



Eugene City Council

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EUGENE CITY COUNCIL AGENDA

May 22, 2019

12:00 p.m. CITY COUNCIL WORK SESSION
Harris Hall, 125 East 8th Avenue
Eugene, Oregon 97401

Meeting of May 22, 2019;
Her Honor Mayor Lucy Vinis Presiding

Councilors

Betty Taylor, President
Mike Clark
Chris Pryor
Jennifer Yeh

Emily Semple, Vice President
Greg Evans
Claire Syrett
Alan Zelenka

12:00 p.m. EUGENE CITY COUNCIL WORK SESSION
Harris Hall, 125 East 8th Avenue
Eugene, Oregon 97401

- 1. WORK SESSION: Northwest Natural's Low Carbon Pathway for Eugene**
- 2. WORK SESSION: Franklin Boulevard Transformation Project Update**

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EUGENE CITY COUNCIL AGENDA ITEM SUMMARY



Work Session: Northwest Natural's Low Carbon Pathway for Eugene

Meeting Date: May 22, 2019
Department: Central Services
www.eugene-or.gov

Agenda Item Number: 1
Staff Contact: Ethan Nelson
Contact Telephone Number: 541-682-5245

ISSUE STATEMENT

Northwest Natural will meet with the City Council as follow-up to previous work sessions about NWN's franchise agreement with the City and Climate Action Plan 2.0 discussions.

BACKGROUND

The City's Climate Recovery Ordinance ([Ordinance No: 20567](#)) includes goals to 1) reduce greenhouse gas emissions by 7.6 percent annually through 2100 and 2) reduce fossil fuel use by 50 percent by 2030 compared to 2010 levels. The City is updating its Community CAP2.0 to create a roadmap to achieve the CRO goals.

As a part of the CAP2.0 process, Eugene Climate Collaborative partners—including NWN—have shared their greenhouse gas and fossil fuel reduction plans for the next 5-10 years. In addition, City Council is considering additional actions to regulate natural gas that will help the City reach its CRO goals as part of the CAP2.0 and the NWN Franchise Agreement renewal processes.

NWN's presentation will inform the City Council about the work that the company has underway now—including opportunities for energy efficiency and conservation, offsets, and energy supply from renewable natural gas and other innovations like renewable hydrogen.

As a reminder, the City Council has most recently held the following work sessions related to natural gas and climate recovery over the past 12 months.

- 01/30/19: Regulation of Natural Gas Work Session and CAP2.0 and 'Gaps' update. No Action.
- 01/16/19: Home Energy Score Program Work Session. Council agreed to include the HES program as an option in a more comprehensive CAP2.0 package for review later in the year.
- 11/14/18: NWN Gas Franchise Work Session and CAP Discussion. Council requested that staff develop a 'Gaps' Plan to address the projected shortfall between the CAP2.0 process and the goals identified in the CRO.
- 10/08/18: CAP2.0 update. No Action.
- 4/25/18: CAP2.0 update Work Session and EV-Ready Homes Discussion. No Action.

Triple Bottom Line Considerations

NWN representatives will address the Triple Bottom Line as part of their presentation.

PREVIOUS COUNCIL DIRECTION

At the November 14, 2018, [NWN Franchise Work Session](#) and CAP Discussion, City Council requested that staff develop a 'Gaps' Plan to address the projected shortfall between the CAP2.0 process and the goals identified in the CRO.

COUNCIL OPTIONS

This is an informational item. No action is requested.

CITY MANAGER'S RECOMMENDATION

This is an information item only.

SUGGESTED MOTION

No motion is provided.

ATTACHMENTS

- A. Fossil Fuel and Greenhouse Gas Reduction Forecast
- B. Recommendations for Additional Eugene Climate Actions to Meet Eugene's CRO Targets and Goals (Gap Analysis)

FOR MORE INFORMATION

Staff Contact: Ethan Nelson
Telephone: 541-682-5245
Staff E-Mail: enelson@eugene-or.gov

Eugene Community Climate Action Plan2.0

Fossil Fuel and Greenhouse Gas Reduction Forecast, 2018 – 2030

for Existing Plans, Policies, Programs and Opportunities for Additional Actions Towards CRO Goals

Draft Date: April 18, 2019. **Note:** Draft results presented are preliminary and are subject to change.

INTRODUCTION

The intent of this memo is to show how close the community gets to accomplishing the Climate Recovery Ordinance (CRO) fossil fuel targets and greenhouse gas (GHG) goals through existing and planned actions of the Large Lever Shareholders (LLS). Our team reviewed LLS plans, policies, and programs, and collected additional data to calculate fossil fuel and GHG emissions reductions. These are used to forecast emissions between 2018 and 2030 and compare that forecast to CRO targets. In addition, this memo also provides suggestions for additional community climate actions towards meeting the goals and targets defined in the CRO.

EUGENE CLIMATE RECOVERY ORDINANCE TARGETS AND GOALS

Updated in 2016, Eugene's Climate Recovery Ordinance includes the following goals and targets:

Section 6.675 Climate Recovery – **Climate Action Goals**

(3) 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.

(4) By the year 2100, total community greenhouse gas emissions shall be 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%**.

Section 6.685 Climate Recovery – **Targets & Benchmarks**

To reach the climate action goals, the city council adopts the targets and benchmarks contained in subsection (1) of this section, and the city will take other actions that the council determines are necessary, for achieving the targets, benchmarks and other climate action goals.

Targets and benchmarks:

Reduce fossil fuels 50% (from 2010 levels by 2030)

2020: 25% reduction from 2010

2025: 38% reduction from 2010

2030: 50% reduction from 2010

Annual Average, 2010 - 2030: 2.5% reduction

The CRO does not clearly define the inventory boundaries that align with CRO goals and targets (i.e. what geographic boundaries and type of emissions sources are included in the goal). Therefore, Good Company made a preliminary interpretation for the fossil fuel use targets and report based on both the

Eugene Community's Sector-based and Consumption-based GHG Inventories. *Note: Good Company's interpretation of the CRO GHG Goal should be considered preliminary and subject to change.*

For the purpose of the analysis conducted and presented in this memo the following was assumed:

- CRO fossil fuel targets are based on the fossil fuels combusted within the City's geographic boundary plus fossil fuels used to generate electricity that serves retail load within the City's Urban Growth Boundary.
- Fossil fuel use for electricity is calculated based on EWEB's current and planned (2017 IERP update) supply contracts (market-based electricity accounting). EWEB's utility-specific GHG emissions factor (GHGs / MWh) is provided by Oregon Department of Environmental Quality (ODEQ). ODEQ does not provide a corresponding fossil fuel use factor (MMBTU / MWh) for EWEB, so one was calculated using ODEQ's GHG factor and using natural gas electricity generation as a proxy.
- CRO GHG emissions reduction goals are calculated using 2016 as the baseline year with annual reductions of 7.6% applied to the prior year, not the baseline year; out to 2100. This rate of reduction is applied to sector-based and consumption-based emissions. Note: The fossil fuel use targets and GHG goals have different reduction rates therefore there are slight differences between fossil fuel use and Sector-based GHG graphics in this memo.

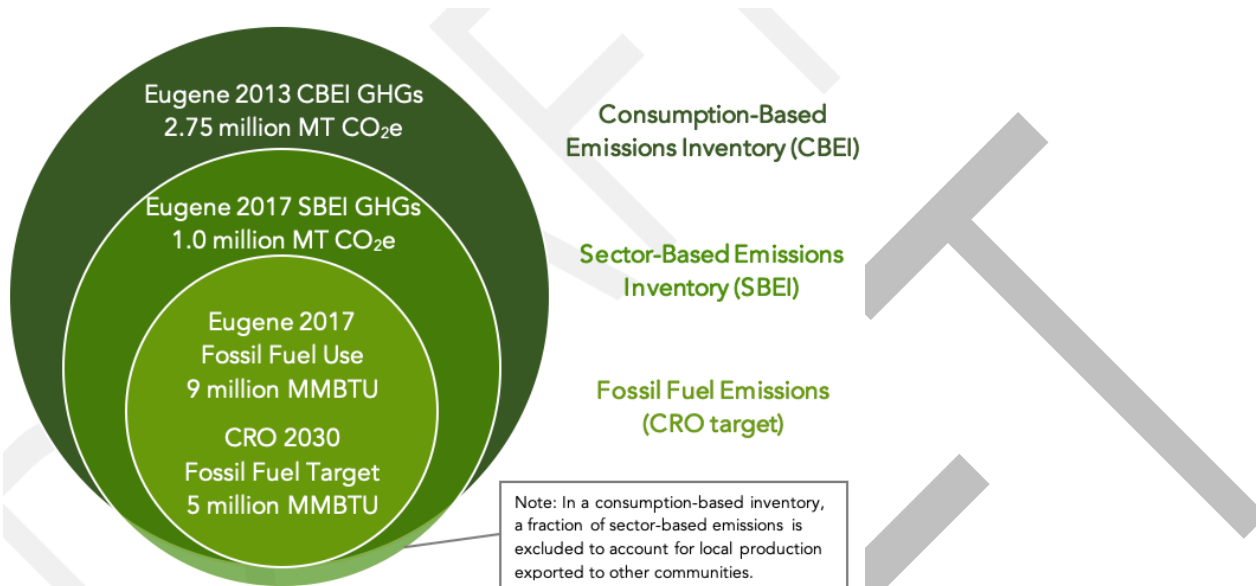
Relationship Between GHG Inventories and CRO Fossil Fuel Target

Figure 1 shows the relationship between the two types of GHG inventories conducted for the Eugene community (Sector-based and Consumption-based) and Eugene's CRO Fossil Fuel Target. As can be seen, the CRO Fossil Fuel Target (CRO Target) is a subset of the Sector-based emissions inventory (SBEI), which is a subset of the Consumption-based emissions inventory (CBEI). The two types of inventories conducted for Eugene is consistent with the State of Oregon's reporting approach. The two inventory types include:

- **Sector-based GHG Inventory** (or local GHG emissions) include GHGs from local fossil fuel combustion (homes and cars) in addition to other local sources of community GHG emissions (e.g. refrigerant gas leaks, landfill methane, etc.). Sector-based emissions are a subset of the largest boundary, Consumption-based emissions.
 - **Local fossil fuel use** is the biggest contributor to the communities Sector-based GHGs (~90%). This boundary is accounted for separately to align with the CRO's fossil fuel targets.
- **Consumption-based GHG Inventory** (or local + imported GHG emissions) include local, Sector-based emissions in addition to "imported" GHG emissions. The imported fraction accounts for GHGs generated elsewhere to produce and transport the goods and food consumed locally in Eugene. Consumption-based GHG inventories are more comprehensive view of the Eugene community's GHG emissions compared to a Sector-based GHG inventory but are also more difficult to accurately account for over time (to track progress towards goals) and the sources of emissions are outside of the Eugene community's direct control which makes taking action to reduce these actions more challenging.

