waste management services.

The City of Wheat Ridge does not have a specific ordinance for solid waste management. Portions of the municipal code reference solid waste regarding litter, nuisance, stormwater, business licensing, and zoning. Current code does not require residences manage trash. City code *Section 20-11. - Illicit discharges prohibited* of the code can be strengthened to compel all residences (occupied and unoccupied) to have a licensed waste hauler. The code includes, “No person shall discharge or fail to implement adequate best management practices to prevent an illicit discharge into the MS4 or watercourses”. A best management practice is to have a requirement for residences to have waste services. Some municipalities require all residences to have solid waste services provided by the city or a contractor. The City of Golden includes this requirement in part to ensure there is support and funding for the system.

Another relevant section of the Wheat Ridge City Code *Section 15-25. - Unlawful Activities Specified Nuisances* includes outlining requirements for managing waste at the household level. This existing language is evidence the City does have a compelling authority, justification, and reason to develop further solid waste management ordinance. Additionally, *Section 26-614. - Trash storage area screening* pertains to business, industrial, agriculturally zoned and multi-family residences, including residential group homes, demonstrates the City’s interest in regulating trash receptacles in an effort to maintain a standard of appearance in the City. The City could reasonably extend this reasoning to the residential waste management sector.

Resources: City staff time would be useful for compiling all existing City ordinances relevant to waste management in the City. This would assist in minimizing developing new code, unless it is necessary. City staff time/or contract to outline the resources needed, including staff time, City council time, and potentially outreach/vote by residents regarding requirement for waste management services by all residences.

2-Bii: Implement ordinance that establishes pay-as-you-throw (also known as unit pricing or variable-rate pricing (PAYT)) to be implemented by 2021 for waste haulers servicing city for residential services, including single- and multi-family dwellings.

Source reduction is essential to short and long-term management of solid waste. Less waste from residences means less waste to be hauled to landfills. Current conditions discourage source reduction, as trash receptacles for single-family homes can be as large as 96 gallons. Nearly all residential haulers *only* provide this large size receptacle. By establishing PAYT, Wheat Ridge can encourage source reduction, while equalizing costs across residences. PAYT allows everyone to pay only for the waste they generate, so others are not subsidizing wastefulness. This approach encourages that the environment, economics, and equity be considered in waste management.

Municipalities nationally and regionally have implemented PAYT waste management requirements. Golden, Lafayette, and Fort Collins all have PAYT ordinances. This method does not require a city to provide trash services or is restrictive to a single hauler. Many municipalities preserve resident’s choice for waste hauler services. PAYT prioritizes reducing waste volumes from residences while establishing incentives to reduce and divert waste from landfills through reduction, recycling, and/or composting. Model code exists that could be readily adapted to suit the needs of Wheat Ridge residences.

In conversations with the City of Golden, it is recommended that efforts to implement a unit or variable-rate pricing include substantial outreach and education prior, during, and after implementation. Golden does not have any staff time specifically devoted to their PAYT

waste program, however there is a City contact that supports the program and works with the service providers. Undertaking this effort would be substantial. While the City does have existing code that pertains to waste, the City would need to establish authority to ensure the program's success. Instituting a unit or variable-rate pricing approach to waste management in Wheat Ridge can lead to substantial environmental benefit and cost savings.

A PAYT approach is a common sense option for encouraging companies to recognize the reality that many households do not produce enough trash to require a weekly 96-gallon pickup. Consumers are by and large focused on increasing recycling at the expense of trash, and at reducing total waste in general. Industry should embrace these trends with their services being offered.

Resources: Staff time would be needed, including efforts to update city code, including City Council or citizen vote. Outreach and education prior, during, and after implementation of a unit or variable-price waste management structure would be necessary. The City would likely need to hire a consultant and would need to develop guidance or a request for contracts/proposals from waste haulers.

2-Biii. Develop and implement waste hauler ordinance, including compliance objectives for any current/future licensed waste haulers operating in City, for compliance by 2021. Develop and implement waste hauler ordinance, including compliance objectives for any current/future licensed waste haulers operating in City.

We recommend the City update city code to require companies conducting business in the City to follow rules intended to address the considerable impacts of the current conditions, which has resulted in overlapping service routes and the negative effects as previously described in this report.

Waste Hauler Licensing

The City should create an additional license for waste haulers, as is currently required for other types of businesses including contractors, kennels and pawn brokers. Allowing the City to track companies operating in the city and ensuring that they are properly licensed with other regulatory agencies, the license application could reasonably impose a requirement for haulers to meet certain standards determined by the City. These may include demonstrating that the company is instituting industry best management practices aimed at helping customers reduce landfill bound waste, as well as how the company is addressing the environmental impacts of their operations. The City of Denver currently requires a Solid Waste Hauler License for companies that service apartment and commercial customers (the City provides all other residential service through its Public Works Department), according to their website, so that the City of Denver “guarantees minimum collection safety requirements, and attains basic solid waste disposal and recycling data”.⁴³

Resources: Making changes to the City Code would likely require an administrative process that includes a vote of City Council and/or the people. Administrative expenses for maintaining a licensing program could be offset by a license fee.

⁴³ City of Denver. City & County of Denver Solid Waste Hauler License Program [web log post]. Retrieved from <https://www.denvergov.org/content/denvergov/en/trash-and-recycling/resources/hauler-licensing.html>.

COMMUNICATION AND ENGAGEMENT

Reducing the amount of waste produced by Wheat Ridge residents, businesses, institutions and government requires changing our behavior. Effective and engaging communication from the City will play a pivotal role in this effort. Building support within the community for any changes to the City Code is a challenging but necessary element of this effort. Strong communication with haulers currently servicing residents regarding any changes in their interactions with the City will be needed as well. We have provided some materials that should assist the City in carrying out our recommendations. As noted, the City taking a more active role in this area will not only improve the quality of life for those living and working in Wheat Ridge, but also will help with City branding and its reputation among our metro area neighboring communities.

Specifically, the City should look to engage residents through its social media accounts and its digital and print publications. This communication should be frequent and clear. The City should also place a high level of emphasis on soliciting feedback from residents before initiating any changes that may affect their trash and recycling service. As determined from discussing with other communities in our area which have instituted similar programs, it is clear that there are very real risks in failing to get community buy-in on this issue in particular.

- Fact sheets
- Best practices by business sector
- Resident composting training
- Social media regarding food waste/composting
- Social media regarding food donation
- Estimate current repaving costs to City
- Identify how institution of residential waste pickup zones may reduce road impacts
- Compare costs of repaving with business license fees for operation in City
- Social media - What are your waste needs?
- Active neighborhood waste audits
- Messaging of waste collection like a utility (City of Golden resources)
- Tips and resources to reduce waste

WATER

WHY & BACKGROUND

Water is a vital natural resource for all of Colorado, both in terms of quality and quantity. Almost 80 percent of the state's water originates on the Western Slope, but more than 80 percent of Colorado's population lives on the Eastern Slope. This mismatch creates long-term supply problems and regional conflicts. Additionally, Wheat Ridge exists in an arid climate, and similar to many Colorado communities, our available water supplies are vulnerable to fire and drought and are not adequate to meet future needs.⁴⁴

As a result, our built drinking water systems that provide clean water to local residents can strain farmers, small western slope communities and deplete natural water systems. The demand for water is expected to increase from climate change by 0-8% in the municipal sector and 0-26% in the agricultural sector⁴⁵, and Colorado's population is expected to nearly double from 5 million to 10 million residents by 2050. Substantial efforts must be made to ensure adequate water is available for current and future residents, to support economic activity, and ensure watershed health.

Wheat Ridge's lakes and streams contribute greatly to the livability and health of the community by providing substantial opportunities for recreation and habitat for wildlife. Clear Creek is an especially important part of the Wheat Ridge community, shown by its prominence in the city's logo. City founders created the greenbelt to preserve the Clear Creek corridor for future generations. Residents are able to enjoy the trails along Clear Creek and city lakes as a result. However, growing populations and associated pollution increasingly strain the water quality of our lakes and streams.

These strains cause loss of wildlife habitat and can cause illness in residents through pollutants such as E-coli and ammonia, both listed as impairment pathogens for our segment of the Clear Creek in 2016. In addition, aquatic life is mostly absent due to high organic sediments and high water temperatures.⁴⁶ Clear Creek was naturally a cold-water fishery and high temperatures have killed almost all aquatic life.

Many of the Clear Creek's water quality problems originate upstream from Wheat Ridge, but there are steps our community can take to improve water quality and aquatic life. Similarly, drought and water conservation are wide reaching issues, but local improvements are necessary to ensure both statewide and regional watershed efforts are successful in ensuring a resilient and sufficient water supply for current and future residential uses and economic activity.

Efforts to both conserve water and improve water quality must be two-pronged. Substantial voluntary efforts put forth by residents and businesses within Wheat Ridge, and new incentives, regulations, or dedicated funding streams are necessary to the long-term health of Clear Creek, and the city's lakes and other water bodies.

⁴⁴ Colorado Water Conservation Board, 2018, Colorado Water Plan

⁴⁵ Colorado Water Conservation Board, 2018, Colorado Climate Plan (updated). p. 11-12.

⁴⁶ Colorado Water Quality Control Division, 2016. Colorado 2016 integrated water quality monitoring and assessment report. Appendix D-22, Segment COSPCL15.

