



4 : Pathway to the CRO

The CRO calls for Eugene to reduce emissions by 790,000 MT CO₂e by 2030. Large emissions reductions from the transportation, building energy and fugitive emissions buckets are planned and more actions that cannot yet be measured are also discussed in this chapter. Combined, these actions provide a pathway to the CRO.

As Eugene continues its climate journey, it's important to understand how far the community has come and how far we need to go to achieve the community CRO goals. This chapter focuses on the data that tells Eugene's climate story.

The CRO includes two community-wide climate goals that focus on fossil fuel use reduction and greenhouse gas emissions reduction.

- By the year 2030, all businesses, individuals, and others living or working in the city collectively shall reduce the total (not per capita) use of fossil fuels by 50% compared to 2010 usage.
- By the year 2100, total community greenhouse gas emissions shall be reduced to an amount that is no more than the city of Eugene's average share of a global atmospheric greenhouse gas level of 350ppm, which is estimated in 2016 to require an annual average emission reduction level of 7.6%.

Long term, the CRO calls for Eugene to effectively reach carbon neutrality. This plan focuses on our 2030 interim goal, a 64% reduction in emissions, or a goal to reduce emissions by 790,000 MT CO₂e.

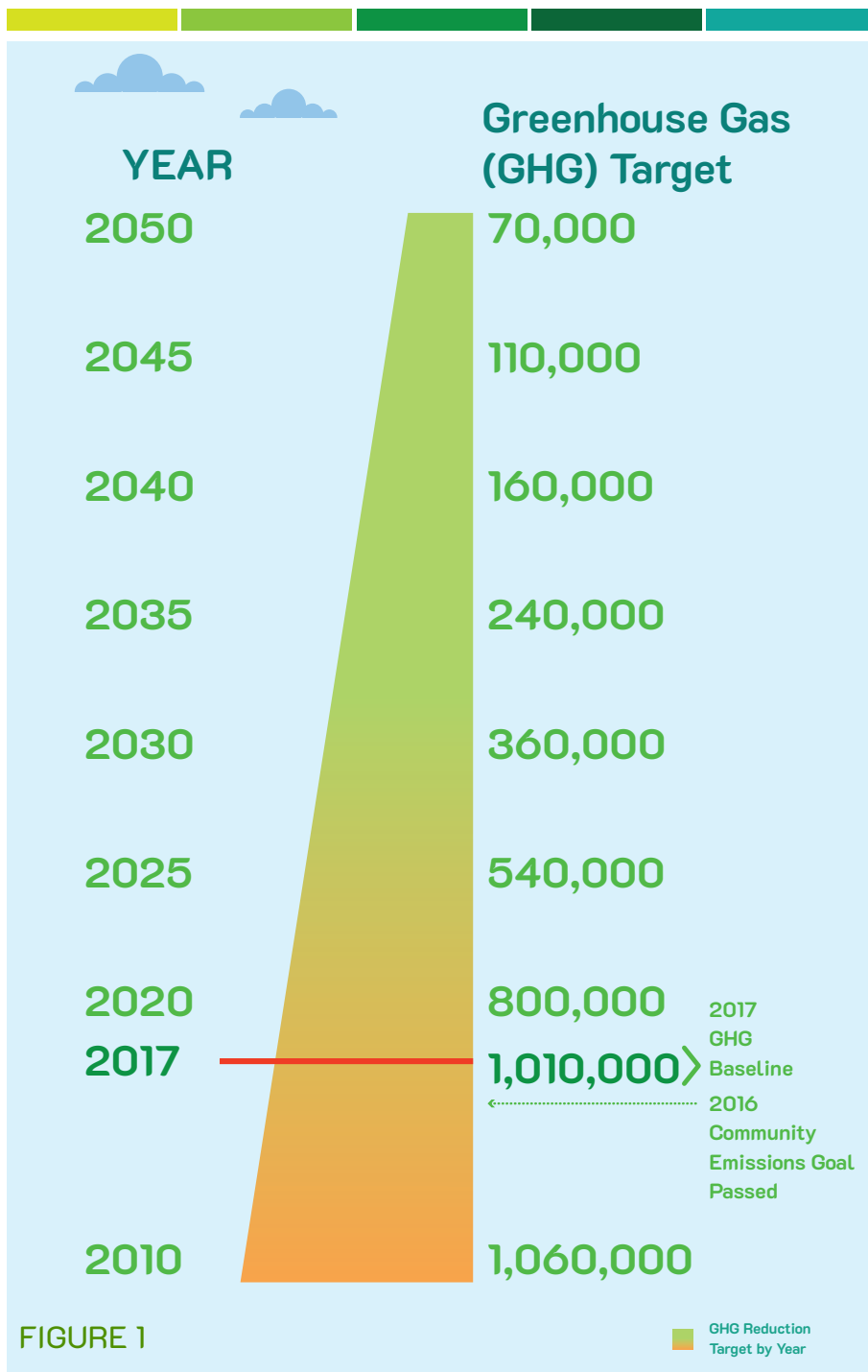


Figure 1: Climate Recovery Thermometer

Figure 1, the Climate Recovery Thermometer shows the community's progress so far and the progress needed to achieve the CRO goals. The width of the wedge illustrates the annual greenhouse gas emissions goal, starting with a baseline of 1,010,000 MT CO₂e in 2017, and narrowing to 70,000 MT CO₂e by 2050 (historical data from 2010 is provided for perspective.). Emissions targets are listed to the right of the wedge.