As can be seen in Figure 1, imported, consumption-based emissions are more than 2x local emissions.

Figure 1: Relationship between GHG inventory types and local fossil fuel use.



Note: Circles in figure not to scale - see right-hand text for scale comparison.

EXISTING POLICY FORECAST FOR LOCAL EMISSIONS (SECTOR-BASED)

Figure 2 compares actual 2010 and 2017 community fossil fuel use and the 2030 forecast fossil fuel use after currently adopted plans are implemented to the 2030 CRO fossil fuel target. Existing plans are projected to achieve 40% of the CRO 2030 Target reductions compared to 2010 levels.

Figure 2: Comparison of actual and forecast fossil fuel use to CRO targets.

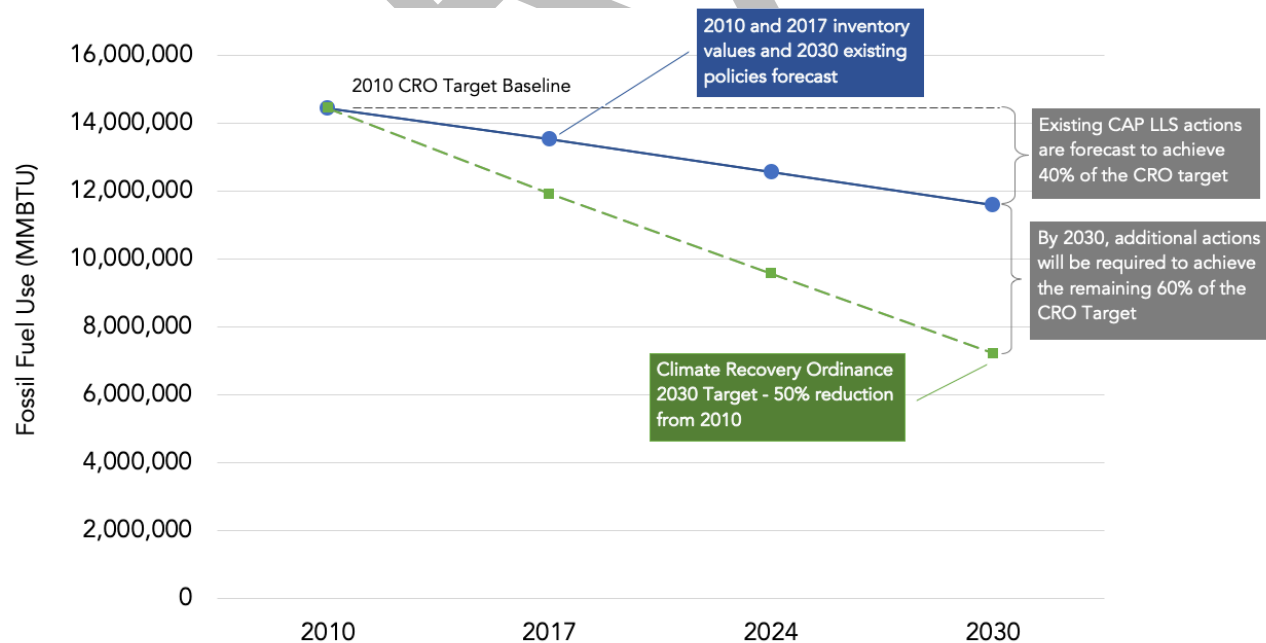


Figure 3 shows Eugene's Fossil Fuel Reduction Forecast for 2030 in greater detail than Figure 2. The y-axis minimum is set equal the CRO GHG 2030 Goal (green dashed line).

The first bar (grey) shows 2017 Fossil Fuel use (in millions of British thermal units, MMBTU). The second bar (blue) shows the increase of fossil fuel use based on a 'Business as Usual' (BAU) forecast of GHGs between 2018 and 2030, which represents the fossil fuel use effect of community population growth. In Eugene population is expected to increase by about 1% annually between 2018 and 2030. The third bar (grey) shows 2030 forecast emissions assuming 2017 GHG rates and additional population. The fourth bar (orange) shows the expected GHG reductions from actions identified through the CAP2.0 process. For details of included actions see Appendix A, Figure 12. The fifth bar (grey) shows the forecast of GHGs in 2030 post CAP2.0 implementation of existing policies.

As can be seen, existing CAP2.0 policies are not forecast to achieve CRO fossil fuel use targets. A "gap" remains equal to about 4.4 million MMBTU of fossil fuel energy use.

Figure 3: Comparison of actual and forecast fossil fuel use to CRO targets.

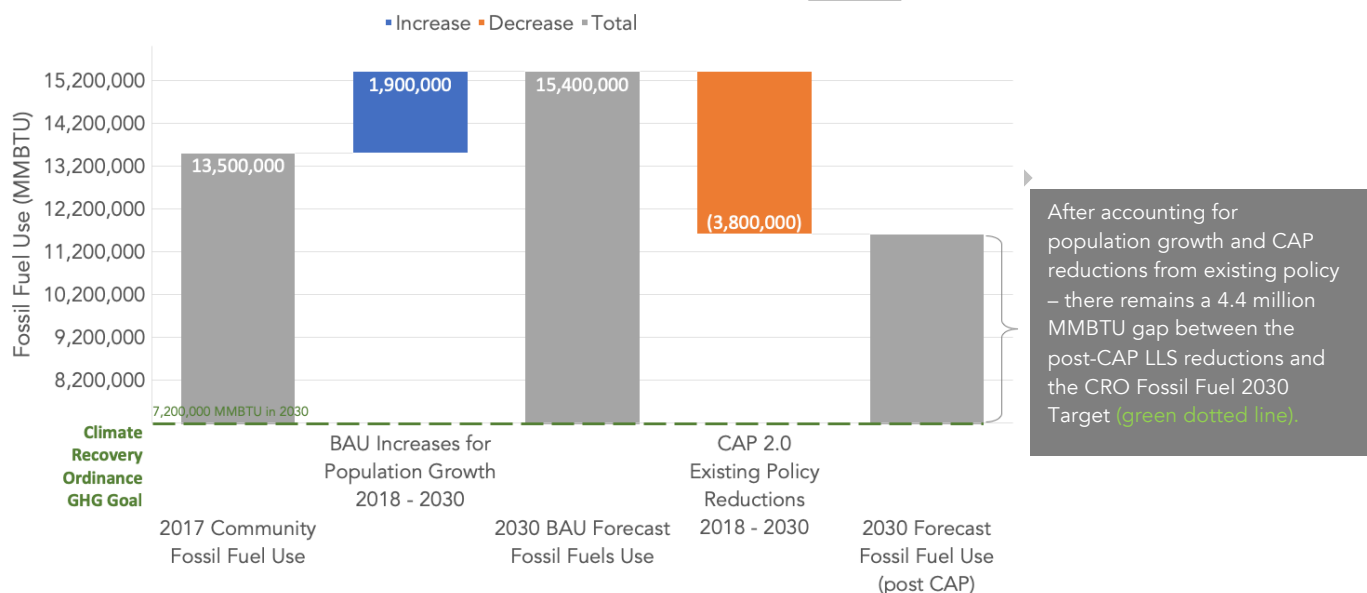


Figure 4 (next page) shows Eugene's GHG Reduction Forecast for local, Sector-based GHGs¹. The y-axis minimum is set equal to the CRO GHG 2030 Goal. The bars in Figure 4 are the same as Figure 3, except that they represent community GHG emissions instead of fossil fuel use (in metric tons of carbon dioxide equivalent, MT CO₂e).

The rates of reduction are different between the Targets (2.5% annually from a 2010 baseline) and the GHG goals (7.6% annually from a 2016 baseline). It's important to note that because the GHG goals are more aggressive than the fossil fuel targets, and that local sources of GHGs are greater than just fossil

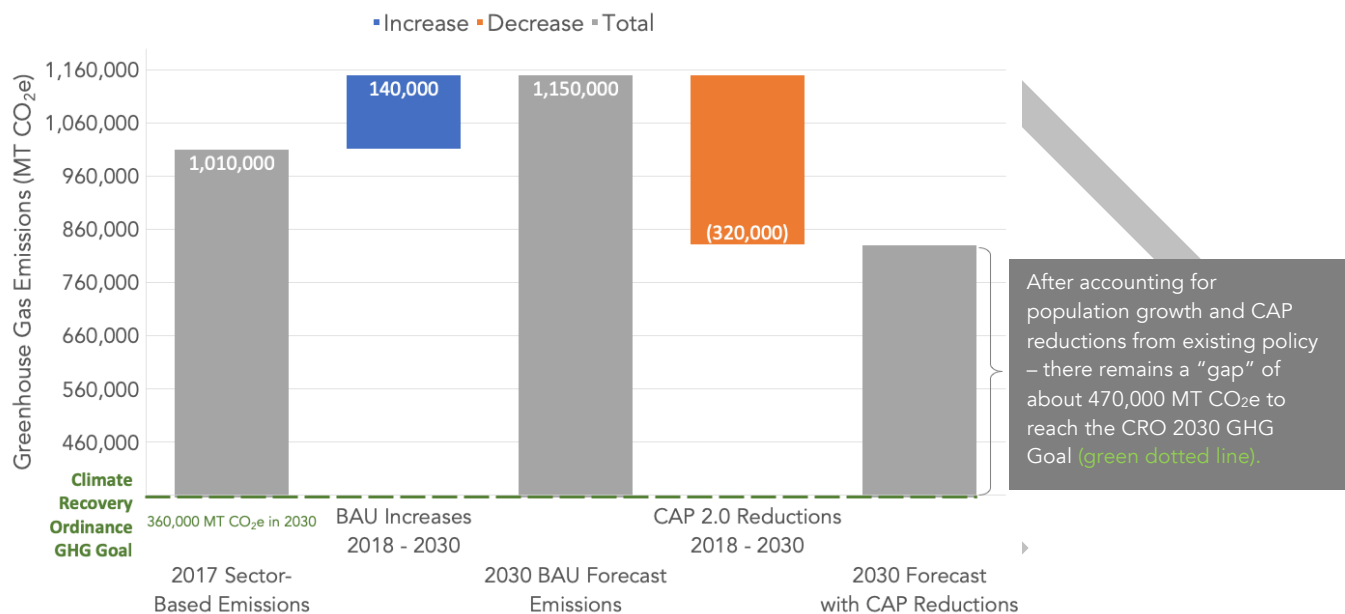
¹ For details see Eugene's 2017 Community GHG Inventory. Eugene's 2015 Community inventory may be downloaded at <https://www.eugene-or.gov/2170/Climate-Recovery-Resources>

fuel use (e.g. methane from waste disposal, fugitive refrigerant loss, etc.), progress towards the GHG goal is less than the CRO fossil fuel targets.