Water

Goal / Action		Timeline*	Cost **	Environmental Benefit***
1	Goal: Improve stormwater management systems and increase water quality in all major waterways and water bodies in Wheat Ridge Indicator/s: Begin with 303d impairments, update based on baseline monitoring and areas we can impact in short term, followed by potential long term indicators we have less ability to impact; additional indicators would focus on individual strategies to document adoption and success			
1-A	Develop/expand the City's education and outreach campaign regarding stormwater ^a quality, non-point source pollution, wastewater, and green infrastructure ^b	Short/Ongoing	Low/Medium	Medium
1-B	Work with volunteer groups to regularly monitor natural water quality status and publish online; establish baselines and indicators we can impact	Short/Ongoing	Low	Medium
1-C	Investigate incentives for the incorporation of green infrastructure and sustainable landscaping practices for individual landowners and future development	Short/Mid	Low/Medium	High
1-D	Investigate opportunities for increased participation in regional partnerships to promote Clear Creek watershed health. <i>"become the squeaky wheel for water quality"</i>	Short/Ongoing	Low/Medium	Medium
1-E	Investigate, Incorporate, and promote use of drought tolerant and native landscaping where possible and appropriate	Mid	Low-Medium	Medium
1-F	Restore and maintain the natural function of Clear Creek, City lakes, and other water bodies to reduce stream bank erosion, restore hydrological function, and reduce water temperatures	Mid/Long	Medium/High	High
1-G	Consider establishing a dedicated stormwater management/water quality funding source to fund needed capital improvements and Improve City's stormwater drainage system	Long	High	High

Water, continued

Goal / Action		Timeline*	Cost **	Environmental Benefit***
2	Goal: Increase the adoption of water efficiency and conservation measures to reduce citywide water usage			
	Indicator/s: Total Wheat Ridge water usage; annual indicator goal to reduce by 1~2% annually; start with local government as pilot			
2-A	Create an education and outreach campaign regarding water conservation and efficiency (including graywater)	Short/ Mid	Medium	Medium
2-B	Explore water usage both for the City govt. and all city users to establish a baseline, track monthly/annual local govt and citywide water consumption data, and publish online	Mid	Medium	Low
2-C	Investigate partnerships to provide and promote incentives for low flow plumbing fixtures	Short/ Mid	Medium	Medium
2-D	Conduct an audit of existing city plans, codes, etc. for water efficiency/conservation elements to identify gaps, and incorporate to the greatest degree possible; investigate how graywater can be included	Mid	Medium	Low
2-E	Participate in water efficiency education program per the Colorado Water Plan	Short	Low	Medium
2-F	Incentivize smart water monitoring and use of smart water meters; potential pilot for local government	Short/ Long	Low/Medium	High
2-G	Investigate water use efficiency improvements at City parks and other facilities/infrastructure; including leak detection and repair (LDAR) program	Short/ Mid	Medium	High

*Timeline as related to time it would take for action to be established, but not necessarily completed. Short term refers to activities that to be established in less than one year; mid-term refers to activities to be established in 1-3 years; long term activities refer to activities to be established in 3-10 years. An activity established in year one would likely have ongoing associated activities for the City to implement.

** Cost estimate considers some actions requiring actions would require ongoing commitments from the City, which are considered in the assessing cost. For example, necessity for City staff.

***Environmental benefit roughly identifies the impact a recommendation has on the environment, categorized as High, Medium, Low.

^a“Stormwater - water that comes from rain, snow, or snowmelt. Stormwater runs off lawns, streets, and buildings into the sewer system or is absorbed and used by natural areas. Water that enters the sewer system picks up pollutants, trash, and debris along the way, eventually emptying into Clear Creek.

^bGreen infrastructure uses plants, trees, soils, and other elements and practices to restore some of the natural processes required to manage water and create healthier urban environments. At the city or county scale, green infrastructure is a patchwork of natural areas that provides habitat, flood protection, cleaner air, and cleaner water. At the neighborhood or site scale, stormwater management systems that mimic nature soak up and store water.” Modified from -EPA, 2018 <https://www.epa.gov/green-infrastructure/what-green-infrastructure>

WHAT: GOALS AT A GLANCE

GOAL 1: Improve stormwater management systems and increase water quality in all major waterways and water bodies in Wheat Ridge

GOAL 2: Increase the adoption of water efficiency and conservation measures to reduce citywide water usage

HOW: GOAL DESCRIPTIONS & STRATEGIES

GOAL 1: Improve stormwater management and water quality in all major waterways and water bodies in Wheat Ridge

This goal aims to improve the water quality of Wheat Ridge creeks, lakes, and other major water bodies, specifically in regard to documented impairments such as temperature and E.coli. Many of the strategies included in this goal focus on the adoption of green infrastructure, low-impact development, and sustainable landscaping practices, all of which complement existing gray infrastructure. These suggested tools improve water quality through the capture and treatment of water where it falls or accumulates, as opposed to directing it to the sewer system without any treatment. Gray infrastructure is important for the management of stormwater, but maintenance and improvements are very costly, whereas green infrastructure can be dispersed across the City and is much less expensive. Not only do these strategies improve water quality, they reduce infrastructure costs, lessen the impacts of climate change, reduce flooding, increase property values, create enjoyable social spaces, and create new avenues for public engagement.

Proposed Metrics:

- Existing 303d impairments, including temperature and E. coli and other water quality impairments and local priorities found through monitoring
- Strategy specific metrics such as the number of green infrastructure features installed

Action 1-A: Develop/expand the City's education and outreach campaign regarding stormwater quality, non-point source pollution, wastewater, and green infrastructure

Behavior change is a critical part of achieving clean water in local rivers, lakes, and riparian areas. Wheat Ridge residents and visitors have a large impact on the quality of stormwater that runs into our lakes and Clear Creek. This strategy seeks to expand existing city efforts to engage the public and businesses in improving water quality. While the City currently has a number of informational sources on the City website, limited resources are available on an ongoing, updated basis to target seasonally relevant issues and reach a wider audience. Materials should focus both on existing priority issues within the community, such as pet waste or car runoff; and, potential attainable solutions for community members, such as the installation of rain gardens and other forms of green infrastructure or the use of sustainable landscaping practices. Ideally, engagement should also be two-way, so that residents and businesses can both learn what's going on and the City can hear about what's working.

One simple example of additional outreach and engagement is reintroducing storm drain markers that inform residents that what enters the sewer system enters and impacts Clear Creek. Workshops and public forums, especially in target areas, can also be held to increase staff awareness of

community member issues and co-develop local strategies. Alternatively, the City could work with local organizations and businesses to include stormwater and water quality in their existing work and outreach. This ongoing strategy should also incorporate any efforts made in the later identified strategies in this goal.

Resources: Requirements to implement this strategy would vary based on the type of education and engagement. All will require some staff time to coordinate volunteers, create and distribute materials.

Action 1-B: Work with volunteer groups to regularly monitor natural water quality status and publish online; establish baselines and indicators we can impact

Routine monitoring of water bodies helps to pinpoint priority geographical areas and top water quality issues. Educational materials and clean-up efforts can focus on these priorities. Reporting this information so it is easily accessible, such as on the City's website or social media, promotes transparency and engagement. This information not only helps engage the public, but supports the establishment of a baseline for water quality and establishes locally relevant indicators for tracking progress.

City-based monitoring and reporting can be challenging given ongoing reporting requirements, so testing can be done through collaboration with local volunteer individuals and organizations. As a result, City resources required for this strategy would be limited to assisting volunteers and updating reporting data.

Action 1-C: Investigate incentives for the incorporation of green infrastructure and sustainable landscaping practices for individual landowners and new development

Incentives that lead to a large number of green infrastructure installations or substantial adoption of sustainable landscaping best practices would have a high degree of impact on stormwater and water quality. Green infrastructure can replace more expensive gray infrastructure and provide a range of benefits to community members. Rain gardens, bioswales^c, green roofs, and trees help reduce local temperatures, reduce flooding, create wildlife habitat, provide opportunities for exercise, and generally provide enjoyable spaces for people. Sustainable landscaping practices, such as the use of native, low-water species and limiting turf space, can compound the benefits of green infrastructure by reducing water, energy, and resource usage.

Upfront time, cost, and lack of knowledge by residents and businesses can be a hurdle in increasing the use of green infrastructure. Incentives for residents, such as a list of quality installers or cost-sharing, can reduce these hurdles. New developments and substantial redevelopments also create an opportunity to replace hard landscaping with green infrastructure. Incentives targeting businesses and new developments could include expedited permitting, decreased fees, zoning upgrades, or reduced stormwater retention requirements. Development incentives go beyond single-site improvements and can have large-scale impacts.

^cBioswales achieve the same goals as rain gardens by slowing and filtering stormwater, but are designed to manage a specified amount of runoff from a large impervious area, such as a parking lot or roadway. Because they need to accommodate greater quantities of stormwater, they often require use of engineered soils and are deeper than rain gardens. They are also linear systems that are greater in length than width. Like rain gardens, they are vegetated with plants that can withstand both heavy watering and drought." Soil Science Society of American, 2018 - - <https://www.soils.org/>

Resources: Requirements for this strategy would vary based upon potential incentives. Staff time would be required to investigate and identify the most locally relevant incentives and fiscal resources would be required for some incentives like cost-sharing. Statewide or federal organizations and governments frequently have grant funding available for green infrastructure programs. The numerous diverse benefits from green infrastructure also mean a variety of grants can be pursued. Pursuing these opportunities would go a long way in defraying costs associated with this strategy. The city has tens of millions of dollars of needed stormwater infrastructure. Where applicable, using green infrastructure can reduce the need for more expensive gray infrastructure.

Action 1-D: Investigate opportunities for increased participation in regional partnerships to promote Clear Creek watershed health

Water quality is a multi-jurisdictional and ecosystem issue, especially for the Clear Creek. It spans the Continental Divide to the plains, numerous counties, cities and special districts. To meet this goal, Wheat Ridge must increase participation in Clear Creek Watershed partnerships and other regional water quality groups to ensure the City is represented. While the Clear Creek's water quality is largely impacted by old mines and upstream conditions, we are strongly impacted as downstream users. We need to participate in regional water quality conversations to ensure our concerns are heard and that Wheat Ridge participates in the development and implementation of solutions.

Resources: Implementation of this strategy includes staff time. Volunteers or the WRESC could act as liaisons for the City of Wheat Ridge.