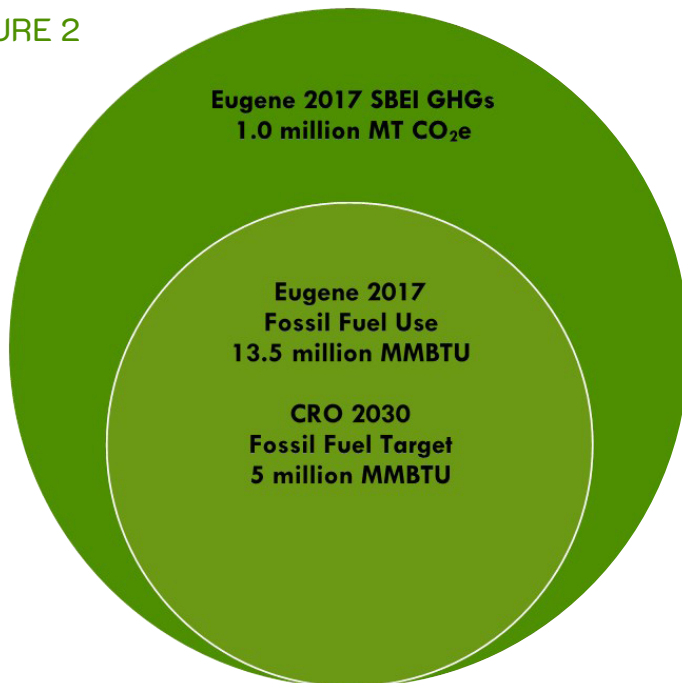
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Connecting Greenhouse Gas Emissions and Fossil Fuel Use

Most of this document will focus on the emissions reduction goal and omit direct mention of reducing fossil fuel use. The inner circle in figure 2 represents all local fossil fuel use in Eugene. Note that all fossil fuel use leads to greenhouse gas emissions. The outer circle represents all of Eugene's local emissions. About 85% of all local emissions are from fossil fuel use. Reducing fuel use reduces emissions.

FIGURE 2



Sector-Based Emissions Inventory (SBEI)

Fossil Fuel Emissions (CRO target)

Figure 2: 85% of our local emissions come from the use of transportation fuels and natural gas.

FIGURE 3

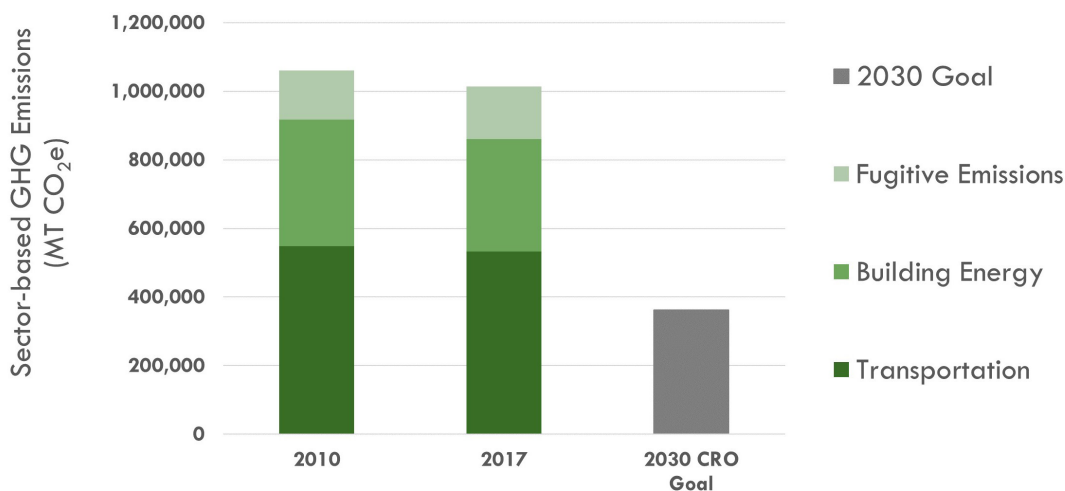


Figure 3 shows that Eugene's emissions have declined about 3 percent from 2010 to 2017, decreasing from 1.061 Million MT CO₂e in 2010 to 1.013 Million MT CO₂e in 2017. Decreases were seen in both Transportation and Building Energy. While not all emissions generated locally are coming from fossil energy, the largest portions are. In order to reduce emissions enough to meet the CRO goals, the community must reduce the use of fossil fuels.

Figure 3: Comparison of 2010 and 2017 GHGs to the 2030 CRO Goal

What is a MTCO₂e?

CO₂ is a gas. All gases have weight and take up space. A metric ton of CO₂ would occupy the same space as a typical 1,200 square foot ranch style house to the height of 13 feet.