As can be seen, existing CAP2.0 policies are not forecast to achieve CRO GHG goals. A “gap” remains equal to about 470,000 MT CO₂e of local GHG emissions.

Figure 4: Sector-based emissions and existing policy forecast.

Note: GHG Goal value in figure based on Good Company CRO interpretation and is subject to change.



Note: GHG Goal value in figure based on Good Company CRO interpretation and is subject to change.

To address the gap, City of Eugene asked Good Company to recommend additional actions to achieve CRO goals and targets by 2030. See GC memo titled *Recommendations for Additional Eugene Climate Actions to Meet Eugene’s Climate Recovery Ordinance Targets and Goals* for a full list of recommended actions. City staff selected a group of Good Company’s recommended actions.

Figure 5 and Figure 6 show the “gap” actions and scenarios considered.

The top row of Figure 5 lists the local, Sector-based GHG and Fossil Fuel Use gaps (470,000 MT CO₂e and 4.4 million MMBTU respectively). These values correspond to the far right-hand grey bars on Figures 3 and 4. The lower rows in Figure 5 describe the action and scenario; corresponding GHG / fossil fuel reduction; and the percentage of the gap addressed by the action/scenario.

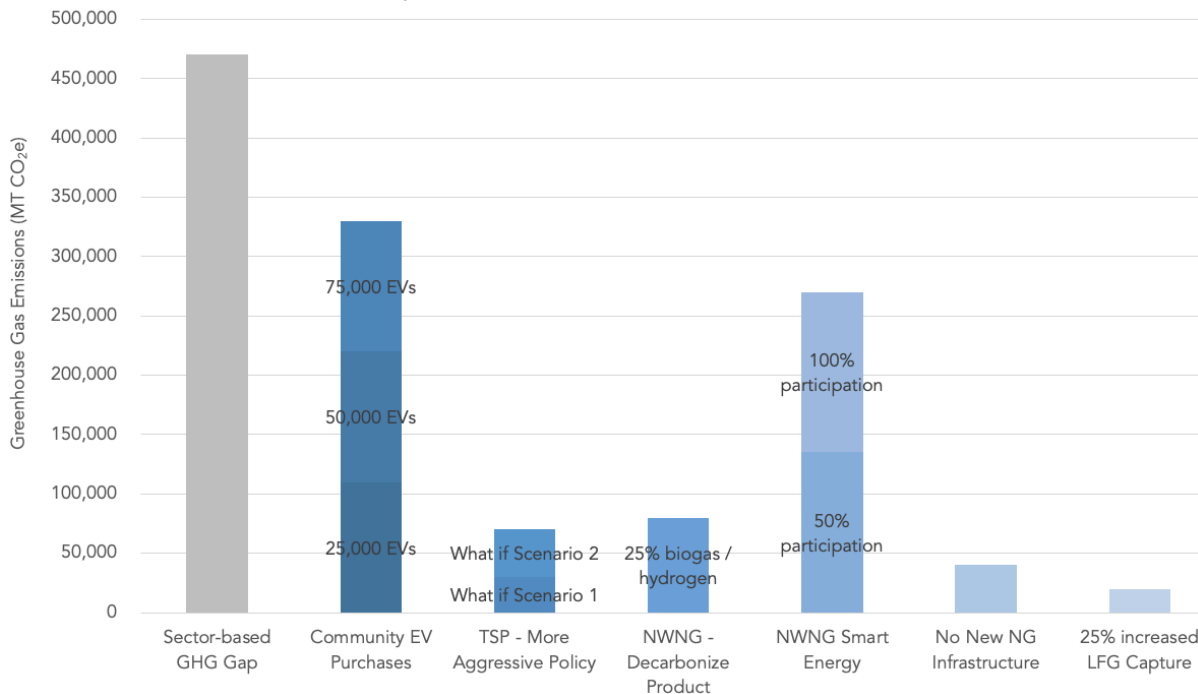
Figure 6 graphically presents the same information as Figure 5 for a select group of actions. The left-hand grey bar is equal to the local, Sector-based CRO gap. The other bars compare the scale of reduction potential for actions / scenarios to the gap. As can be seen, some of the larger actions include State of Oregon adoption of a Cap-and-Invest program; community adoption of electric vehicles; and community participation in Northwest Natural’s Smart Energy program.

Figure 5: Sector-based GHG and Fossil Fuel Use Gap compared to additional actions / scenarios.

Annual Gap - Sector-based GHGs and Fossil Fuel Use	470,000	MT CO2e	4,400,000	MMBTU
	MT CO2e	% of Gap	MMBTU	% of Gap
Building Actions				
Scenario 1: NWNG - 50% Reduced NG infrastructure investment	(20,000)	-4%	(300,000)	-7%
Scenario 2: NWNG - 100% Reduced NG infrastructure investment	(40,000)	-9%	(700,000)	-16%
Scenario 1: NWNG SmartEnergy - 50% participation	(140,000)	-30%	*Action does not reduce FF use	
Scenario 2: NWNG SmartEnergy - 100% participation	(270,000)	-57%	*Action does not reduce FF use	
Scenario 1: NG Appliance Fee, 2020 - 2030	(130,000)	-28%	(2,400,000)	-55%
Scenario 1: Reduce Carbon Intensity of NWNG Product (25% biomethane)	(80,000)	-17%	(1,500,000)	-34%
Scenario 2: Reduce Carbon Intensity of NWNG Product (50% biomethane)	(160,000)	-34%	(2,900,000)	-66%
Scenario 1: Prohibit Financial Incentives for New NG Equipment	More information required			
Scenario 1: Increase franchise fee to fuel switch away from NG	Not modeled per staff guidance			
Scenario 1: Home Energy Score	(10,000)	-2%	80,000	2%
Transportation Actions				
Scenario 1: TSP What if 1 (in addition to Adopted)	(30,000)	-6%	(400,000)	-9%
Scenario 2: TSP What if 2 (in addition to Adopted)	(70,000)	-15%	(1,000,000)	-23%
Scenario 1: 25,000 additional EVs beyond TSP	(110,000)	-23%	(1,300,000)	-30%
Scenario 2: 50,000 additional EVs beyond TSP	(220,000)	-47%	(2,500,000)	-57%
Scenario 3: 75,000 additional EVs beyond TSP	(330,000)	-70%	(3,800,000)	-86%
Produce Use Actions				
Scenario 1: Refrigerant recharge fee to purchase carbon offsets for 100% of GHGs	(80,000)	-17%	*Action does not reduce FF use	
Waste Actions				
Scenario 1: Landfill gas capture efficiency increases by 10%	(10,000)	-2%	*Action does not reduce FF use	
Scenario 2: Landfill gas capture efficiency increases by 25%	(20,000)	-4%		
Overarching Action				
Scenario 1: Oregon Cap-and-Invest (Draft SB 557, Section 4 goals) Note: An Oregon Cap-and-Invest program would reduce climate impacts in Eugene using many of the same LLS actions already considered and counted in the LLS forecast. Therefore GHG reductions a Cap-and-Invest policy should not be viewed as wholly independent and additive to existing LLS actions. The Cap-and-Invest program will be complimentary - providing regulatory and financial support towards climate action, but the reductions presented in this row are not 100% additive to reductions previously presented for existing LLS actions.	(430,000)	Indeterminate. Cap-and-Invest reductions overlap with other LLS and gap filling actions	(7,200,000)	Indeterminate. Cap-and-Invest reductions overlap with other LLS and gap filling actions
	*This column shows max cumulative potential in 2030		*This column shows max cumulative potential in 2030	

Figure 6: Sector-based GHG and Fossil Fuel Use Gap compared to additional actions / scenarios.

CRO Gap (Existing Policy Reductions - CRO Goal) = 470,000 MT CO₂e

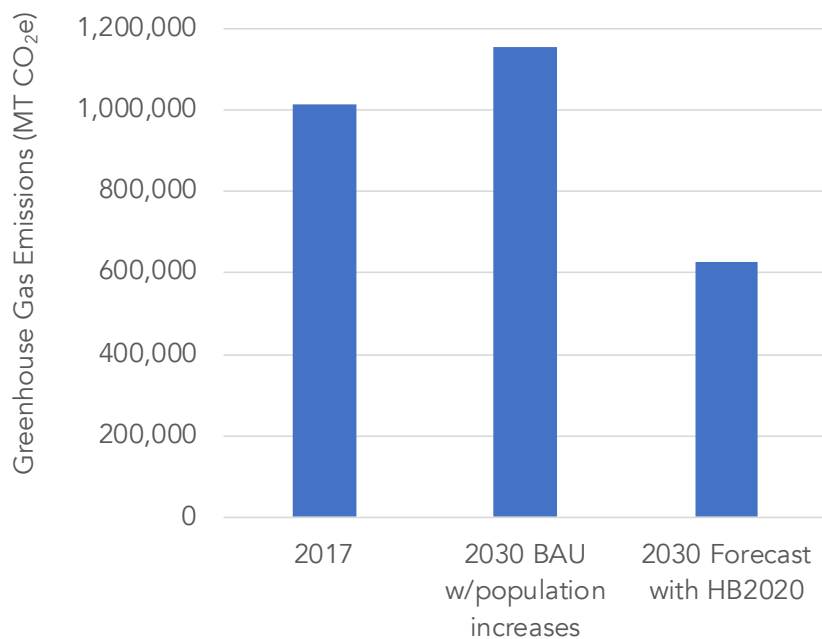


Note: NWNG's Smart Energy program reductions are only applicable to NWNG direct customers and does not include "transport" gas. NWNG "transports" through its pipelines for Eugene natural gas customers who contract with gas suppliers other than NWNG.