Action 1-E: Investigate, incorporate, and promote green infrastructure and sustainable landscaping where possible and appropriate

This strategy could include a variety of different actions, but all focus upon the general promotion of green infrastructure and low-impact development that reduces pollutants and flooding. First, the City can take a leadership role in installing green infrastructure at city locations and utilizing sustainable landscaping practices, such as native plants. Incorporating educational elements like interpretive signs in these installations can help raise resident awareness of green infrastructure and stormwater issues and solutions. Second, barriers to the use of green infrastructure and sustainable landscaping should be investigated and addressed. For example, City ordinances can be modified to promote the use of native grasses and plants, instead of discouraging them.

Resources: Implementation of this strategy would likely include staff time and financial resources as potential installations would need to be identified and installed. Removing barriers from City code would only require staff time.

Action 1-F: Restore and maintain natural function along the Clear Creek, City lakes, and other water bodies to reduce stream bank erosion, restore hydrological function, and reduce temperatures

The riparian areas near water bodies play a large role in those water bodies' conditions. Trees and shrubs can greatly reduce stream temperatures and natural ecosystems remove pollutants from water that flows through them. Riparian areas and wetlands can absorb large quantities of pollutants and reduce flooding by slowly releasing during high-intensity rainstorms. Protecting riparian areas along lakes and creeks reduces local water temperatures, pollutants, and recreational uses.

This strategy would require substantial staff time and resources, as large-scale restorations along the Clear Creek and nearby lakes would be high cost. This strategy can also go hand-in-hand with an expansion of the Greenbelt Tree Steward program to include a more substantial restoration effort in degraded riparian areas. Grant funding can also be pursued to defray financial costs.

Action 1-G: Consider establishing a dedicated stormwater management/water quality funding source to fund needed capital improvements and Improve city's storm water drainage system

Our infrastructure is old or inadequate and we lack a dedicated source of funding for necessary stormwater improvements. Dedicated funding, such as through a stormwater utility, will help ensure Wheat Ridge has clean water and can protect residents and businesses from flooding. An important first step in this process would be to update past utilities studies to determine potential revenues, billing or fee rates, exemptions, and incentive crediting rates that can reduce costs for use of best practices in green infrastructure and stormwater management. Implementation of this strategy would also need to include a substantial element of public engagement to get Wheat Ridge citizens on board.

Resources: Substantial staff time and financial resources would be required; however, these costs could be offset by the implementation of a new revenue stream if something like a stormwater utility were pursued.

GOAL 2: Increase the adoption of water efficiency and conservation measures to reduce citywide water usage

Goal 2 within the water section aims to reduce local government and citywide water usage. The strategies in this goal range from educational efforts aimed at reducing residential and business water use, promoting incentives for water efficient upgrades, and improving water efficiency in local government facilities. Saving water in Colorado and the Front Range is a necessity, but it also saves money on water and reduces energy usage through decreased need to clean, heat and move water, in turn reducing air pollution and greenhouse gas emissions from energy generation. Implementing substantial water efficiency and conservation improvements now also means less drastic action will be required in the future when the next inevitable drought hits, improving community resilience.

Proposed Metrics:

- Total Wheat Ridge water consumption with an annually updated goal targeting 1~2% annual reduction
- Total Wheat Ridge City Government water usage can be used as a pilot prior to citywide water consumption
- 5% of homes and businesses are retrofitted with smart water meters each year

Action 2-A: Create an education and outreach campaign regarding water conservation and efficiency (including graywater)

Behavior change in residents and businesses is vital for reducing water usage. Outreach and engagement efforts can target both residents and heavy water users in the community to promote voluntary conservation and efficiency upgrades. Ideally, engagement should include two-way communication, so that information is both provided to the public and new insights, strategies, and challenges can be gleaned from their input. Recent changes to Colorado graywater laws could also be incorporated into outreach. Efforts targeting businesses could include green business recognition programs that include water efficiency and conservation.

Resources: Staff time would be required for this strategy, but the campaign could also be completed with the help of volunteers like WRESC and local organizations.

Action 2-B: Explore water usage both for the City Govt. and all City users to establish a baseline, track monthly/annual local government and citywide water consumption data, and publish online

Establishing a baseline for current water usage is vital for tracking progress over time, both in the local government and city as whole. The City can take a leadership role in this strategy to track and publish existing monthly water usage as a pilot, to be followed up with citywide water use tracking.

Resources: Staff time and potentially financial resources would be required for this strategy, dependent upon investments required to adequately collect and track local government and citywide water use.

Action 2-C: Investigate partnerships to provide and promote incentives for low flow plumbing fixtures

Water efficiency upgrades require up-front investment. Providing incentives through water providers, the local government, or other organizations can help residents and businesses defray these up-front costs.

Resources: Staff time to investigate and promote appropriate incentives, and the financial resources required to implement those incentives would be required.

Action 2-D: Conduct an audit of existing city plans, codes, etc. for water efficiency/conservation elements to identify gaps, and Incorporate to the greatest degree possible; investigate how graywater can be included

Updates to plans, codes, ordinances, and other planning tools ensure water efficiency and conservation are promoted and incentivized where possible and that no barriers to their adoption exist. Graywater systems should also be encouraged to reduce the use of clean drinking water for irrigation or toilet flushing.

Resources: Staff time would be required. However, updates could coincide with scheduled plan or code updates, reducing additional staff time required for an outside process.

Action 2-E: Participate in water efficiency education program per the Colorado Water Plan

The Colorado Water Conservation Board offers training to a limited number of local governments each year. The training is no cost and Wheat Ridge should consider participating in the training.

Resources: Staff time would be required as the training is provided at no cost.

Action 2-F: Incentivize smart water monitoring & use of smart water meters; potential pilot for local government

The city should work with water providers to provide smart meters to residents, businesses and city facilities. A smart water meters program can pay for itself with water savings. In addition to saving water, meters can help homeowners discover problem areas and leaks before they become large problems, helping to prevent mold and related health issues.

Resources: Staff time to work with water providers and potentially financial resources to help offset the cost to consumers would be required.

Action 2-G: Investigate water use efficiency improvements at City parks and other facilities/infrastructure; including leak detection and repair (LDAR) program

Irrigation and water efficiency technologies are constantly improving. The City should upgrade water and irrigation infrastructure with reasonable payback periods. Focusing on top water using facilities, such as park irrigation, should be a top priority.

Resources: Staff time and financial resources to make efficiency improvements would be required. However, efficiency improvements will offset costs.

COMMUNICATION AND ENGAGEMENT

Ensure that water efficiency and conservation, along with stormwater best management practices, are included in the proposed Wheat Ridge Green Business recognition program by City Council.

Provide targeted pamphlets or other education materials with sustainable guidelines for residents, businesses, and other organizations to that target the use of water efficiency and conservation practices along with stormwater best management practices.

Conduct targeted forums or workshops that focus on water in the community, both quality and quantity. These two-way communication channels inform community members of best practices for improving our water and identify available resources, while also providing a channel to the local government for challenges community members are experiencing in regard to water issues.

COMMUNICATION & ENGAGEMENT

WHY & BACKGROUND

We define communication and engagement as efforts to establish consistent outreach, advocacy, and stewardship relating to sustainability efforts within the City of Wheat Ridge. Effective communication and engagement is critical to the success of achieving sustainability objectives.

Current communication channels utilized in the City and community include: The Wheat Ridge Gazette, Mayor's Matters E-newsletter, social media, and the City website. These outlets provide information and share updates about progress and opportunities for broader public input.

The objectives of Communication and Engagement are to increase the City's role in educating and providing support to the community on issues related to environmental sustainability, and engage and activate community members to take ownership and responsibility for their own sustainability practices. These recommendations are based on conversations with sustainability leaders in neighboring communities, business owners in and around Wheat Ridge, and with City officials about their communications successes and challenges. This work, and ongoing research, provides us with valuable context when developing our City action plan.

To move Wheat Ridge toward a more sustainable future, we recommend the City engage residents, businesses, and institutions during their day-to-day activities and routines. In addition to communicating the vision, goals, and plans for City and community wide sustainability recommendations, the City must provide venues for open dialogue and feedback from the community itself. Engagement means that City residents, businesses, and institutions actively participate with the City to advance sustainability efforts. This partnership of the people with the City allows for greater agreement in planning and decision-making regarding policy and actions.