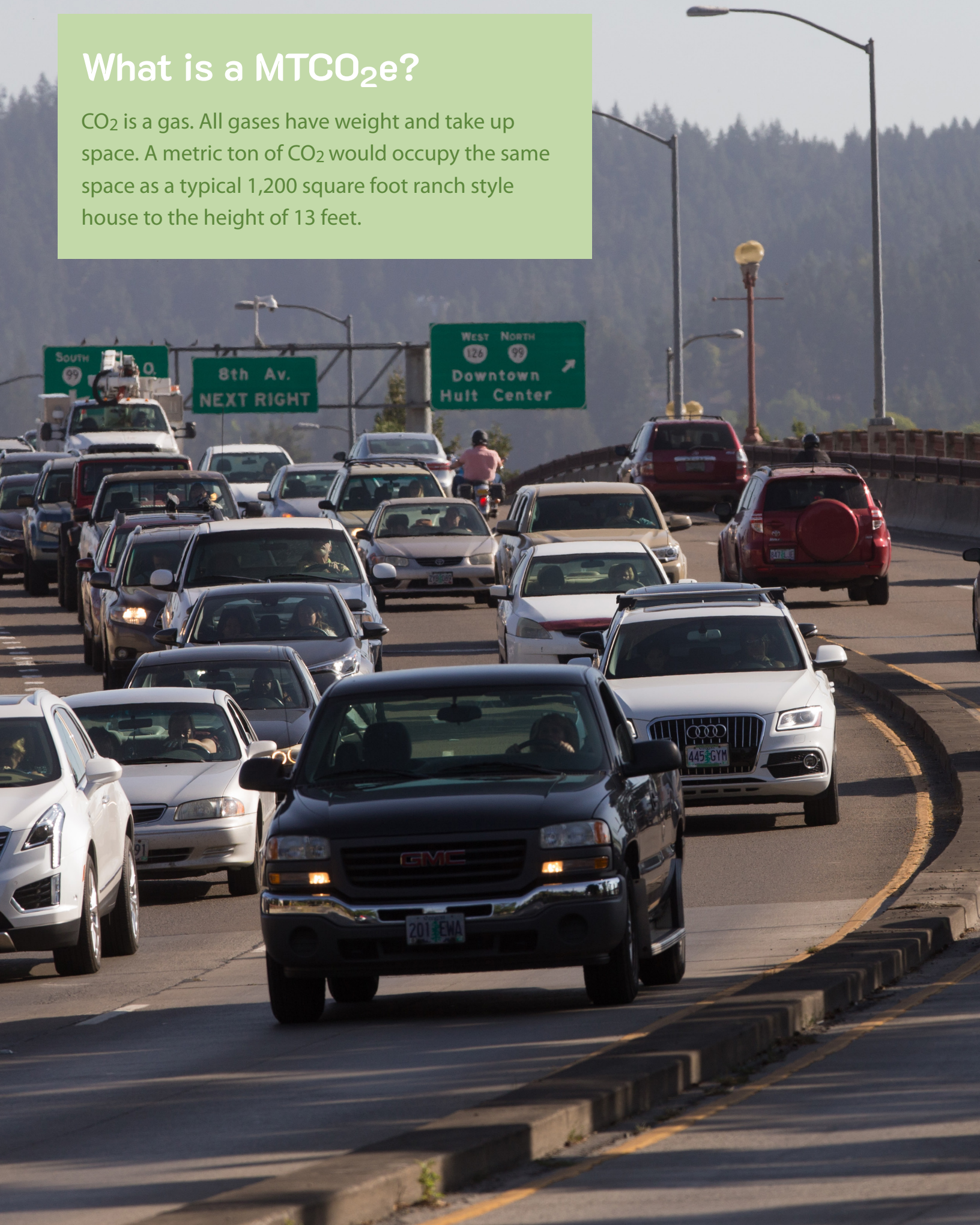


FIGURE 4

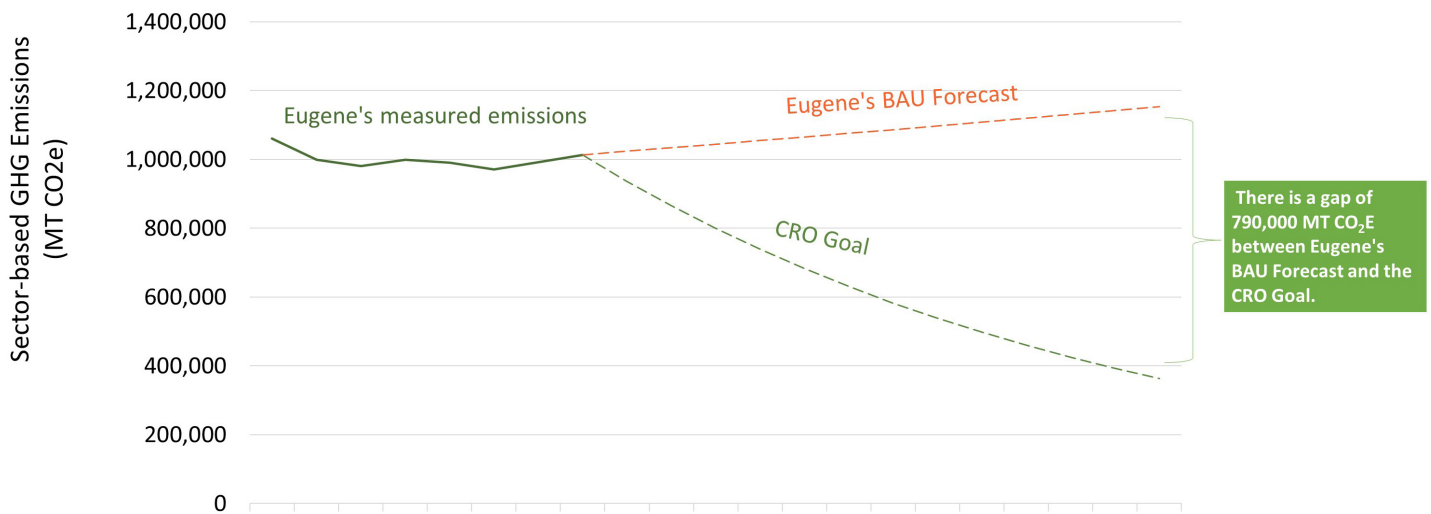
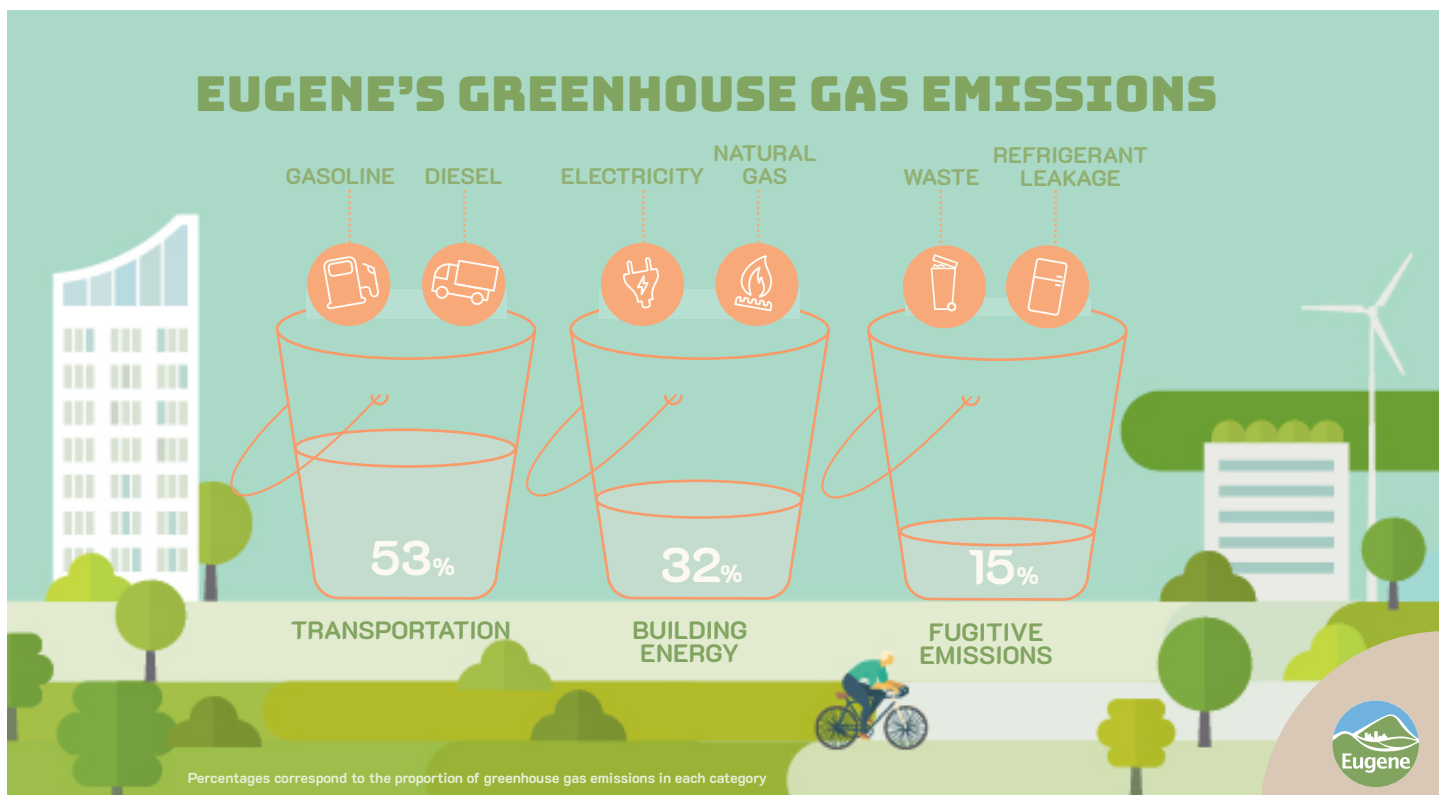


Figure 4 Eugene's emissions trend, business as usual forecast, and CRO Goal, 2010-2030

Figure 4 compares Eugene's past emissions, business as usual forecast and the CRO emissions reduction goal. The analysis uses 2017 as the baseline year, the first data collected after the community-wide CRO emissions goal was adopted by City Council in 2016. The solid green line shows Eugene's emissions have declined from 1.061 Million MT CO₂e in 2010 to 1.013 Million MT CO₂e between 2010 and 2017. The dashed orange line shows Eugene's business as usual (BAU) forecast, or Eugene's forecasted emissions if the community does nothing to address climate change. Emissions are expected to rise to 1,150,000 MT CO₂e using the BAU forecast. The dashed green line shows the CRO goal. Emissions need to decline from 1.013 Million MT CO₂e to 360,000 MT CO₂e by 2030 to achieve the CRO goal. That's a reduction of about 790,000 MT CO₂e annually.