Figure 7 presents projected 2030 Eugene GHGs, post-implementation of HB2020. HB2020 is actively in the legislative process as of this report writing. The introduced text², and specifically the goals in Section 1, are used to estimate GHG reductions. To estimate reduction for Eugene it is assumed that citizens of Eugene (on a per capita) basis will be required to reduce emissions at the same rate and in the same amount as all other Oregonians towards the goals stated in Section 1 of HB2020.

The scaling below *may* overestimate the mitigation reductions due to assumed electricity emissions reduction potential based on higher statewide electricity emissions than EWEB's very-low emissions electricity. Alternatively, the Cap and Trade program, *could* recognize Eugene's unique lower carbon electricity sector and finance deeper mitigations for transportation than in other communities to ensure the overall reductions per capita are roughly even around the state.

Figure 7: Eugene's 2017 sector-based GHGs and estimated effects in 2030 post-HB2020 implementation. Note: The following figure is meant to provide a sense of scale comparison to show how emissions reductions from HB2020 might impact Eugene's community emissions. This comparison is preliminary and should not be used for community planning purposes until the final bill language is available.



EXISTING POLICY FORECAST FOR LOCAL+IMPORTED EMISSIONS (CONSUMPTION-BASED)

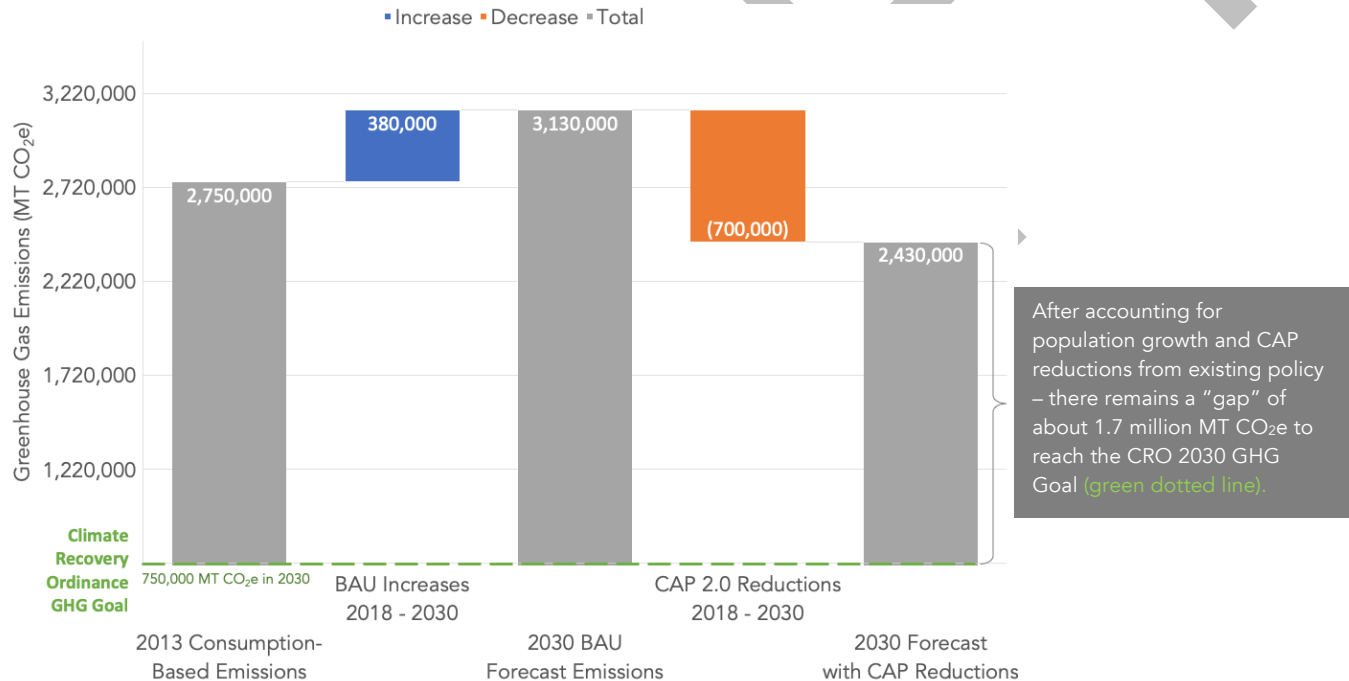
Figure 8 shows Eugene's 2013 consumption-based emissions of goods and food; projected growth based on 2017 emissions rates and population increases; and forecast reductions from existing, already adopted policy. Note that Figures 3 and 4 (Sector-based) are subsets and included in the consumption-based emissions presented in Figure 7 (Consumption-based).

² Downloaded 4/2019 from <https://olis.leg.state.or.us/liz/2019R1/Measures/Overview/HB2020>.

As can be seen, existing CAP2.0 policies are not forecast to achieve CRO GHG goals. A “gap” remains equal to about 1.7 million MT CO₂e of local + imported GHG emissions. As the City and community consider the consumption-based GHG gap, it’s important to reiterate that the “imported” fraction of consumption-based GHGs are produced largely outside of the Eugene community’s control.

While there are point of purchase decisions and actions that members of the Eugene community can make to reduce the community’s consumption-based emissions (such as buying used products instead of new or choosing lower-carbon foods) – there is no currently known way to reduce Eugene consumption-based emissions to zero outside of domestic and international climate policies. If the City / community were to select consumption-based GHGs as the basis for CRO goals it will require the community devising a means to influence or control the energy systems in other states and counties to reduce the GHGs generated in those places as they produce goods for consumption here. It’s important to recognize that there isn’t any precedent for consumption-based emissions being used as the basis for community goal setting or action planning.

Figure 8: Consumption-based emissions and existing policy forecast.



Note: GHG Goal value in figure based on Good Company CRO interpretation and is subject to change.

Figure 9 and Figure 10 show the “gap” actions and scenarios considered for consumption-based emissions. Since Sector-based GHGs are a subset of Consumption-based emissions, previously discussed Sector-based actions are also a means to reduce Consumption-based emissions.

The top row of Figure 9 lists the Consumption-based GHG gap (1.7 million MT CO₂e). This value corresponds to the far right-hand grey bar on Figure 7. The lower rows describe the action and scenario; corresponding GHG reduction; and the percentage of the gap addressed by the action/scenario.

Figure 9: Sector-based GHG and Fossil Fuel Use Gap compared to additional actions / scenarios.

Annual Gap - Consumption-based GHG Gap	1,700,000 MT CO ₂ e	MT CO ₂ e % of Gap
Consumption and Materials Management Actions		
Reduce the average size of new single-family homes (from 2,300 to 1,600 sqft.)	(50,000)	-3%
Eugene optimizes the solid waste system to minimize GHGs	(90,000)	-5%
Scenario 1: 25% of community reduces meat and dairy by 25%	(10,000)	-1%
Scenario 2: 50% of community reduces meat and dairy by 50%	(40,000)	-2%
Scenario 3: 100% of community reduces meat and dairy by 100%	(170,000)	-10%
Community reduces 100% of edible food waste	(50,000)	-3%
Community reduces the carbon intensity of concrete products	Data not readily available	
U.S. Remains in Paris Accord	(550,000)	-32%

*This column shows
max cumulative
potential in 2030

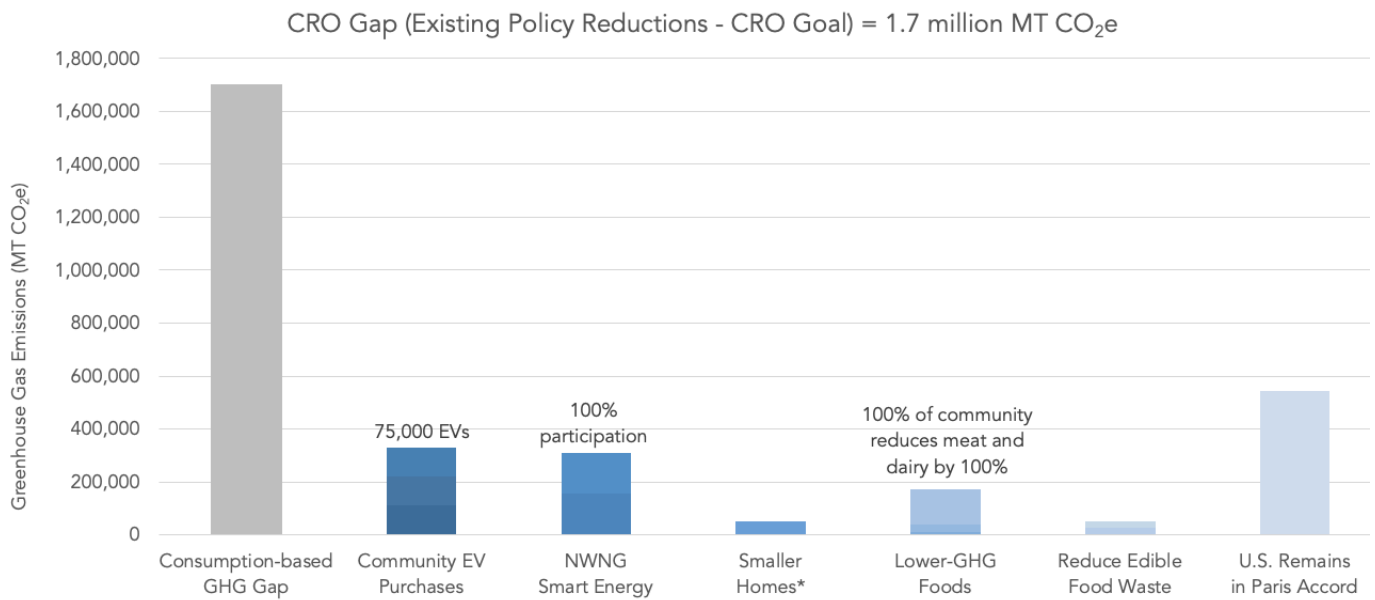
Figure 10 graphically presents the same information as Figure 9 (for a select group of actions). The left-hand grey bar is equal to the local, Sector-based CRO gap. The other bars compare the scale of reduction potential for actions / scenarios to the gap. As can be seen, some of the larger actions include U.S. remaining in the Paris Climate Accord; community adoption of electric vehicles; community participation in Northwest Natural's Smart Energy program; lower-GHG food choices; and reduction in the amount of edible food waste.