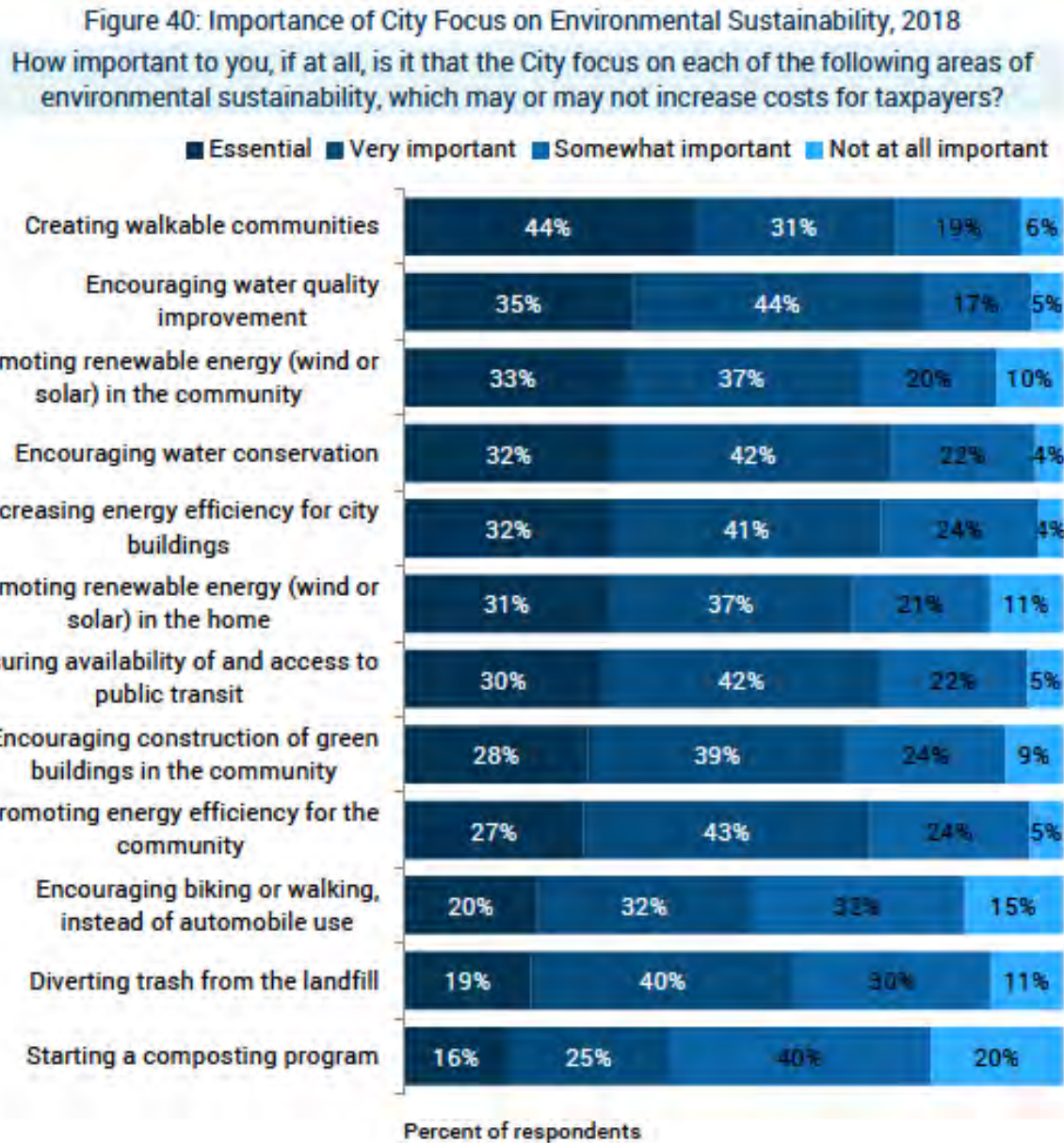
Most importantly, WRESC focused on the appropriate format for presenting Committee recommendations, with a priority on simple and straightforward communications. WRESC values outcomes and aims to support all members of the community in improving quality of life in Wheat Ridge and encourages the City to recognize the value of strengthening City-community relationships to achieve a vibrant, sustainable Wheat Ridge.

In June 2018, Wheat Ridge worked with the National Research Center, Inc. to conduct and evaluate a survey of 4,500 randomly selected households on a wide variety of community topics. With the support of WRESC, the City included a section within the survey on sustainability to assess how the respondents rated the importance of City involvement in a variety of sustainability issues.

The issues considered essential or very important by the greatest proportion of respondents, about three-quarters, were creating walkable communities, encouraging water quality improvement and encouraging water conservation. About 7 in 10 respondents believed it was essential or very important for the City to promote renewable energy in the community, promote renewable energy in homes, and increase energy efficiency for city buildings.⁴⁷

⁴⁷ <http://www.ci.wheatridge.co.us/258/Resident-Survey>

The Figure below is an excerpt from the 2018 Resident Survey.⁴⁸



⁴⁸ <http://www.ci.wheatridge.co.us/DocumentCenter/View/28495/2018-Resident-Survey-Report->

Communication & Engagement

	Goal/Action	Timeline*	Cost**	Environmental Benefit***
1	Communicate the Wheat Ridge Sustainability Action Plan to Council, businesses and residents			
1-A	Update the City's website with current Action Plan, keep website current and relevant, and use it a source of information	Ongoing/ Immediate	Low	High
1-B	Post updates and information on social media sites as plan is evolving and successes achieved	Ongoing	Low	High
1-C	Communicate ongoing messaging in all Topic Areas of the Action Plan	Ongoing	Low	High
2	Encourage and grow participation in sustainability activities, approaches and programs			
2-A	Join an existing program or develop a new one aimed at incentivizing residents to increase their own neighborhood participation	Mid	Medium	Medium
2-B	Partner with existing community groups in Wheat Ridge working on sustainability practices	Short	Low	High
2-C	Create an opt-in subscription e-Newsletter focused on sustainability in Wheat Ridge.	Short/ Ongoing	Medium	High
3	Engage the community with implementation of the Sustainability Action Plan			
3-A	Recognition of residents' involvement in sustainability practices	Ongoing	Medium	High
3-B	Create platforms for residents to participate	Short/ Ongoing	Medium	High
4	Engage Wheat Ridge businesses and organizations			
4-A	Green Business recognition by City Council	Short/ Ongoing	Medium	High
4-B	Post and advertise Action Plan with businesses	Mid	Low	Medium
4-C	Engage businesses in sustainability efforts	Mid	Medium	High
4-D	Communicate sustainability efforts to businesses	Mid	Low	High
5	Create opportunities for feedback and input from community and City for ongoing sustainability initiatives			
5-A	Regularly survey residents and businesses for input regarding sustainability issues			

*Timeline as related to time it would take for action to be established, but not necessarily completed. Short term refers to activities that to be established in less than one year; mid-term refers to activities to be established in 1-3 years; long term activities refer to activities to be established in 3-10 years. An activity established in year one would likely have ongoing associated activities for the City to implement.

** Cost estimate considers some actions requiring actions would require ongoing commitments from the City, which are considered in the assessing cost. For example, necessity for City staff.

***Environmental benefit roughly identifies the impact a recommendation has on the environment, categorized as High, Medium, Low.

WHAT: GOALS AT A GLANCE

GOAL 1: Communicate the Wheat Ridge Sustainability Action Plan to Council, businesses, and residents

GOAL 2: Encourage and grow participation in sustainability activities, approaches, and programs within Wheat Ridge

GOAL 3: Engage the community with implementation of the Wheat Ridge Sustainability Action Plan activities

GOAL 4: Engage Wheat Ridge businesses and organizations

GOAL 5: Create opportunities for feedback and input from community and City for ongoing sustainability initiatives

HOW: GOAL DESCRIPTIONS & STRATEGIES

GOAL 1: Communicate the Wheat Ridge Sustainability Action Plan to Council, businesses, and residents

Action 1-A: Update the City's website with the current Sustainability Action Plan, keep website current, relevant, and use it as a source of information dissemination.

Action 1-B: Post updates and information on social media sites as the Plan is evolving and success achieved

Through the City's Facebook page, post relevant and timely action items that community members can engage in. Duplicate posts on Twitter, and create auto feed on website for those not engaged on social media. Further develop Instagram presence.

Action 1-C: Communicate ongoing messaging for all topic areas with regular website updates.

GOAL 2: Encourage and grow participation in sustainability activities, approaches, and programs within Wheat Ridge

Action 2-A: Join an existing program or develop a program aimed at incentivizing residents to increase neighborhood identification through community building actions

1. Sustainable Neighborhoods Program (implemented in Lakewood) provides a neighborhood-centric definition of the city.
2. Use resources at Localworks to engage in neighborhood programs like Clean Up Days, and expand these programs

3. Outline and define neighborhoods, and help residents identify their neighbors through the use of social media groups, and encourage neighbors to reach out to elders in include them in participating in sustainability efforts

Action 2-B: Partner with existing community groups in Wheat Ridge working on topic area issues and sustainability. Examples include WRATATS, Wheat Ridge Gardeners, Chamber of Commerce

Action 2-C: Create an opt-in subscription e-Newsletter focused on sustainability in Wheat Ridge.

GOAL 3: Engage the community with implementation of the Wheat Ridge Sustainability Action Plan activities

Action 3-A: Recognition of residents' involvement in sustainability practices

Action 3-B: Create platforms for residents to participate with the City's Sustainability Action Plan through volunteer opportunities

GOAL 4: Engage Wheat Ridge businesses and organizations

Action 4-A: Green Business City Council Recognition - develop parameters (Denver Certifiably Green for example)

Action 4-B: Post and advertise Action Plan and activities with businesses

Action 4-C: Engage businesses in communicating their sustainability efforts with community

Action 4-D: Communicate sustainability efforts to businesses

Identify a business sector to start (perhaps restaurants) and work together to create a platform to share sustainability information/collaboration among West Metro Sustainability Committee covering the multi-jurisdiction in the Cities of Jefferson County.

GOAL 5: Create opportunities for feedback and input from community and City for ongoing sustainability initiatives

Action 5-A: Regularly survey residents and businesses for input regarding sustainability issues

METRICS

Calculating the involvement and enthusiasm for the City's sustainability efforts may not always be measurable. But there are ways to calculate engagement.

- Track Facebook sharing and engagement
- Track involvement by businesses in Action Plan implementation, and also in participation in a Green Business program
- Track subscription to a new Wheat Ridge Sustainability e-newsletter
- Continue to survey residents regarding importance/prioritization of sustainability issues bi-annually in the Wheat Ridge Resident Survey

Wheat Ridge has an engaged and passionate portion of its community. The success of organizations like Localworks and Wheat Ridge Gardeners indicates people are involved and community-minded. Wheat Ridge is small and presents a uniquely easy opportunity for neighborly engagement. The accessibility of City Council members provides a relatively easy opportunity to engage with City leadership on an ongoing basis.

IMPLEMENTATION

Tools for implementing effective Communication and Engagement already exist. With a few more additions, and minimal expense, the City can become a voice and a leader in sustainability efforts.

- Current sources of communication: Gazette, Connections, Social Media, Website
- Add: Electronically distributed Sustainability newsletter with email subscription

WRESC recommends the City identify and further explore potential funding sources. Consider grants for City government and community-based organizations and seek fundraising opportunities with businesses and foundations to support City and community sustainability messaging and activities.