Eugene's Emissions Buckets

In the sections that follow, local emissions are modeled using three “buckets” to represent the primary sources: transportation, building energy, and fugitive emissions. The buckets are introduced here to show the emissions reductions possible in each area. Chapter 5 contains more information on each bucket, including actions to address the emissions in each bucket. The buckets help illustrate specific sources of emissions and strategies to address those sources.

1



Transportation:

This bucket contains emissions primarily from the combustion of gasoline and diesel fuels used in vehicles in Eugene.

2



Building Energy:

This bucket contains the emissions associated primarily with electricity and natural gas used to heat and cool our homes, businesses, and stores in Eugene.

3



Fugitive Emissions:

This bucket contains all the emissions from waste and refrigerant leakage, including emissions from the landfill.

FIGURE 5

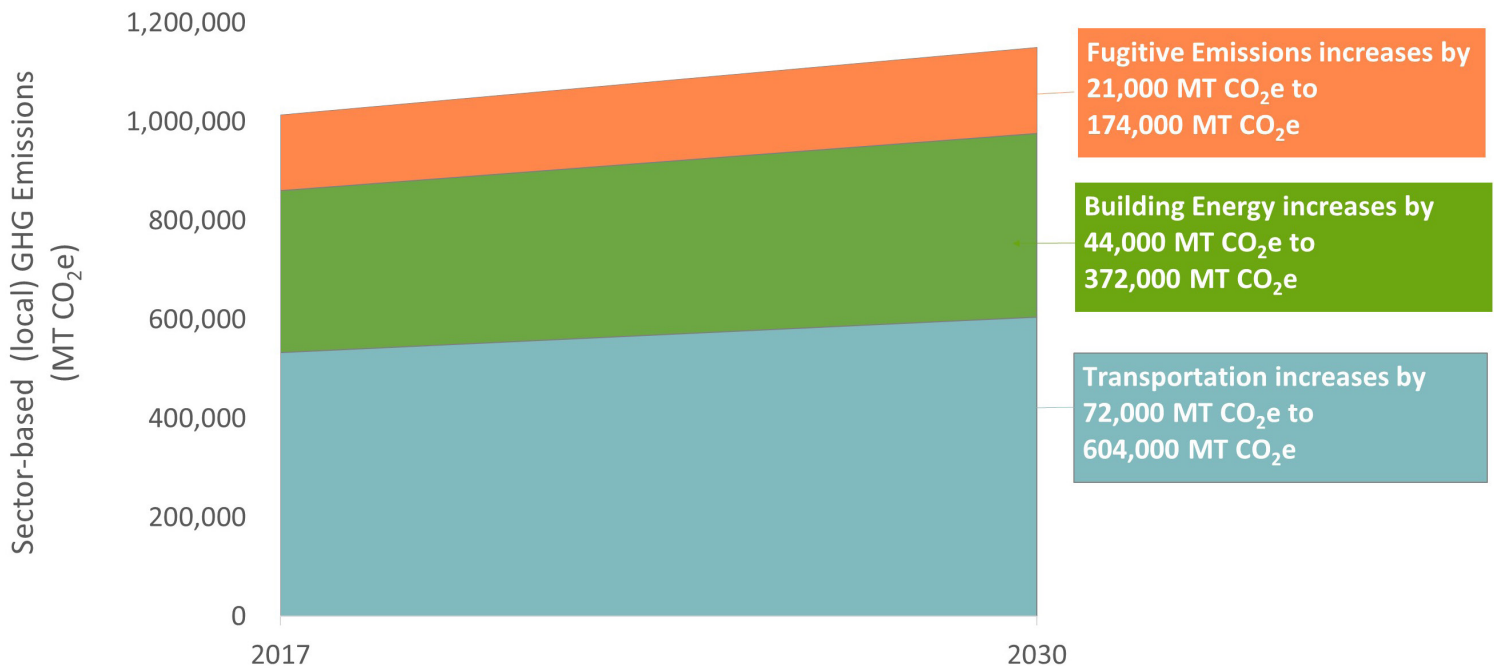


Figure 5: Sector-Based (Local) GHG Emissions Using the Business-As-Usual Forecast, 2017-2030

Figure 5 shows Eugene's business as usual (BAU) forecast divided into buckets. If Eugene continues on its current trajectory, emissions are expected to rise to 1,150,000 MT CO₂e using the BAU forecast. Breaking this down by bucket, transportation emissions would increase by 72,000 MT CO₂e to 604,000 MT CO₂e, Building Energy would increase by 44,000 MT CO₂e to 372,000 MT CO₂e and Fugitive Emissions would increase by 21,000 MT CO₂e to 174,000 MT CO₂e.*

**Note: The analysis that follows assumes that each bucket continues to make up the same proportion of emissions if Eugene continues on its current trajectory. Forecasts by bucket are beyond the scope of this project. This proportional analysis is one possible scenario, but is not intended convey a forecast of predicted emissions by bucket.*





Eugene Climate Collaborative High Impact Practices – Measured Contributions

The CAP2.0 process started by identifying climate actions that the City of Eugene and other Eugene Climate Collaborative (ECC) Partners would commit to implementing over the next 5-10 years. ECC partners, including the City of Eugene, contributed 115 actions to this plan. These actions are included in the Chapters 5, 6, and 7. Of these actions, 21 were identified as high impact practices (HIPs), the measured contributions of the ECC Partners that are expected to have a significant impact on emissions reductions. The project team estimated the forecasted emissions reduction for each HIP in Figures 7, 9 and 11 included later in this chapter. The HIPs represent the identified and measured contributions on the ECC Partners in reaching the CRO goals.