One action of note on Figure 10, is U.S. participation in the Paris Climate Accord and the significance of domestic and international climate policy in general. The U.S. is currently in the process of withdrawing from the Paris Climate Accord. Oregon imports about 44% of its goods from U.S. states outside of Oregon.³ If the U.S. were to remain in the Accord, the reductions required by the Accord would have had the effect of reducing GHGs from U.S. energy systems thereby lowering the amount of GHGs emitted during the production of the goods imported from other U.S. states into Eugene.

Eugene's consumption-based emissions are primarily a function of the fuels used to generate the energy used to produce goods imported to Eugene for local consumption. Because Eugene has limited control over other states' Energy systems – Federal climate policy, or state level policy in other states is required if Eugene is to reach CRO goals for consumption-based emissions.

³ Oregon's Greenhouse Gas Emissions through 2015. Available for download at <https://www.oregon.gov/deq/FilterDocs/OregonGHGreport.pdf>.

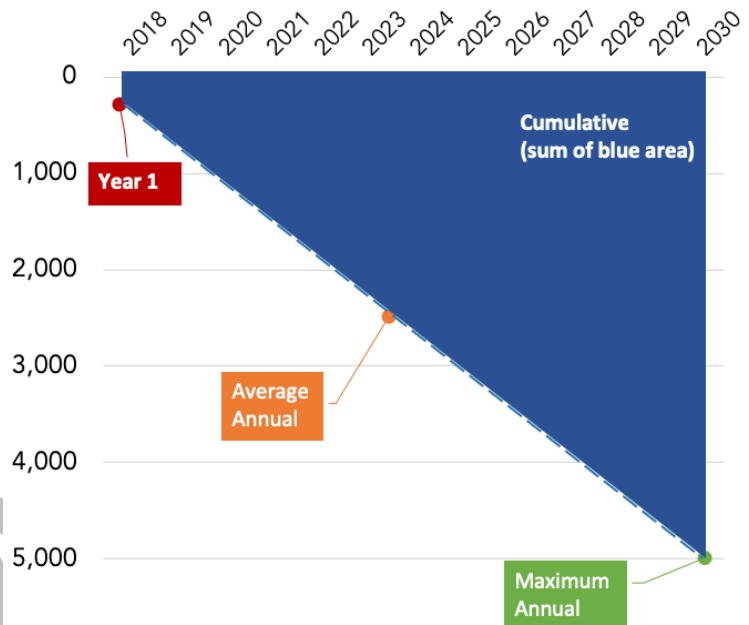
Figure 10: Sector-based GHG and Fossil Fuel Use Gap compared to additional actions / scenarios.



APPENDIX A – EXISTING POLICY FORECAST DETAILS

Fossil fuel and GHG reductions are calculated in four ways for this memo, which are illustrated in Figure 11 and presented in Figure 12. “Year 1” represents reductions expected during the first year of project implementation. “Average Annual” is the annual average of reductions over the life of the action. “Maximum Annual” is the maximum annual reduction in 2030. For some projects, like wastewater biomethane to the natural gas pipeline, Year 1, Average, and Maximum values will all be very similar because almost all of the benefit is realized the moment the system is turned on and every year after for the action. Other actions accumulate over time, such as annual work done to improve the energy efficiency of our community’s buildings. These will have different Year 1 and Maximum values because budgets require that the actions are implemented over time.

Figure 11: Illustration of GHG reduction over time.



The following documents and tools were used to calculate reductions. Additional details in Appendix B.

- City of Eugene’s 2010 and 2017 Sector-based Community Greenhouse Gas Inventories
- City of Eugene’s 2013 Consumption-based Community Greenhouse Gas Inventory
- Portland State University – Population estimates and Lane County Population Forecast
- EWEB Integrated Energy Resource Plan – 2017 update
- NWN’s 2018 Integrated Resource Plan
- Eugene 2035 Transportation System Plan (specifically a memo titled “Eugene Transportation System Plan as it Relates to Climate Recovery Ordinance Goals”)
- City of Eugene, Fleet Internal Climate Action Plan
- City of Eugene, Facilities GHG Reduction Analysis
- Oregon Senate Bill 263 (2015) – Updates to Opportunity to Recycle Act
- City of Eugene / Good Company GHG inventory and analysis for road materials
- Lane County data related to landfill diversion rates and plans for 2025 goal
- Environmental Protection Agency, Waste Reduction Model (v14)
- Interviews with City’s staff related to urban forestry
- Oregon’s Waste Composition Study for Lane County
- Good Company GHG analysis of wastewater biomethane utilization pathways for MWMC
- City of Eugene Love Food Not Waste program data
- Lane Community College, DRAFT 2018 Climate Action Plan
- Envision Eugene, Residential housing projections
- Oregon Department of Environmental Quality, Oregon’s 2018 Greenhouse Gas Inventory
- Oregon Department of Environmental Quality, EWEB emissions coefficients
- Environmental Protection Agency, eGRID 2016

- Energy Information Administration's 2017 Annual Energy Outlook
- Many other organizational documents were reviewed but were not used for reduction calculations. Thank you to everyone who provided information.

Figure 12: Detailed summary of existing plans, by lead organization. For some of the line items, like the Eugene TSP, implementation will be delivered by multiple agencies.

Large Lever Shareholders Plans and Strategy Bundles	Greenhouse Gas (MT CO ₂ e)				Fossil Fuel Use (MMBTU)			
	Year 1 Potential	Average Annual 2018 - 2030	Maximum Potential, 2030	Cumulative Potential 2018 - 2030	Year 1 Potential	Average Annual 2018 - 2030	Maximum Potential, 2030	Cumulative Potential 2018 - 2030
Eugene Water and Electric Board (EWEB)								
Future Energy Conservation (market-based)	(200)	(1,000)	(2,500)	(17,000)	(3,700)	(14,000)	(27,000)	(190,000)
Future Energy Conservation (location-based)	(4,000)	(22,000)	(44,000)	(290,000)	Not applicable to CRO target			
Operational Fleet / Facilities Climate Action	(1,000)	(1,000)	(2,000)	(8,000)	(7,000)	(8,000)	(20,000)	(290,000)
Northwest Natural (NWN)								
Future Conservation (cost effective resources only)	(1,100)	(8,000)	(15,000)	(100,000)	(21,000)	(150,000)	(280,000)	(1,960,000)
Cost Effective	(1,100)	(8,000)	(15,000)	(100,000)	(21,000)	(150,000)	(280,000)	(1,960,000)
Achievable (85% of total)	(1,500)	(16,000)	(19,000)	(140,000)	(28,000)	(200,000)	(360,000)	(2,540,000)
Technical Total	(1,700)	(5,201)	(23,000)	(160,000)	(33,000)	(230,000)	(430,000)	(2,990,000)
Smart Energy Program (5% participation rate)	(3,000)	(12,000)	(15,000)	(155,000)	Not applicable to CRO target			
Operational Reduction of Local Distribution Loss	(30)	(200)	(400)	(2,500)	(50)	(300)	(2,500)	(17,000)
City of Eugene								
Eugene 2035 Transportation System Plan*	(10,000)	(90,000)	(240,000)	(1,200,000)	(160,000)	(1,100,000)	(2,800,000)	(26,600,000)
Envision Eugene	Included in Eugene TSP modeling and Future Conservation							
Food Materials Management	(5,300)	(5,900)	(6,000)	(74,200)	Not applicable to CRO target			
Food Waste Composting	(2,900)	(3,200)	(3,300)	(40,500)				
Food Waste Avoidance	(2,400)	(2,700)	(2,700)	(33,700)				
City Operational Reductions	(1,200)	(2,000)	(4,000)	(34,000)	(23,400)	(40,000)	(57,000)	(520,000)
City Operational - Facilities	(1,000)	(1,000)	(1,000)	(15,000)	(21,000)	(22,000)	(23,000)	(281,000)
City Operational - Fleet	(200)	(1,000)	(3,000)	(19,000)	(3,000)	(18,000)	(34,000)	(239,000)
Roads - Materials Management	(1,300)	(1,300)	(1,300)	(16,700)	(5,100)	(5,100)	(5,100)	(66,000)
Urban Forest	(340)	(2,100)	(3,700)	(27,500)	Not applicable to CRO target			
30% Tree Canopy Goal	(300)	(2,000)	(3,000)	(26,000)				
World Track and Field - Tree Planting Offsets	(40)	(200)	(300)	(2,000)				
Lane County								
Material Management - 63% Recovery by 2035	(87,000)	(88,000)	(90,000)	(440,000)	Not applicable to CRO target			
Electric Vehicles in County Fleet	Not calculated. See Eugene > Fleet for sense of scale							
Roads - Materials Management	Not calculated. See Eugene > Roads for sense of scale							
INFO ONLY: Anaerobic Digestion of Food Waste	(2,900)	(3,000)	(3,100)	(18,000)	(40,000)	(41,000)	(42,000)	(246,000)
4J and Bethel School Districts								
Food Waste Composting	Supports and included with City of Eugene > Food				0	0	0	0
Bus Fleet & Fuels	Included in Eugene TSP modeling				Included in Eugene TSP modeling			
Lane Community College								
INFO ONLY: DRAFT Climate Action Plan Goals	(610)	(6,400)	(7,900)	(55,000)	(9,900)	(104,000)	(129,000)	(900,000)
Facilities	(100)	(600)	(700)	(5,200)	(1,100)	(11,200)	(13,900)	(97,300)
Owned Fleet	(10)	(70)	(80)	(590)	(120)	(1,290)	(1,590)	(11,160)
Student Commute	(500)	(4,800)	(6,000)	(42,000)	(8,700)	(91,300)	(113,100)	(791,500)
University of Oregon								
Climate Action Plan Goals	UO CAP is being updated							
Metropolitan Wastewater Management								
Biogas to NG pipeline (project with NWN)	(6,000)	(5,000)	(7,000)	(69,000)	(82,000)	(86,000)	(90,000)	(944,000)
Lane Transit District								
Fleet & Fuels (electric bus substitution)	(100)	(400)	(900)	(4,700)	(11,700)	(49,600)	(49,600)	(645,300)
Route Efficiency	LTD to analyze in 2019							
State of Oregon								
Net-Zero Residential Building Code	(1,300)	(1,500)	(6,400)	(19,300)	(27,400)	(31,600)	(136,800)	(410,400)
Net-Zero Commercial Building Code	(2,500)	(2,800)	(12,300)	(36,800)	(40,900)	(47,200)	(204,700)	(614,000)
Clean Fuels Program	Included in Eugene TSP modeling				Not applicable to CRO target			
International Agreements								
Paris Climate Accord (reductions by trading partners)	(20,000)	(150,000)	(270,000)	(1,890,000)	Not applicable to CRO target			

*Note – Eugene TSP incorporates aspects of other LLS plans and policies (e.g. LTD planning, Envision Eugene, etc.)