RESOURCES

The following are available to the City:

- Access to planning documents
- Volunteer website
- "Notify Me" service through the website

The following are available to the Community:

- High level of social media engagement
- Localworks and other community-based volunteer programs
- Publications that are readily available

CONCLUSION

Across the six Topic Areas covered in this plan, the committee recommends 20 Goals with detailed strategies and actions that will make Wheat Ridge a more environmentally sustainable, healthy, resilient, and livable community. During our one-year term, WRESC worked diligently to develop this Action Plan. WRESC researched national best practices and sought local guidance for each Topic Area to inform our recommendations. However, given our time constraints, the original charge from City Council, and the nature of a volunteer-based committee, we acknowledge that this plan does not capture all elements of environmental sustainability and that there may be some content gaps in the plan. For example, urban agriculture, open space conservation, and wildlife preservation are not covered in detail.

WRESC recognizes that sustainability includes not only environmental elements, but social and economic considerations as well. While this plan is focused primarily on strategies targeting direct environmental improvements, as directed by the Mayor and City Council, the recommendations also contain substantial social and economic benefits.

WRESC volunteers appreciate the opportunity to aid the Mayor and City Council to fulfill its vision for an environmentally sustainable Wheat Ridge. One where individual actions and city-wide changes can have lasting positive effects on our community's environment, quality of life, and economic health.

We encourage the Mayor and City Council to consider the following steps to facilitate implementation of this Action Plan:

1. Adopt the Action Plan
2. Hire a Full-time Sustainability Coordinator
3. Conduct prioritization exercise for implementation
4. Perform cost savings analysis of recommendations
5. Continue to engage residents, businesses, and institutions about sustainability
6. Identify a path for the WRESC's future in the form of a permanent volunteer committee
7. Seek further expertise on social and economic facets of sustainability

Implementing the drafted recommendations requires varying degrees of resources. Some of the WRESC's recommendations can be put into action immediately without significant investment or programmatic changes. Recommendations that include policy or code changes will likely require more time and investment. All recommendations require community education and involvement at a minimum. Many recommendations promote individual responsibility and behavior change for lasting environmental results. In addition to approving and adopting this Action Plan, this committee believes that to fulfill the City's vision of a sustainable Wheat Ridge, it is critical to hire a Sustainability Coordinator. This staff position, supported by volunteers from the community, would work closely with the community to further craft and implement sustainability plans, policies, and programs that are right for our community and support strong, lasting economic development.

With the completion of the current WRESC term, there is an opportunity to expand the presence of a volunteer resident-based committee by formalizing a permanent committee. At the least, the City should reauthorize the WRESC and initiate the application process for another one-year term. The objectives of WRESC are worthy of long-term commitments from both the City and those in the community who demonstrate a desire to accomplish the goals laid out in this Action Plan. Sustainability is a dynamic, moving target that requires dedication and ongoing City, resident, and commercial commitment. These efforts will help ensure Wheat Ridge is taking the necessary steps to proactively respond to local and global challenges and move toward a more resilient, livable community.



Energy Strategy Recommendations

6-18-2018

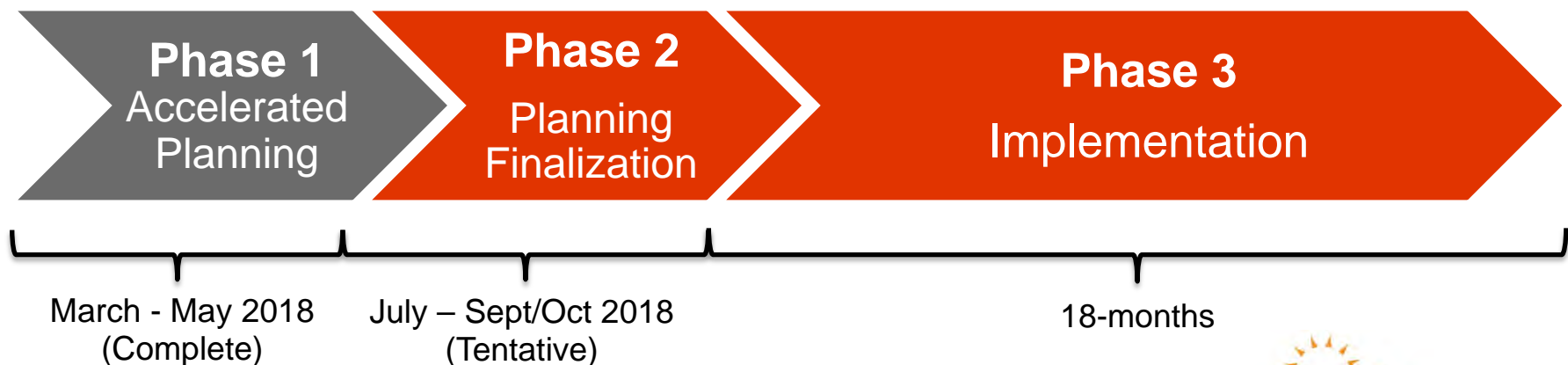
Process Overview

Hybrid Fast Track Planning Approach

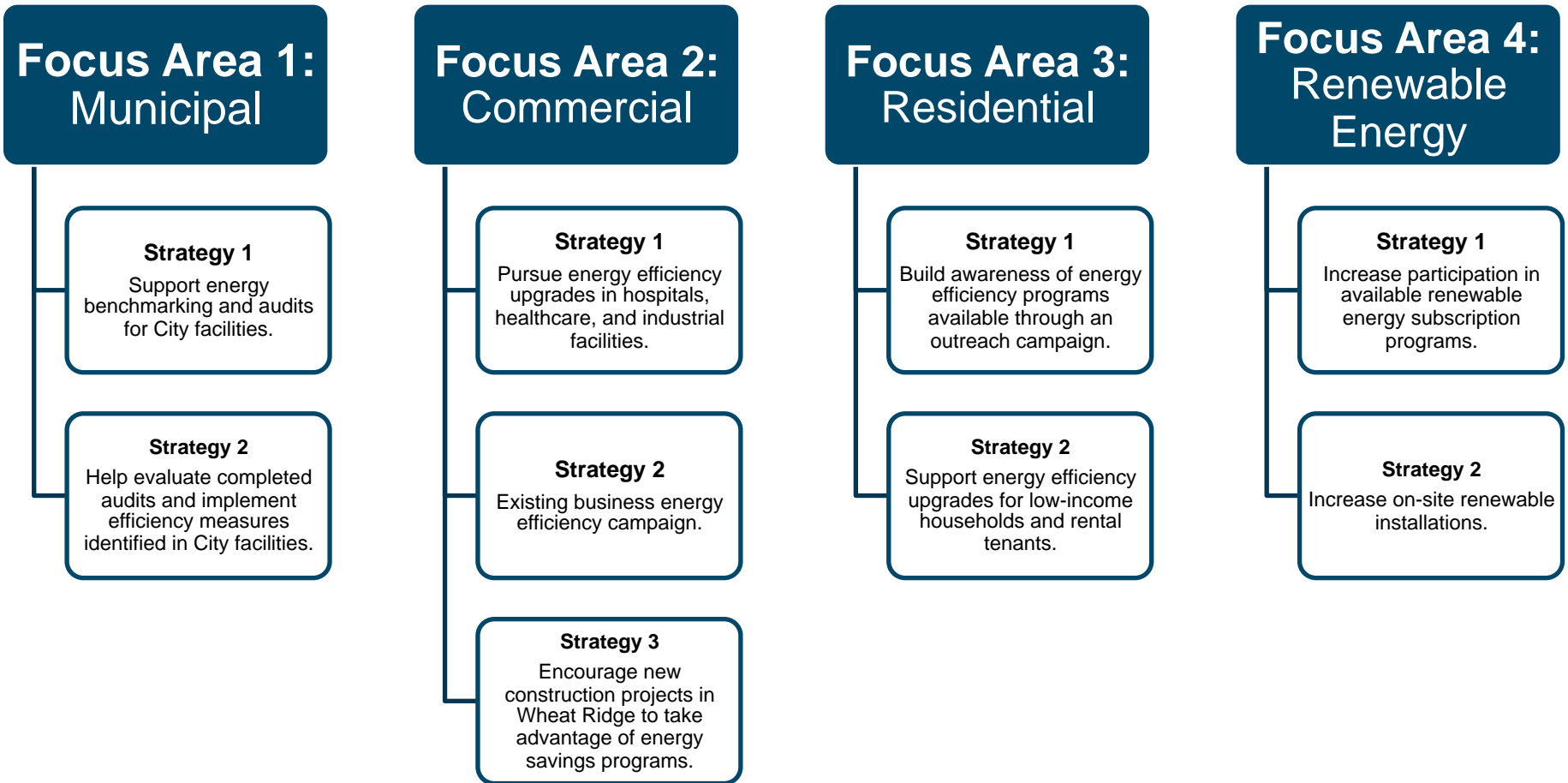
Phase 1: Accelerated support for energy-related WRESC recommendations to City Council

Phase 2: In depth workshop(s) to finalize implementation strategies and Wheat Ridge's Energy Action Plan