The following section breaks down each bar from Figure 5 into three components: total emissions given a business as usual approach, forecasted emission reductions from the HIPs, and the emissions level needed to achieve the CRO goal, shown as a 64% reduction within each bucket.

A High Impact Practice (HIP)

is an action that has been shown to greatly reduce carbon emissions or fossil fuel use.

The CAP2.0 includes 21 HIPs across the the transportation, building energy, and fugitive emissions buckets.



FIGURE 6

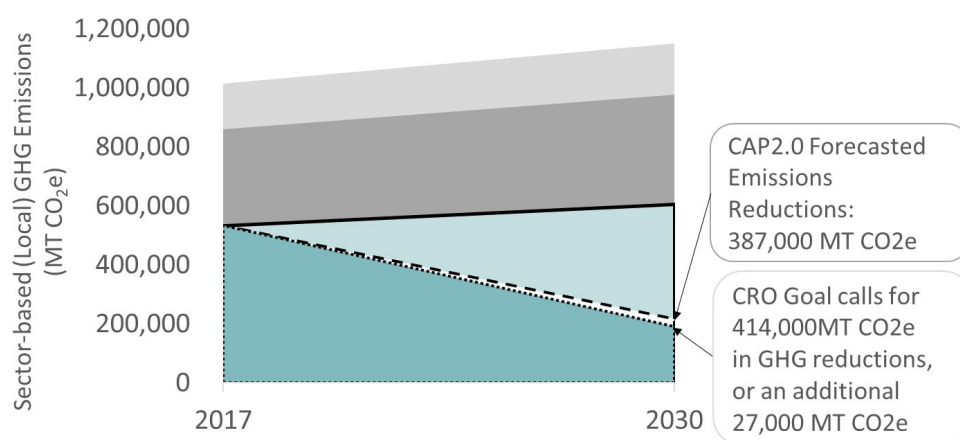


Figure 6: Transportation - BAU, ECC Reductions and CRO Goal, 2017-2030

Transportation

Transportation emissions make up 53% of local emissions in Eugene. These emissions are primarily from the combustion of gasoline and diesel fuels used in vehicles in Eugene. Using the BAU Forecast, transportation emissions will reach about 604,000 MT CO₂e by 2030 if no action is taken.

FIGURE 7

Transportation High Impact Practices (HIPs)	MT CO ₂ e
Eugene 2035 Transportation System Plan (Actions T1-T7)	(240,000)
Transportation System Plan Aligned with CRO Goals (Action T8)	(70,000)
Electric Vehicle Adoption - (Assumes 15,000 in addition to TSP) (Actions T20-T25)	(66,000)
LCC CAP - Student Commute (Action T41)	(6,000)
COE Internal CAP - Fleet (Action T26)	(3,000)
EWEB CAP - Fleet (Action T40)	(1,000)
LTD Bus Fleet & Fuels (Action T39)	(900)
LCC CAP - Owned Fleet (Action T40)	(100)
Total Transportation Reductions	(387,000)

*Descriptions of each HIP listed in figure 7 are included in later chapters. The action number is noted in the table.

Figure 7 summarizes the Transportation HIPs. Implementing the Eugene 2035 Transportation System Plan (TSP) is the largest emissions reduction action in this CAP2.0. The TSP is broken down into a suite of actions in the following chapter that include infrastructure projects and programs to promote active transportation, rail, electric vehicles and other ghg reduction strategies. Altogether, the TSP's forecasted reduction is 387,000 MT CO₂e. Aligning the TSP with the CRO goals and implementing Eugene's EV Strategy will lead to additional significant emissions reductions. Other transportation HIPs include fleet updates for COE, EWEB, LTD, and LCC, and LCC's work to reduce emissions from student commuter trips.



FIGURE 8

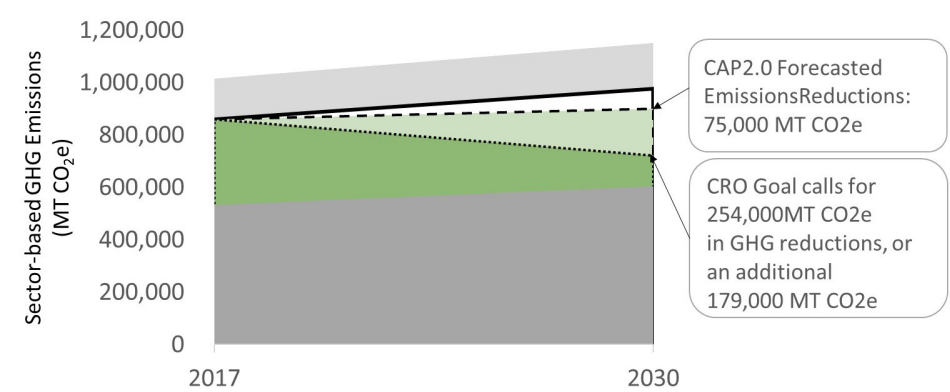


Figure 8: Building Energy - BAU, ECC Reductions and CRO Goal, 2017-2030

Building Energy

Building Energy emissions make up about 32% of local emissions in Eugene. These emissions primarily come from electricity and natural gas used to heat and cool our homes, businesses, and stores. Using the BAU forecast, building energy emissions will reach 372,000 MT CO₂e by 2030 if no action is taken.