APPENDIX B: METHODOLOGY AND ASSUMPTIONS

Large Lever Shareholder	Methodology Description	Assumptions
Existing Policy / Strategy / Action		
Eugene Water and Electric Board (EWEB)		
Future Conservation (Energy Efficiency)	Energy reduction calculated based on 2017 Annual IERP Update - Figure 1. The Figure shows that EWEB's future conservation will maintain electricity use at current levels through 2035. Roughly a 7% reduction from EWEB's 2017 BAU forecast. GHGs were calculated using both market-based and location-based emissions factors. Market-based factors are provided by Oregon Department of Environmental Quality based on EWEB supply contracts that serve local load for calendar years 2010 - 2016. The average of EWEB's 2010 - 2016 factors are used to project reductions from 2018 - 2030. Location-based factors are taken from U.S. Energy Information Administration's 2017 Annual Energy Outlook - 2050 projections for the Northwest Power Pool regional electricity grid.	<ul style="list-style-type: none"> - The average of EWEB's 2010 - 2016 market-based emissions factors is used to calculate GHG / fossil fuel reductions from future conservation for the years 2018 - 2030. - Fossil fuel factor for EWEB is calculated using the market-based factor (from ODEQ) and an assumption that the electricity is generated 100% from natural gas. ODEQ does not currently provide fossil fuel factors for specific utilities, only GHG factors.
Operational Climate Action (EWEB-owned buildings and vehicles)	EWEB's operational climate goals (50% fossil fuel reduction by 2030, and carbon neutral by 2050) are used in combination with EWEB's 2017 inventory to calculate future emissions reductions. EWEB's most recent GHG inventory shows they are ahead of schedule towards meeting their goals (http://www.eweb.org/Documents/Community/2017-ghg-inventory.PDF)	<ul style="list-style-type: none"> - EWEB achieves goals as written assuming average annual percentage progress towards the goals. - Future reductions exclude those from EWEB's decommissioning of the steam plant as those reductions are already accounted for in the 2017 Eugene Community Inventory. - Future reductions assume EWEB will continue purchasing low-carbon vehicle fuels at current rates as well as take on additional actions in order to reach EWEB's state fossil fuel and GHG related goals.
Northwest Natural Gas (NWN)		
Future Conservation (Energy Efficiency)	NWN provided Energy Trust of Oregon reporting on conservation in Eugene for the period 2011 - 2017. Average annual conservation over that period is 214,000 therms per year. This average is applied to the 2018 - 2030 period to estimate additional future conservation. The range over this period was between 100,000 - 380,000 therms. On average ETO efficiency projects serve about 550 residential households, 35 commercial businesses, and 2 large-scale industrial / agricultural customers. ETO savings are assumed to be "cost effective" measures (i.e. those that pay for themselves and save money over the life of the equipment). There are also additional types of future conservation potential assessed by ETO called "achievable" and "technical". ETO's 2014 Resource Assessment is used to estimate additional local conservation resources that are more expensive than the "cost effective" category, but still represent an opportunity to reduce emissions and fossil fuel use.	<ul style="list-style-type: none"> - Assumes future conservation is implemented at a similar rate as the 2011 - 2017 period. - See NWN's 2018 Integrated Resource Plan for additional details https://www.nwnatural.com/uploadedFiles/NW%20Natural%202018%20IRP.pdf
Smart Energy Program (5% participation)	2030 maximum reduction GHG / fossil fuel potential is calculated as 5% of annual emissions as projected for 2030. 2030 projected natural gas use is estimated with 2017 community natural gas use data scaled up 1% annually for the period 2018 - 2030 to account for projected population growth. Eugene community natural gas-related GHGs / fossil fuel use are taken from Eugene's 2017 Community Greenhouse Gas Inventory. Population growth projections are taken from Portland State University's Lane County Coordinated Population Forecast, 2015-2065.	<ul style="list-style-type: none"> - Community participation rate is 5% in 2030. This assumption was discussed and agreed upon with NWN staff for the purpose of the existing policy forecast.
Operational Climate Action (5% upstream GHG reduction)	NWN Climate Action Plan / Goal includes actions to plans to reduce upstream leakage of natural gas by 5%. This goal is applied to GHGs/fossil fuel use for the local distribution system as well as for the entire supply chain. Local distribution system loss estimated is reported by NWN as 0.0061%. As a benchmark EDF User Guide for Natural Gas Leakage Rate Modeling Tool suggests an average value of 0.3% (https://www.edf.org/sites/default/files/US-Natural-Gas-Leakage-Model-User-Guide.pdf). So NWN's local distribution system has far less leakage than the average. Total natural gas supply chain loss emissions are estimated using factors from ICLEI's U.S. Community GHG Inventory Protocol (i.e. upstream NG emissions are equal to about 12% of tailpipe emissions. 2030 projected natural gas use is estimated with 2017 community natural gas use data scaled up 1% annually for the period 2018 - 2030 to account for projected population growth. Eugene community natural gas-related GHGs / fossil fuel use are taken from Eugene's 2017 Community Greenhouse Gas Inventory. Population growth projections are taken from Portland State University's Lane County Coordinated Population Forecast, 2015-2065.	<ul style="list-style-type: none"> - Upstream emissions are calculated using the rates and sources previously described in methodology. - NWN 5% planned reduction is assumed to be implemented in equal shares over the period of 17 years, 2019 - 2035.

Large Lever Shareholder Existing Policy / Strategy / Action	Methodology Description	Assumptions
City of Eugene		
Envision Eugene / Transportation System Plan	The CAP forecast uses the results from a previous modeling effort for Eugene's 2035 Transportation System Plan conducted by Lane Council of Governments, City of Eugene, and Oregon Department of Transportation staff. These results were presented in a 2/8/2018 memo titled <i>Eugene Transportation System Plan as it Relates to Climate Recovery Ordinance Goals</i> . The TSP modeling work considered three scenarios; 1) Adopted plans, 2) What if 1, and 3) What if #2. The "What if" scenarios consider similar actions as the adopted plans at a larger-scale and faster rate. Modeling results provided projected reductions for both GHGs and Fossil Fuel use.	- Assumptions are identical to those documented in the ODOT modeling analysis
Food Waste - Avoiding Edible Waste and Composting	Oregon Department of Environmental Quality's Waste Composition Study provides food waste quantities including the edible fraction of food waste (https://www.oregon.gov/deq/mm/Pages/Waste-Composition-Study.aspx). EPA's WARM v14 (waste reduction model) is used to calculate GHG reductions (https://www.epa.gov/warm/versions-waste-reduction-model-warm#WARM%20Tool%20V14).	- 25% of food waste will be recovered from the waste stream by 2030 to comply with the requirements of Oregon SB263. - 5% of edible food waste is avoided by the community at large as a result of City / County public outreach and education along with other related programming.
Operational Climate Action - Fleet	Good Company worked with City of Eugene to develop the <i>2018 Fleet Division and Fire Department Internal Climate Action Plan</i> . The plan focuses first use of telematics to drive operational efficiency and substitution of electricity for gasoline and renewable diesel for fossil fuel diesel. As of 2017 the City is about 60% towards the CRO's 2020 GHG goals and 90% towards the 2030 fossil fuel goals. The Fleet ICAP details the projected GHG and fossil fuel savings for various actions considered for the plan as well as the final scenario and actions selected to reach CRO goals and targets.	- See Fleet ICAP report for findings and details of modeling methodologies and assumptions (https://www.eugene-or.gov/DocumentCenter/View/38211).
Operational Climate Action - Facilities	Solarc worked with City of Eugene to develop the <i>2017 Facilities Greenhouse Gas Reduction Analysis</i> . Opportunities considered in the Analysis include energy efficiency, solar energy, as well as substitution of heat pumps for existing natural gas boilers. The Analysis includes projections for GHG and fossil fuel reductions as well as first costs and operational costs associated with a variety of actions to achieve CRO goals and targets.	- See Facilities ICAP report for findings and details of modeling methodologies and assumptions (https://www.eugene-or.gov/DocumentCenter/View/37360). - Scenario 3 from the Facilities GHG Analysis is used to represent City Facilities reductions in the CAP Forecast.
Road Construction - Low-GHG Material Use	Good Company worked with City of Eugene Public Works staff to collect materials-related data used in City construction projects and develop a simple Excel-based tool to calculate GHG reductions associated with substitution of lower-GHG materials for conventional cement and asphalt binder. The Excel-based tool utilizes factors from environmental product disclosures from National Ready Mixed Concrete Association (https://www.nrmca.org/sustainability/EPDProgram/) as well as Circular Ecology's <i>Inventory of Climate and Energy</i> (http://www.circular ecology.com/embodied-energy-and-carbon-footprint-database.html).	- The analysis uses average, past GHG reductions and assumes similar results going forward.
30% Tree Canopy Goal	The amount of carbon currently stored in Eugene urban forest is provided by City of Eugene via a report using the i-Tree Landscape tool (https://landscape.itreetools.org/report/ef5518cd-7698-47a3-a372-16e29d228a77/sample/). Currently stored carbon is representative of 23% canopy coverage. A carbon to canopy ratio is used to estimate the additional carbon that will be stored by increasing the urban canopy to 30%. Note that these calculations only include carbon storage in the trees and do not include estimates of energy savings associated with shading from the additional canopy coverage.	- Eugene's urban tree canopy increases from 23% to 30% coverage by 2030 - Carbon storage in additional trees is at similar rates to existing
World Track and Field - Tree Planting	This action is aligned with the City's commitment to plan 2021 trees to offset emissions and commemorate the 2021 World Track event to be held in Eugene. The method and factors for calculating carbon storage in the additional trees is provided by U.S. Dept. of Energy's <i>Method for Calculating Carbon Sequestration by Trees in Urban and Suburban Settings</i> .	- Tree type is assumed to be a fast growing conifer for all 2,021 trees - Carbon storage for these trees is limited to the growth period 2021 - 2030.