Phase 3: 18-month implementation period with additional support/resources



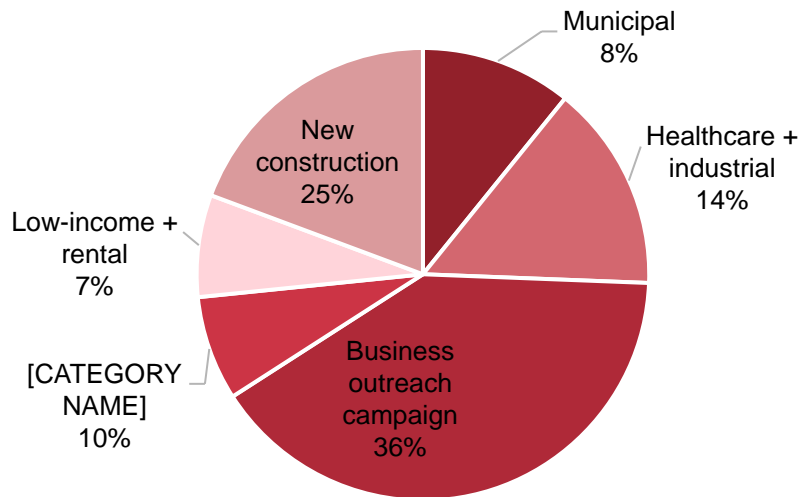
Focus Area + Strategy Summary



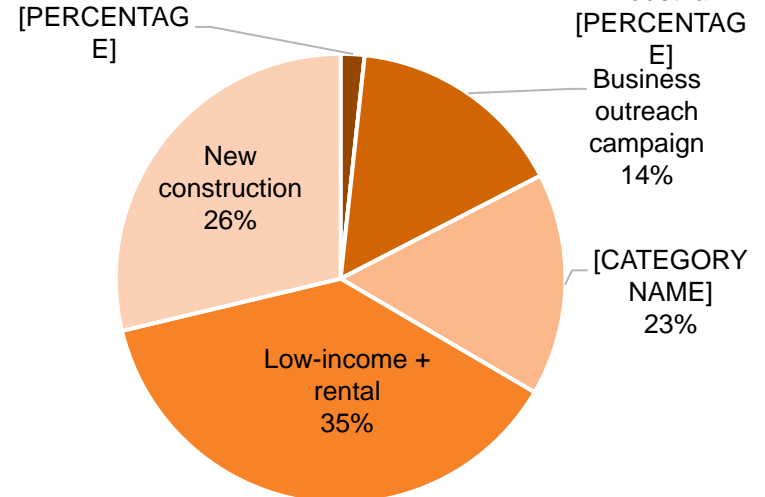
Communications & Outreach

Implementation (18-month) Energy Savings Summary

Implementation Electricity Savings Contribution
(2.12 GWh)



Implementation Gas Savings Contribution
(51,800 therms)

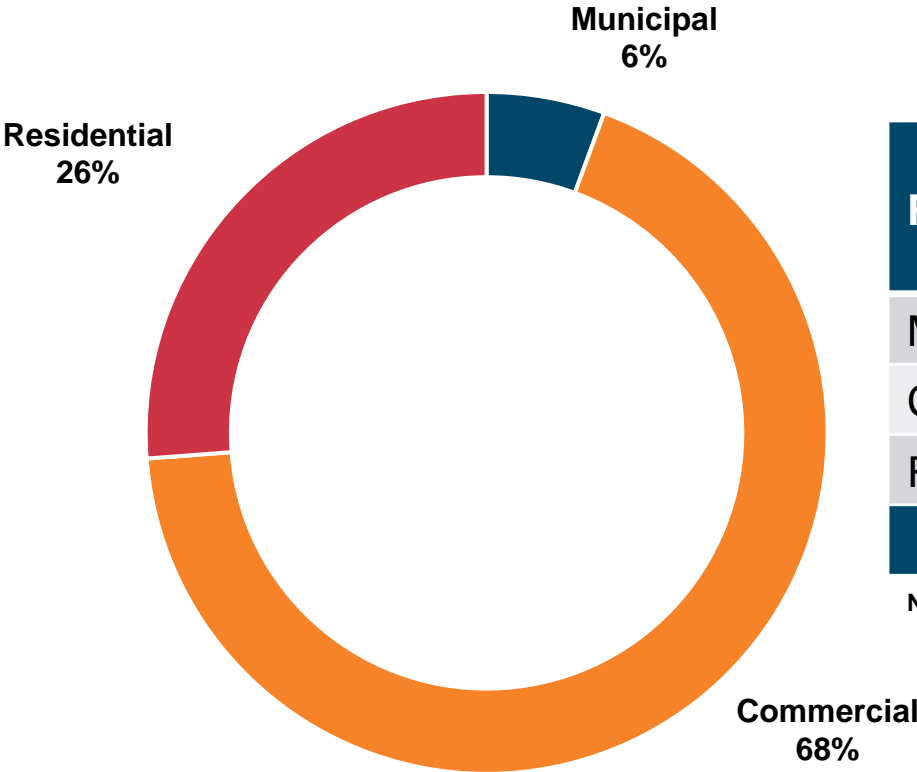


Focus Area	Total Energy Savings (MMBtu)	Estimated Electricity Savings (kWh)	Estimated Gas Savings (therms)	Estimated Annual Cost Savings	Estimated Payback
Municipal	700	165,700	1,200	\$11,150	2 years
Commercial	7,600	1,607,200	20,900	\$135,600	2 years
Residential	4,200	349,600	29,700	\$52,100	4 years
Total	12,500 MMBtu	2,122,500 kWh	51,800 therms	\$198,850	3 years

Note: Energy savings do not include renewable energy program totals. All savings projections are estimates based on proposed participation. Payback does not include customer due to varying implementation cost

Implementation (18-month) Cost Savings Summary

Annual Focus Area Cost Savings

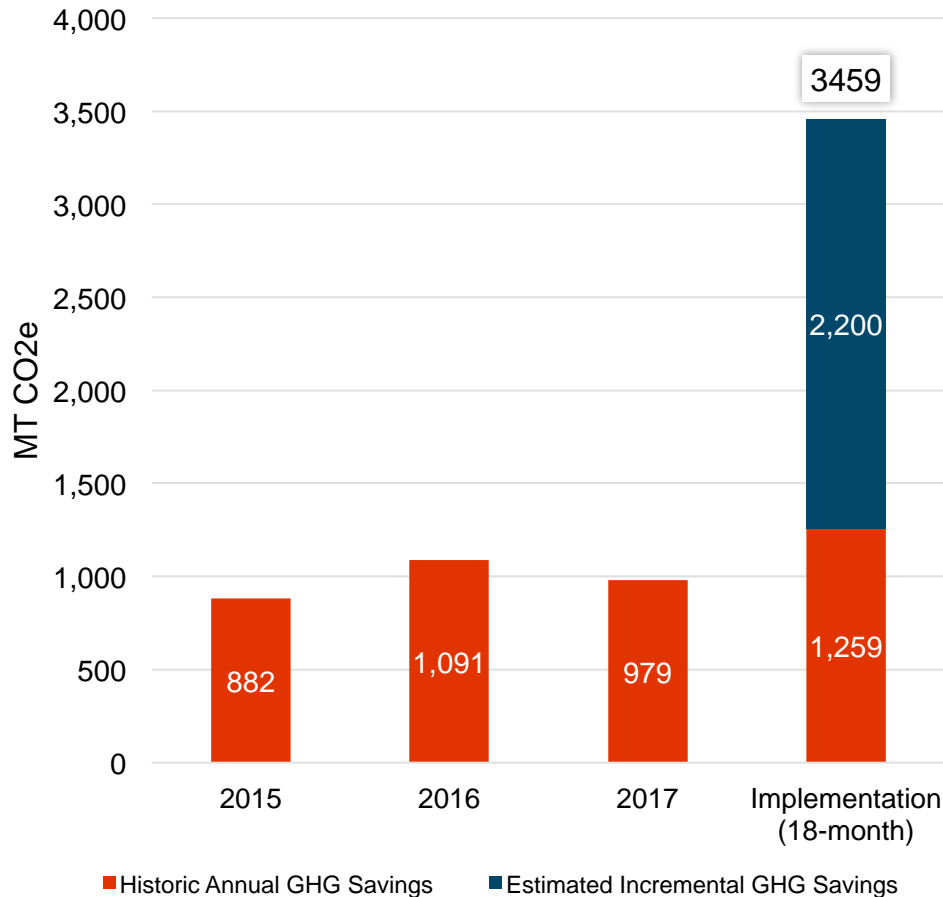


Focus Area	Estimated Annual Cost Savings	Estimated Payback
Municipal	\$11,150	2 years
Commercial	\$135,600	2 years
Residential	\$52,100	4 years
Total	\$198,850	3 years

Note: Energy savings do not include renewable energy strategy program totals.

GHG Savings Summary

GHG Emissions Savings



Note: Implementation GHG emission savings include maintaining 2015-2017 average historic program participation with proposed new incrementation participation and renewable energy on-site installations. 2017 and subsequent year emission reporting is still preliminary and not third-party verified.

Focus Area	Incremental GHG Savings (MT CO2e)	Equivalent Number of Vehicles off the Road*
Municipal	100	21
Commercial	1,010	216
Residential	350	75
Renewable Energy	740	158
Total	2,200	470

*EPA Greenhouse Gas Equivalencies Calculator (https://www.epa.gov/sites/production/files/widgets/ghg_calc/calculator.html#results)

Focus Area 1: Municipal

Strategies 1 & 2

Support energy benchmarking and audits for City facilities as well as review completed projects within the last 12 months. Evaluate completed audits and implement efficiency measures identified in City facilities as well as pursue rebates for the identified and eligible completed projects.

Illustrative Pathway

Program	Total Projects Completed (2015-2017)	Proposed New Participation	Estimated Payback w/ Rebate (years)
Energy Benchmarking	0	TBD	--
Business Energy Analysis	0	TBD	--
Lighting Efficiency	1	2	5
Lighting – Small Business	1	2	2
Recommissioning	0	1	1
Total	0	5	--

Estimated Incremental Savings: **165,700 kWh + 1,200 therms**

Estimated Annual Cost Savings: **\$11,150**

Estimated Payback: **2 years**

Focus Area 2: Commercial

Strategy 1

Pursue energy efficiency upgrades in hospitals, healthcare, and industrial facilities.

Illustrative Pathway

Program	Avg. Annual Participation (2015-2017)	Proposed New Participation
Various Energy Efficiency Measures (e.g., combination of prescriptive rebate programs varying among sector participant and facility needs)	Varies	TBD
Total	--	TBD

Estimated Incremental Savings: **300,000 kWh**

Estimated Annual Cost Savings: **\$27,000**

Estimated Payback: **Varies by Measure**

Focus Area 2: Commercial

Strategy 2

Existing business energy efficiency campaign to increase participation in energy efficiency programs by 50%.