FIGURE 9

Building Energy High Impact Practices (HIPs)	MT CO ₂ e
NWN Smart Energy Program (5% participation) (Action 13)	(17,000)
NWN Future Conservation / Energy Efficiency (Action B14)	(15,000)
Oregon Net-Zero Commercial Building Code (Action B23)	(12,300)
Home Energy Score and Commercial Benchmarking (Action B4)	(10,000)
MWMC / NWN Biomethane to natural gas pipeline (Action B15)	(7,000)
Oregon Net-Zero Residential Building Code (Action B23)	(6,400)
EWEB Future Energy Conservation (Action B11)	(2,500)
UO CAP - New/Existing Building Energy Efficiency (B17)	(1,900)
EWEB CAP - Facilities (Action B7)	(1,000)
COE Internal CAP - Facilities (Actions B6-B7)	(1,000)
LCC CAP - Facilities (B16)	(700)
Total Building Energy Reductions	(75,000)

*Descriptions of each HIP listed in the figure 9 are included in later chapters. The number of each action is noted in the table.

Figure 9 summarizes the Building Energy HIP actions. Northwest Natural's efforts to reduce emissions via the Smart Energy Program and Energy Efficiency have the largest forecasted impact in this bucket, estimated to reduce emissions by more than 30,000 MT CO₂e by 2030. Updates to the residential and commercial building code at the state level are also projected to lead to significant reductions at the local level, forecasted to achieve about a 20,000 MT CO₂e reduction. Implementing a Home Energy Score Program and Commercial Benchmarking program could reduce emissions by another 10,000 MT CO₂e and also help consumers have complete information about energy costs when finding a place to live or work. NWN and MWMC's partnership to capture renewable natural gas will lead to another 7,000 MT CO₂e savings. Finally, changes to facilities at the City, EWEB, LCC and UO will also help reduce emissions.



FIGURE 10

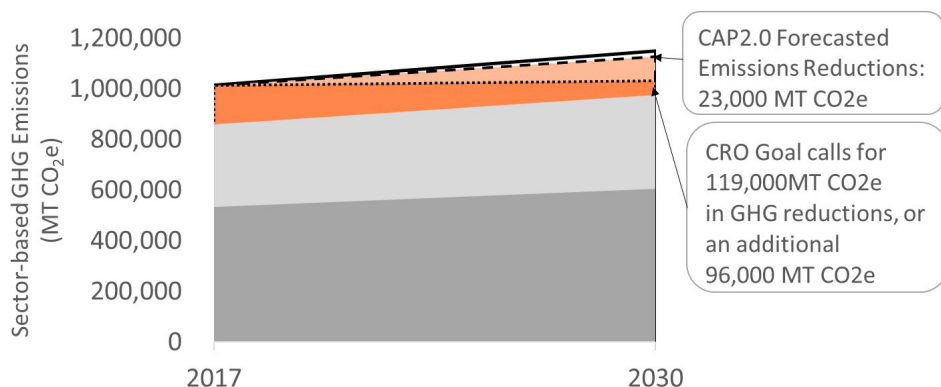


Figure 10: Fugitive Emissions - BAU, ECC Reductions and CRO Goal, 2017-2030

Fugitive Emissions

Fugitive Emissions comprise about 15% of local emissions in Eugene. Those emissions primarily come from waste and refrigerant leakage, including emissions from the landfill. Using the BAU forecast, fugitive emissions will reach out 175,000 MT CO₂e by 2030 if no action is taken.

FIGURE 11

Fugitive Emissions High Impact Practices (HIPs)	MT CO ₂ e
Reduce fugitive refrigerant loss - Facilities (Action F4)	(10,000)
Reduce fugitive refrigerant loss - Fleet (Action F4)	(10,000)
COE Food Waste Diversion to Composting (Action F1-F2)	(3,300)
Total Fugitive Emissions Reductions	(23,000)



Figure 11 shows that the HIP Fugitive Emission actions will reduce emissions by 23,000 MT CO₂e by 2030. To achieve the CRO goal with this bucket, Eugene will need to reduce building energy emissions by an additional 96,000 MT CO₂e.