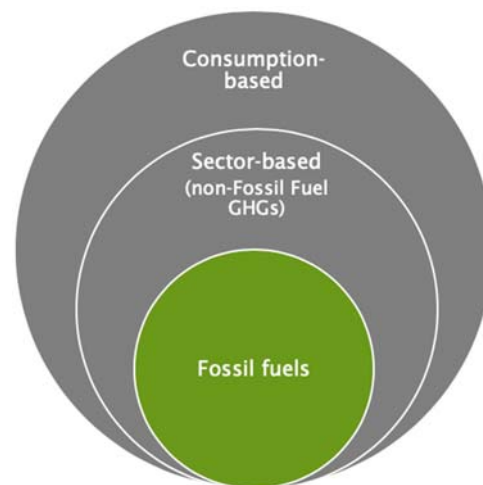
Existing Policy / Strategy / Action	Methodology Description	Assumptions
Large Lever Shareholder		
Lane Community College		
DRAFT Climate Action Plan	Lane Community College's DRAFT Climate Action Plan has set a goal of carbon neutral operations by 2050. LCC's goal combined with LCC's most recent GHG inventory is used to estimate reductions in 2050 versus GHGs reporting in the baseline inventory.	<ul style="list-style-type: none"> - Assumes LCC will meet climate goals as written - Assumes an equal, average rate of reduction between 2017 to 2050. CAP Forecast only includes reductions for time period 2019 - 2030.
University of Oregon		
DRAFT Climate Action Plan	CAP still in development as of 2/2019.	
Metropolitan Wastewater Management		
Biogas to NG pipeline (project with NWN)	Good Company worked with MWMC staff to perform a detailed GHG analysis and scenario comparison for a variety of potential uses for the community's wastewater treatment generated biogas supply. The analysis results are for the MWMC selected scenario, which is to inject the biogas into NWNG's pipeline to be used as a vehicle fuel. The GHG analysis considered all energy and process emissions sources required to produce the biogas, refine to biomethane quality, and credits the fuel for displacing conventional fossil diesel fuel.	<ul style="list-style-type: none"> - 100% of MWMC biogas is cleaned and injected into NWNG's pipeline - End-use for 100% of the biogas is to displace vehicle diesel fuel use
Lane Transit District		
Fleet & Fuels	LTD 2013 fuel use data - from the Eugene's 2013 Community Inventory - for buses is used in conjunction with ODEQ fuel carbon intensity scores to estimate reductions associated with shifting 50% of LTD's diesel use (B5) to Springfield Utility Board (SUB) electricity. Carbon intensity scores are provided by Oregon Department of Environmental Quality to support accounting for Oregon's Clean Fuels Program. NOTE: ODEQ's CI score for SUB electricity uses market-based accounting.	<ul style="list-style-type: none"> - By 2030 11 of LTD's 90 buses are fueled with electricity (or a comparable low-GHG fuel type). This substitution is estimated to reduce LTD bus fuel use by about 10% from current levels.
State of Oregon		
Net-Zero Residential Building Code	Planned net-zero building codes will apply to future, yet-to-be constructed properties. Mitigation potential is calculated based on Eugene's average 2017 household emissions for energy. Average household emissions are calculated using Eugene's 2017 Community GHG Inventory and U.S. Census Bureau data. The number of new housing starts predicted for 2025 - 2032 is provided in a report titled Eugene Housing Needs Analysis prepared to support Envision Eugene. The study finds that roughly 15,000 new housing units are required in Eugene between 2012 - 2032. To estimate GHG / fossil fuel reductions for this actions, new housing starts projected for the 2025 - 2030 time period are assumed to have zero-net energy and GHGs. These reductions are only calculated for the period 2025 - 2030, but the reductions associated with this code will span the 70 year life of these new structures.	<ul style="list-style-type: none"> - Net-zero energy is equal to net-zero GHGs - New codes are implemented in 2025 - Assumed to not be included in existing EWEB load projections - Eugene housing needs, as defined in the analysis, are developed at a consistent rate over the study time period (i.e. 15,000 / 20 years = 750 units / year) - Composition of housing types are consistent with Table 28 in the Eugene Housing Needs Analysis
Net-Zero Commercial Building Code	Planned net-zero building codes will apply to future, yet-to-be constructed properties. Development projections for future, additional commercial space needs are not readily available. Future commercial building energy use are estimated for the period, 2019 - 2030 using 2017 commercial building emissions rates scaled up using a 1% annual compounding growth rate to account for new community population. Population growth projections are taken from Portland State University's Lane County Coordinated Population Forecast, 2015-2065. To estimate GHG / fossil fuel reductions for this actions, new housing starts projected for the 2025 - 2030 time period are assumed to have zero-net energy and GHGs. These reductions are only calculated for the period 2025 - 2030, but the reductions associated with this code will span the 70 year life of these new structures.	<ul style="list-style-type: none"> - Net-zero energy is equal to net-zero GHGs - New codes are implemented in 2025 - Assumed to not be included in existing EWEB load projections - Commercial building development and related energy needs are assumed to be equal to projected population growth

Recommendations for Additional Eugene Climate Actions to Meet Eugene's Climate Recovery Ordinance Targets and Goals

Opportunities to Close the Fossil Fuel and Sector based Gap

Existing Fossil Fuel Gap

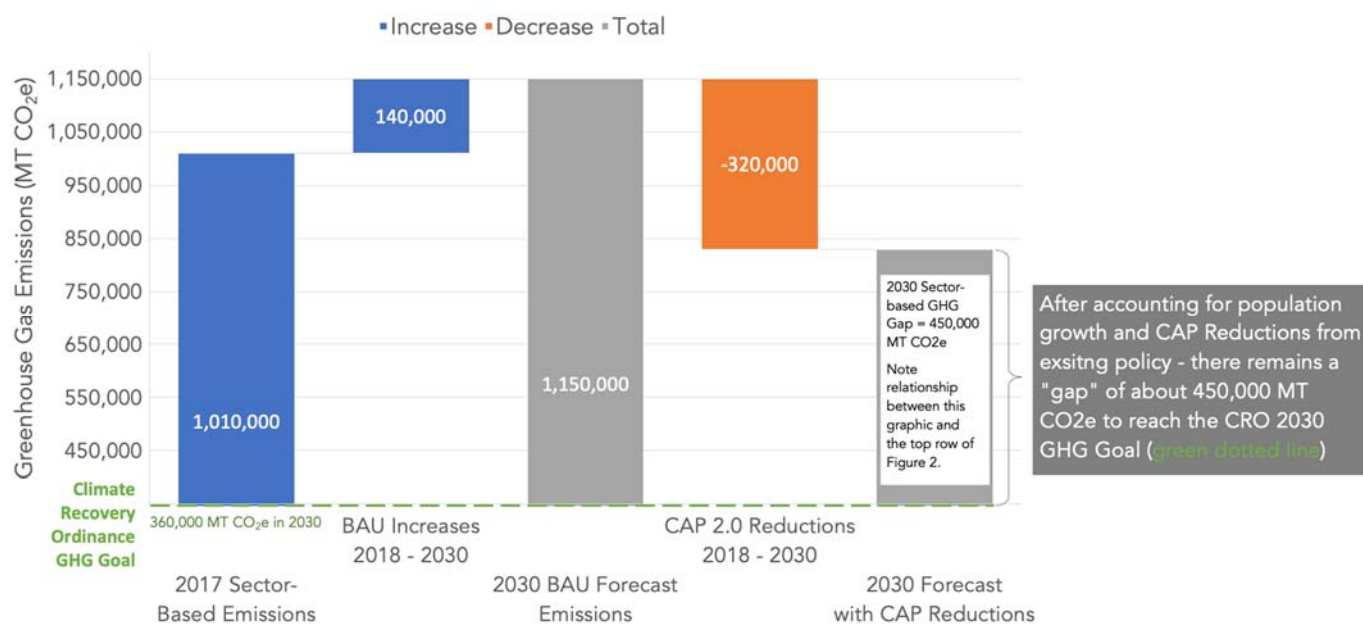
The CRO's fossil fuel target is a 50% reduction in community fossil fuel use in 2030 compared to a 2010 baseline or an average annual reduction of 2.5% per year between 2010 and 2030. Eugene's community 2010 fossil fuel use was equal to about 14.4 MMBTU. To meet the CRO's fossil fuel target (50% reduction by 2030 compared to 2010), Eugene's annual community fossil fuel consumption will need to be equal to or less than 7.2 MMBTU in 2030. Eugene's 2030 forecast, which adjusts for community population increases and CAP2.0 large-lever shareholder (LLS) reductions, is projected to be 11.6 MMBTU, which leaves a gap of about 4.5 MMBTU that will need to be addressed with additional actions to reach the CRO targets.



Existing Sector-based Gap

The CRO's greenhouse gas goal (GHG Goal) is an average annual emissions reduction of 7.6% to 2100 beginning in 2016. Eugene's 2017 Community Sector-based GHGs are equal to about 1,000,000 MT CO₂e. Based on rate specified in by the CRO GHG Goal, Eugene's Sector-based emissions will need to be equal to or less than 360,000 MT CO₂e in 2030. Eugene's 2030 forecast with CAP 2.0 reductions is projected to be 830,000 MT CO₂e, which leaves a gap of about 450,000 MT CO₂e that will need to be addressed with additional actions to reach the CRO targets.

Figure 1: Local GHG Gap (Sector-based) compared to additional actions / scenarios.



Note: This document is a summary from a more extensive report from Good Company, but summarized by City of Eugene staff for purposes of discussion with City Council.