Illustrative Pathway

Program	Avg. Annual Participation (2015-2017)	Proposed New Participation	Incremental Participant Increase
Commercial Refrigeration Efficiency	9	13	4
Cooling	3	5	2
Heating	1	2	1
Lighting Efficiency	22	34	12
Lighting – Small Business	52	78	26
Motor & Drive Efficiency	2	4	2
Total	89	135	47

Estimated Incremental Savings: **774,500 kWh + 7,500 therms**

Estimated Annual Cost Savings: **\$53,950**

Estimated Payback: **4 years**

Focus Area 2: Commercial

Strategy 3

Encourage new construction projects in Wheat Ridge to take advantage of energy savings programs.

Illustrative Pathway

Program	Avg. Annual Participation (2015-2017)	Proposed New Participation	Incremental Participant Increase
Energy Design Assistance	0.33 (1 project in 2015)	2	2
Energy Efficient Buildings	1	4	3
Total	~ 1	6	5

Estimated Incremental Savings: **532,700 kWh + 13,400 therms**

Estimated Annual Cost Savings: **\$54,700**

Estimated Payback: **Immediate (< 1 year)**

Focus Area 3: Residential

Strategy 1

Build awareness and increase participation 50% in available energy efficiency programs through an outreach campaign with a focus on promoting Home Energy Squad®.

Illustrative Pathway

Program	Avg. Annual Participation (2015-2017)	Proposed New Participation	Incremental Participant Increase
Evaporative Cooling	69	104	35
High Efficiency Air Conditioning	31	46	15
Home Energy Audit	23	34	11
Home Energy Squad	4	75	71
Home Performance with ENERGY STAR	3	4	1
Insulation & Air Sealing	14	21	7
Refrigerator & Freezer Recycling	112	168	56
Residential Heating	50	76	26
Water Heating	11	16	5
Total	317	544	202

Estimated Incremental Savings: **201,700 kWh + 11,700 therms**

Estimated Annual Cost Savings: **\$27,800**

Estimated Payback: **5 years**

Focus Area 3: Residential

Strategy 2

Support energy efficiency upgrades for low-income households and rental tenants.

Illustrative Pathway

Program	Avg. Annual Participation (2015-2017)	Proposed New Participation	Incremental Participant Increase
Single-Family Weatherization	13	26	13
Multifamily Weatherization	0	2	2
Multifamily Buildings Efficiency	1 (i.e., facility/complex)	5 (i.e., facility/complex)	4 (i.e., facility/complex)
Total	14	33	19

Estimated Incremental Savings: **148,000 kWh + 18,000 therms**

Estimated Annual Cost Savings: **\$24,200**

Estimated Payback: **3 years**

Focus Area 4: Renewable Energy

Strategy 1

Increase participation in available renewable energy subscription programs.

Illustrative Pathway

Program	Participants/ New Applicants	Annual Subscribed Energy/ Produced Energy (kWh)
Solar*Rewards® for Residences	5	36,800
WindsorSource® for Residences	370	720,000
WindsorSource® for Businesses	6	136,800
Renewable*Connect® (residential only)	50	150,000
Total	431	1,043,600 kWh

Focus Area 4: Renewable Energy

Strategy 2

Increase on-site renewable installations.

Illustrative Pathway

	Number of Additional Installations	Installed Capacity	Annual Generation
Residential On-Site Solar	30	6 kW	220,800 kWh (7,400 kWh/installation)
Commercial On-Site Solar	2	15 kW	37,900 kWh (18,400 kWh/installation)
Total	32	--	258,700 kWh

Xcel Energy Renewable Options

Solar*Rewards®

Onsite option

Produce up to 120% of energy use

Xcel Energy keeps REC

20-year contract term

Windsorsource®

Subscription option

100% local wind to offset energy use

Customer keeps REC

No minimum contract length

Pay premium
(1.5¢ / kWh)

Renewable*Connect®

Subscription option

Locally sourced 100% large scale solar

Customer keeps REC

0-10 year contract term

Program credit variable by contract term and updated annually

Xcel Energy's Renewables

**Reduce CO₂
Emissions**

60%

Plans to reduce
CO₂ emissions
60% by 2026



A leading wind
energy provider
for over a decade



National leader
in renewable
energy choices

55%

**Renewable
Resources**

Proposed to provide
55% renewable
energy by 2026

Renewable*Connect®



PARTNERS IN ENERGY
An Xcel Energy Community Collaboration

Choose a low-cost renewable energy option

Adding more green energy to your life just got easier. With no equipment to install, you can enjoy hassle-free solar energy simply by subscribing to **Renewable*Connect**.

Phase I

May 23 – July 18: Residential + C class businesses

Phase II

July 30 – July 31: Open to all customers

Benefits that suit your lifestyle

- 1 Flexible terms**
You have a choice of three subscription terms—month-to-month, five-year or 10-year.
- 2 Low cost**
Affordable pricing with the potential to save money over time.
- 3 Local energy sources**
The solar energy is produced right here in Colorado.
- 4 Renewable Energy Credits (RECs)**
The RECs associated with the renewable energy you subscribe to are yours to claim and promote.

Getting started is easy

Go to xcelenergy.com/RenewableConnect for program details.
For questions, email us at RenewableConnectCO@xcelenergy.com.





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An Xcel Energy Community Collaboration



Wheat Ridge Environmental Sustainability Committee

Composting at Home

Step 1: Think about it

- Learn the basics, but don't overthink it. Like much of gardening, nothing replaces trial and error.
- See the attached FAQs from Cornell.edu which provide a good informational overview of composting.

Step 2: Choose a site for your compost pile

- Will it be convenient to get materials to the space?
- Is there sufficient air flow?
- Depending on the design you choose, is there enough room? (error on the side of more space if possible)
- Are there appearance considerations for the yard?

Step 3: Choose a Design for your Composting System

- Easiest option is a well managed pile on the ground (See *Farmer Dan's Compost Pile* below)
- Other popular systems are:
 - Barrel systems designed for hand cranked turning of a barrel mounted on a stand
 - Compartmentalized systems, essentially two or three-sided ventilated chambers for different types of materials or stages of compost.
 - Wire fencing set in a circle to contain pile but allow ventilation.

A quick web image search can get you thinking. Also, *The Rodale Book of Composting: Easy Methods for Every Gardener* is an excellent easy to use resource for the benefits and disadvantages of different compost systems.

Step 4: Secure compost ingredients

- Develop a system for saving kitchen scraps.
 - The easiest way is to use a small container (you can purchase one designed for this purpose) to leave on your counter or under the sink to save scraps which, once full, go to the compost pile. Or use larger sized buckets kept outside (with secure lids) that can be filled with kitchen bucket for less frequent additions to the pile.
- Start a system of setting aside yard waste that can be composted. Many people maintain separate piles consisting of materials that take longer or shorter periods to breakdown.
- Save leaves in the fall for compost!

Step 5: Managing a Compost Pile

- Moisture is important in our arid climate. Water pile if needed.
- Turning compost speeds up the process. Aeration is necessary for fostering the environment for microbes to thrive. When a pile becomes “anaerobic” (lack of oxygen) bad things start to happen.
- Use enough “brown material” to ensure pile does not stink or attract unwanted critters
- Patience - depending on how it is managed, composition and environmental conditions, the process takes 3-9 months or even longer.
- Relay on senses and instinct to know when the pile is finished. If unsure, let it “cure” for a while.

Farmer Dan’s Method

Tools: Shovel, stiff garden rake, (Optional) Enclosed footwear - ideally rubber boots

A good size rule of thumb for a compost pile is 3ft x 3ft. I essentially build separate connected piles and add new material only to one end, while occasionally turning the other end. I layer “green material” and “Brown material” and then mulch the whole pile. Mulching is extremely helpful in creating a more healthy and orderly pile. It retains moisture, improves appearance, and helps promote biological activity throughout the pile.

When adding to the pile, I remove top layer of mulch with my rake, then I create a impression on the end of the pile with my shovel where “green” material is being added. This is done in order for the material (often times pretty sloppy stuff!) to be retained in pile rather than run over the sides. I then add “brown”

material and then reapply the mulch I removed at the start and add more if necessary.

Every month or so, I will return to the end of the pile where new material is not being added to and turn the partially finished compost. It should be essentially free of most visible food scraps within a month or so of composting. Aside from the tremendous biological activity unseen by the naked eye, you may see arthropods like centipedes, beetles, and others depending on the stage of the pile. You may also see evidence of the microbiological activity in the pile, including fungal mycelium.

Once you have been composting for a while, you will get familiar with the phases of a pile including when it is hottest and when the best time to turn the pile. There are other approaches which are aimed at slower composting and no turning, but must be prepared properly so as to avoid creating anaerobic conditions.

FAQ's

Taken from Cornell Composting

<http://compost.css.cornell.edu/faq.html>

How long does it take?

The answer to this question ranges widely, depending on the process used, the compost ingredients, and how the system is managed. Perhaps most importantly, it depends on the intended use of the compost: many ingredients can be used as a mulch immediately, while it may take many months to achieve the stability required for germination of sensitive seedlings. Here we assume the compost will be incorporated in soil for general garden use.

Under optimum conditions, thermophilic composting with frequent mixing or turning can produce usable compost within a month or two. A worm bin requires three to six months to turn food scraps to compost, and an unmanaged leaf pile may take more than a year to break down.

In general, it is best to let compost "cure" for several months even after it appears finished. During this additional time, degradation occurs at a slower rate, resulting in a more chemically stable end product.

How can you tell when compost is finished?

Finished compost will no longer heat up, even after mixing. The initial ingredients are no longer recognizable, and what is left is an earthysmelling substance similar to a rich organic soil.

Is newspaper safe to compost? Are the inks toxic?

Newspaper is safe to compost, but it breaks down quite slowly because of its high lignin content. (Lignin is a substance found in the woody cell walls of plants, and it is highly resistant to decomposition).