FIGURE 12

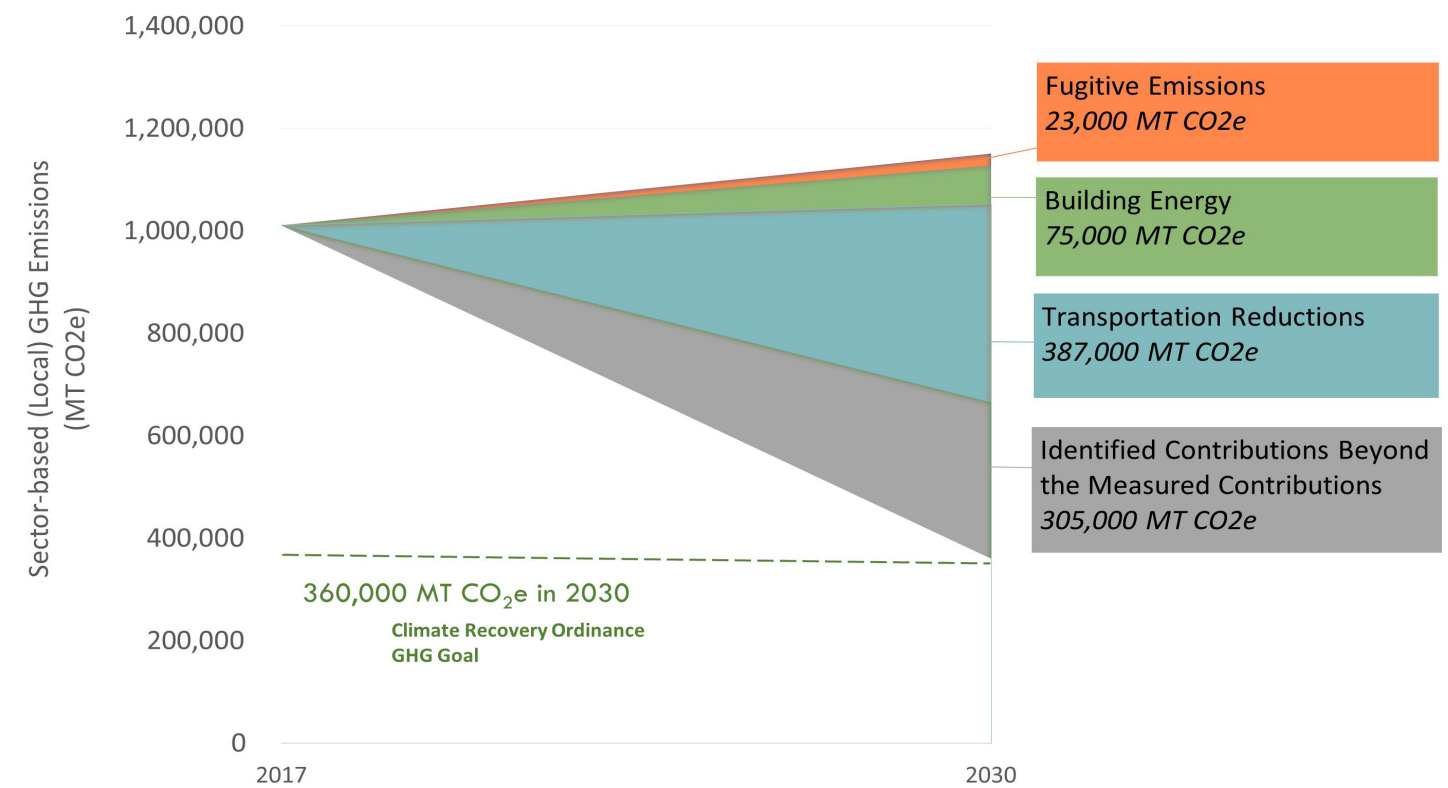


Figure 12: Pathway to the CRO, 2017-2030

Reaching the Goal

Figure 12 shows the measured contributions from ECC Partners that will reduce emissions from each bucket. Those contributions add up to 485,000 MT CO₂e in reductions by 2030. The gray wedge in Figure 12 shows that we still need an additional 305,000 MT CO₂e in reduction to meet the CRO goal.



Identified Contributions Beyond the Measured Contributions

Eugene needs to reduce emissions by an additional 305,000 MT CO₂e annually to reach the CRO goals. The following list includes three tangible options the City is committed to using to achieve the goals as necessary.

1. Northwest Natural Franchise and Climate Agreement

The City of Eugene and Northwest Natural are in negotiations to renew Northwest Natural's Right of Way Franchise Agreement. The agreement is expected to be finalized by the end of 2020. Under direction from City Council, the new agreement will include actions to reduce greenhouse gases from natural gas.

2. State and Federal Action

State and Federal Action is necessary in order for Eugene to reach the CRO targets. Over the past few years, the Oregon Legislature has worked on versions of ghg reduction bills through carbon reduction legislation. Governor Kate Brown

enacted Executive Order 20-04 in March of 2020 that directs Oregon state agencies to adopt rules and new policy that will reduce carbon emissions to be 50% below 1990 levels by 2030. The City continues to be engaged in how those rules and policies are adopted.

At the Federal level, the City joins forces with other jurisdictions and stakeholders to support passage of comprehensive legislation that reduces carbon emissions across all sectors. This includes reauthorization of the Surface Transportation Act to incentivize carbon smart investments in transit, transit-oriented development, and bike/pedestrian infrastructure. Additionally, the path forward to

meeting the CRO goals is dependent upon increasing the federal Corporate Average Fuel Economy (CAFÉ) standards and increased investments in electric vehicles.

3. Carbon Offsets

Carbon offsets are a reduction in emissions facilitated by purchasing ownership of ghg reductions from verified carbon offset projects. This is done to compensate for emissions the community has already emitted. The City will consider offsets as a bridge strategy to achieve emissions reductions outside the area while we work to reduce emission locally through other strategies.

Lastly, the City will continue to research and explore what other actions are needed to achieve the CRO goal. The community provided a list of ideas for more actions as a part of this CAP2.0 process. Those ideas can be found in Chapter 10 and will be used as source for future potential actions.