Most newspapers today use water or soy-based inks. Although these may contain small amounts of toxic compounds, the trace levels are not of significant toxicological concern. Some caution should still be used with glossy magazines, which sometimes use heavy metal based inks to produce vivid colors.

Which kinds of pet wastes can safely be composted?

Wastes from classroom critters such as guinea pigs, rabbits, hamsters, or gerbils can be safely composted, along with the wood or paper shavings used in their cages. Droppings from dogs or cats should be avoided, though, because they may contain parasites or disease organisms harmful to humans.

Are inoculants, activators, or other additives a good idea?

Commercial inoculants are made up of dormant microorganisms. Although composting depends on microorganisms, you do not need to purchase them. They are already present, on the leaves, food scraps, and other materials you are composting. If you wish to augment these populations, addition of soil or finished compost will work as well as commercial inoculants.

Activators are designed to speed up the compost process by providing sugar or nitrogen to trigger rapid microbial growth. Normally an activator is not needed. If your mixture of materials to be composted has a C:N ratio higher than about 30:1, however, then addition of nitrogen will speed up the composting process. Lime is sometimes added to compost piles but is not necessary unless the initial pH is lower than about 5. If the compost process becomes anaerobic, the organic acids that are produced may lower the pH of the mixture. Aerating the system to return it to aerobic conditions will also cause the pH to return to a near-neutral range.

Can compost harm plants?

In general, compost is good for plants -- it helps build soil structure, retains moisture, increases soil organic matter, and provides a slow release of nutrients important for plant growth. If you use compost that has not adequately matured, however, it may cause chemical burns on plants or compete with them for use of soil nitrogen.

Fresh compost should not be used for starting sensitive seedlings such as tomatoes and peppers because they may succumb to damping-off disease. These seedlings should be started using a sterilized potting mixture.

If you use compost, do you still need fertilizer?

That depends on the nutrient requirements of your plants and the nutrient status of your soil. Compost does provide needed plant nutrients, but this occurs in small doses gradually over the course of the growing season. If your soil is particularly barren, or you are growing a crop that needs a burst of nitrogen soon after planting, then you may want to supplement with other types of fertilizer. Your best bet is to have the soil tested, then make your decision based on the test results and your intended plantings.

How do you keep rats away?

The best way to keep rodents and other animal pests from becoming a problem is to avoid creating conditions that will attract them. If you add meat or dairy products, or leave cooked foods such as pizza crusts lying around, you will be inviting rodents to a feast. On the other hand, if you stick to composting vegetation such as leaves and grass clippings, you will minimize your chance of hosting rodents. Adding fruit and vegetable scraps is safe as long as they are buried in the other compost ingredients and the system heats up so that the food wastes are quickly broken down.

What about flies?

Fruit flies or house flies can become a problem for indoor composters unless preventative steps are taken. If food scraps are composted, they should not be left exposed to the air. Instead, they should be covered by a layer of brown material such as soil, old compost, leaves, or wood shavings. In worm bins, food scraps should be buried in the bedding rather than placed on the surface.

If fruit flies do become a problem, you can make a simple but highly effective trap. Just take a soda bottle and remove the lid. Cut the bottle in half, and pour cider vinegar into the bottom half to a depth of about 2 centimeters. Then invert the top half of the bottle into the bottom half, forming a funnel leading into the bottle. Fruit flies will be attracted to the vinegar and will get trapped or drowned in bottle.

Will there be leachate?

Composting in containers does produce leachate, a rich organic soup called "compost tea" that is prized by gardeners. It is best to design your bioreactors to catch the leachate so that it will not make a mess or cause odor or fly problems. In the 2-can bioreactor, leachate is trapped by absorbent material in the outer can. The soda bottle bioreactors hold the leachate in the bottom of the bottle unless you make holes down low enough so that it drains into a dish or tray underneath.

Will it smell bad?

As long as your compost has enough airflow so that it remains aerobic, there may be some odor but it shouldn't be objectionable. If you do get foul-smelling odors, you should add more wood chips or other bulking agent, and mix the system to reaerate it. Ammonia odors may develop if you compost materials that are high in nitrogen, such as fresh grass clippings. To prevent this, you can calculate the appropriate mixture of materials to achieve the right carbon-to-nitrogen ratio. If you are using soda bottle bioreactors in a classroom, you can vent them through a window using flexible tubing to prevent any possibility of odor problems.



Consumer Waste Reduction Tips

It is not often pointed out that the famous three R's of "Reduce, Reuse, Recycle" are listed in order of their significance. Additionally, some people like to add "Refuse" as another R. Reducing waste streams have tremendous environmental benefits. Just as important, learning how to avoid dealing with materials that end up in the recycling bin or the trash can save you time and burden of dealing with unwanted materials.

Junk Mail

Junk mail exceeds first class mail by volume!¹

- Catalog Choice is a non-profit organization unaffiliated with the mail marketing industry
 - <https://www.catalogchoice.org/>
- DMAchoice™ is an online tool developed by the Data & Marketing Association to help you manage your mail
 - <https://dmachoice.thedma.org/>
- Choose email as preferred communication method when appropriate
- You can call a single number to get your name and address removed from the mailing lists circulated by all three credit agencies used for credit card and insurance offers (as well as that of a fourth company, Innovis).
 - 1-888-5-OPTOUT (1-888-567-8688)
 - www.optoutprescreen.com

Food Packaging

¹ <http://www.usjunkmail.com/consumer/factsOther.aspx>

Chemicals in food packaging can get into food²

- Buy in bulk
 - Find a grocer that offers bulk goods; bring your own jar/container; get it tared before filling; ensure is rung up properly at check-out
- Eat Fruits and Veggies/Cook from scratch
 - Reduce waste and avoid hidden sugars, salts, and preservatives/additives

Food Waste

Globally, over 1 billion tons of food are wasted each year³

- Learn how to Compost at Home (See Compost Fact Sheet)
- EPA Resources
 - <https://www.epa.gov/recycle/reducing-wasted-food-home>
- Support local organizations addressing this issue

Consumer Products

Manufacturers spend up to 7 cents to the dollar on packaging of products⁴

- Buy local!
- Save money - find it used!
- Choose brands who make an effort to reduce packaging
- Be sure to recycle whenever possible

² <https://www.foodpackagingforum.org/news/what-chemicals-are-in-plastic-packaging>

³ <http://www.fao.org/save-food/resources/keyfindings/en/>

⁴ <https://www.consumerreports.org/cro/magazine/2013/09/product-packaging/index.htm>

APPENDIX B: SOLID WASTE & RECYCLING -- WASTE HAULER COMPANY COMPARISONS

Company	Service Area	Website	Phone	Bin Size (Gal)	Provider bin or resident bin?	Trash Pick up Frequency	Recycling offered?
Republic	All of Wheat Ridge	https://www.republicservices.com/	3032861200	96	provided	weekly	Yes
Waste Management	All of Wheat Ridge	https://www.wm.com/us	3032788600	96	Provided - one time fee \$35	weekly	Yes
American Disposal	Services WR 80214; Not clear if you serve all of WR	https://www.americandisposal.com/colorado/for-home/curbside-collection	7203220500	96	provided	Friday weekly	Yes
Pro Disposal	most of wheat ridge; 80033, 80212-80214; https://dqr70fsc51odw.cloudfront.net/sites/4/2016/01/31091827/Service-Area-Map.jpg	https://www.prodisposal.net/	3037913827	customer provides; not to exceed 96 per bin; unlimited trash and recycling	No; resident provides	weekly	Yes

Company	Recycling frequency pickup	Service contract	Landfill transfer location/company	Recycling transfer location/company	Recyclables accepted?	Fees based on user volume or bin volume?	Other services
Republic	biweekly	quartly or annual	Landfills in Commerce City and Golden	Recycle ? 3rd party contract	https://www.republicservices.com/all-in-one-recycling?tab=local	No/see other	Bulk Large Item (furniture/lg yard debris) \$25 per
Waste Management	biweekly	no contract	Aurora or Commerce City	2400 W Union or 6901 Brighton transfer	http://www.wm.com/documents/pdfs/recycle-often-recycle-right.pdf	fee with standard bin	Bulk item \$45 per
American Disposal	biweekly	No contract	Several landfills - gun club and hampton	recycling; have location to separate it	https://www.americandisposal.com/colorado/recycling	Bin volume	Bulk item; charge depedning on what item; accept household kitchen and bathroom items; not furniture
Pro Disposal	biweekly	no contract; \$20 fee to cancel service; refunded from paid service	DAB; on 470	single stream; 3rd party separates	https://www.prodisposal.net/whats-recyclable-whats-not/	Flat fee; unlimited trash and recycling; must be in bin	bulk items extra fee; only accept household items; not furniture, mattresses, etc.

Company	Average cost	Billing type/frequency	Provide bulk pricing for multiple households on street/neighborhood?	Yard Waste
Republic	Quarterly T=56.85 R=9 Yearly T=227.4 R=36	quartly or yearly	Must be formal association	branches/small mix with trash; 4ft length 18in diameter 50lbs
Waste Management	T = base rate \$12/mo R=\$4/mo plus enviro and regulatroy fees "about" \$15/mo	quartly	Must be formal association - need to contact sales dept to discuss further	branches/small mix with trash; 4ft length 18in diameter 50lbs
American Disposal	No taxes/fuel charge, no cost to deliver containers; cost T= 59.85 3 months; 80.70 for three months	Set up on monthly; every three months; or yearly	Referred, free month; if you pay for year, you get 12th for free	do take yard waste and five bundles of branches per week; pick up cardboard boxes - no limit - must be broken down
Pro Disposal	flat rates, no enviromental fees. every 4 month or annual; T= 22.50 /mo; 247.50/year (1mo free w/ 12mo); T+R= 28.25 /mo; 310.75/yr (1mo free w/ 12mo)	bill one month ahead; pro rated.	Have a referral program; when sign up - give informaiton; and issue a month free on account	Accepts size limited bundled small branches similar to WM/Repub