Recommended Additional Actions to Close the Fossil Fuel and GHG Gaps.

Sector-based Actions (fossil fuel only):

- **Natural Gas in buildings actions (from Regulation of Natural Gas work session)**
 - o **Action 1:** Limit or prohibit new natural gas infrastructure.
 - o **Action 2:** Require NWNG to incentivize customers' reduced use of natural gas or customers' purchase of emission offsets provided by NWNG's Smart Energy Program.
 - o **Action 3:** Regulate the purchase and installation of natural gas fueled appliances.
 - o **Action 4:** Prohibit financial incentives for installing natural gas service.
 - o **Action 5:** Prohibit financial incentives for purchasing natural gas appliances.
 - o **Action 6:** Prohibit installation of natural gas service for new residential, commercial and/or industrial buildings.
 - o **Action 7:** Require NWNG to fuel switch to biogas and renewable hydrogen.
 - o **Action 8:** Increase franchise fee and dedicate franchise fee funds to implementing a program that provides incentives to switch from natural gas to renewable.
 - o **Action 9:** Reduce the term of the franchise from 20 years to 10 years.
 - o **Action 10:** Create a hybrid franchise fee structure: 1) fixed portion; and 2) variable fee based on carbon footprint of the natural gas delivered to the community.
 - o **Action 11:** Prohibit the expansion of natural gas services unless NWNG can demonstrate plan to decarbonize its product.
- **Additional Building Actions (from Council Home Energy Score work session)**
 - o **Action 12:** Implement a Home Energy score program.
- **Transportation-Gasoline/Diesel Actions**
 - o **Action 13:** City adopts more aggressive rate of implementation of the Eugene Transportation System Plan goals, policies, and projects. Two scenarios have been modeled by LCOG and used for this analysis. Of note, as Council considers additional actions to fill CRO gaps, it is important to highlight the assumption that Eugene's TSP *would have to be fully implemented by 2035 to reach CRO targets and goals.*
Existing, Obama era fuel economy standards are included in TSP modeling. Considering the current approach on these standards by the Federal government we assume that what is already included the modeling is "aggressive".
 - o **Action 14:** Electrify the community's on-road passenger vehicles and light trucks as rapidly as possible, potentially via the following approaches.
 - City of Eugene works with partners (EWEB, ODOE, ODEQ, UO) to promote and enhance local financial incentives, and bulk EV purchases in a way that aligns community passenger vehicle EV adoption rates with CRO targets.
 - A new vehicle registration fee or fuel distribution fee for City of Eugene on fossil fuel vehicles (gasoline and diesel) or fuels. Fee revenue could be used to provide additional local EV incentives.
 - Prohibit the sale of fossil fuel powered passenger vehicles in Eugene after 2030.
- **Other Policy and non-fossil fuel actions**
 - o **Action 15:** Reduce refrigerant loss through possible approaches such as: new service fee for refrigerant re-charge of systems due to leakage. Fee is based on global warming potential of the refrigerant lost. New fee or tax on new refrigeration equipment that contains high impact refrigerants. Credit programs for recycling/decommissioning of older refrigeration equipment.
 - o **Action 16:** Capture methane from organics before disposal and/or additional effort to increase the efficiency and quantity of landfill or wastewater biogas collection.
 - o **Action 17:** Oregon Cap-and-Trade program is implemented.

Cost Information Summary:

- Action 1,4,6, and 11
 - Source: <https://www.eia.gov/consumption/residential/data/2015/c&e/pdf/ce4.20.pdf>
 - See the values provided in the “Main Heating Fuel” section of the Table CE4.20
 - Utility infrastructure costs are unknown
 - Residential Equipment costs – Assumed to be comparable for gas and electric
 - Residential Average Annual Household Energy Costs
 - Natural gas (main heating fuel)
 - Space heating: \$457 / year
 - Water heating: \$614 / year
 - **Total Household Energy Expenditures: \$1,626 / year**
 - Electricity (main heating fuel)
 - Space heating: \$386 / year
 - Water heating: \$545 / year
 - **Total Household Energy Expenditures: \$1,505 / year**
 - Conclusion: Based on U.S. Energy Information Administration’s 2015 residential energy consumption survey, households in the **Western region of the U.S.** that use electricity as their main heating fuel have lower annual energy costs than households served by natural gas.
- Action 2
 - Assuming credits at \$15 per tonne. Current CA market price (https://www.arb.ca.gov/cc/capandtrade/auction/results_summary.pdf)
 - 2017 residential GHGs = 85,079 MT CO₂e
 - Cost to offset 100% GHGs = \$1,275,000 (@\$15 / tonne)
 - # of residential customers = 25,944
 - **Average cost per residential customer = \$50 / year**
 - 2017 Commercial GHGs = 90,538 MT CO₂e
 - Cost to offset 100% GHGs = \$1,358,000 (@\$15 / tonne)
 - # of commercial customers = 3,759
 - **Average cost per commercial customer = \$360 / year**
 - 2017 Industrial GHGs = 106,516 MT CO₂e
 - Cost to offset 100% GHGs = \$1,597,000 (@\$15 / tonne)
 - Industrial customers = 78
 - **Average cost per industrial customer = \$20,500 / year**
 - Cost to the City is assumed to be minimal. Data collection and reporting for this action can be included with community GHG reporting.
- Action 3 and 5
 - Since the fees described in Action 3 and 5 are based on offsetting emissions. Costs for this type of program will be similar to those described for Action 2.
- Action 7 and 10
 - Costs to procure large substitutions of biomethane or renewable hydrogen for conventional natural gas are unknown at the scales being considered in these actions.
- Action 12
 - Additional City costs. Based on the experience of Portland Oregon, 1 FTE can be expected for the initial 1.5 years for community implementation. After that it is assumed that 0.5 FTE is required for program reporting and maintenance.
 - Costs and savings between home sellers and home buyers are difficult to assess. The building sellers will bear the cost of home energy upgrades to improve the buildings “score”. The cost of

these improvements will presumably be recovered by the seller during the sales process as home buyers value the energy score favorably when comparing properties. After the sale the home buyer will benefit from reduced operational energy costs. The net of these financial transactions is difficult to quantify given currently available data.

- Action 13
 - o Additional cost information for infrastructure and City staff time is unavailable for Eugene TSP “What if” scenarios.
- Action 14
 - o Costs for passenger vehicles were assessed thoroughly during the development of City of Eugene’s Fleet Internal Climate Action plan. Downloaded 1/19 at <https://www.eugene-or.gov/DocumentCenter/View/38211>. The analysis compared new vehicle purchase prices, fuel use, and vehicle maintenance for plug in electric vehicles (EV) versus an internal combustion engine vehicle that gets 35 miles per gallon.
 - o **With Federal and State tax credits it was found that an EV could save about \$9,000 over the life of the vehicle from reduced fuel and maintenance costs.**
- Action 15
 - o For comparison, current CA market prices are \$15 per tonne (https://www.arb.ca.gov/cc/capandtrade/auction/results_summary.pdf)
 - o **At \$15 / metric tonne the emissions reductions in 2030 as a result of Cap-and-invest (about 80,000 MT CO₂e) have a market value of about \$1.2 million, or about \$18 per Eugene household annually.**
- Action 16
 - o Costs for the Oregon Cap-and-Invest program are dependent on how GHGs are valued within the program’s systems in order to achieve program goals.
 - o For comparison, current CA market prices are \$15 per tonne (https://www.arb.ca.gov/cc/capandtrade/auction/results_summary.pdf)
 - o **At \$15 / metric tonne the emissions reductions in 2030 as a result of Cap-and-invest (about 430,000 MT CO₂e) have a market value of about \$6.5 million, or about \$100 per Eugene household annually.**

Eugene CAP 2.0 – CRO Reduction Forecast Gaps Analysis

Figure 2: Sector-based GHG and Fossil Fuel Use Gap compared to additional actions / scenarios.

Annual Gap - Sector-based GHGs and Fossil Fuel Use		450,000	MT CO2e	4,500,000	MMBTU
		MT CO2e	% of Gap	MMBTU	% of Gap
Building Actions					
Action Number					
1, 4, 6, 11	Scenario 1: NWNG - 50% Reduced NG infrastructure investment	(20,000)	-4%	(300,000)	-7%
	Scenario 2: NWNG - 100% Reduced NG infrastructure investment	(40,000)	-9%	(700,000)	-16%
2	Scenario 1: NWNG SmartEnergy - 50% participation	(160,000)	-36%	*Action does not reduce FF use	
	Scenario 2: NWNG SmartEnergy - 100% participation	(310,000)	-69%	*Action does not reduce FF use	
3, 5	Scenario 1: NG Appliance Fee, 2020 - 2030	(130,000)	-29%	(2,400,000)	-53%
7, 10	Scenario 1: Reduce Carbon Intensity of NWNG Product (25% biomethane)	(80,000)	-18%	(1,500,000)	-33%
	Scenario 2: Reduce Carbon Intensity of NWNG Product (50% biomethane)	(160,000)	-36%	(2,900,000)	-64%
8	Scenario 1: Prohibit Financial Incentives for New NG Equipment	More information required			
9	Scenario 1: Increase franchise fee to fuel switch away from NG	Not modeled per staff guidance			
12	Scenario 1: Home Energy Score	(20,000)	-4%	(190,000)	-4%
Transportation Actions					
13	Scenario 1: TSP What if 1 (in addition to Adopted)	(30,000)	-7%	(400,000)	-9%
	Scenario 2: TSP What if 2 (in addition to Adopted)	(70,000)	-16%	(1,000,000)	-22%
14	Scenario 1: 25,000 additional EVs beyond TSP	(110,000)	-24%	(1,300,000)	-29%
	Scenario 2: 50,000 additional EVs beyond TSP	(220,000)	-49%	(2,500,000)	-56%
	Scenario 3: 75,000 additional EVs beyond TSP	(330,000)	-73%	(3,800,000)	-84%
Produce Use Actions					
15	Scenario 1: Refrigerant recharge fee to purchase carbon offsets for 100% of GHGs	(80,000)	-18%	*Action does not reduce FF use	
Waste Actions					
16	Scenario 1: Landfill gas capture efficiency increases by 10%	(10,000)	-2%	*Action does not reduce FF use	
	Scenario 2: Landfill gas capture efficiency increases by 25%	(20,000)	-4%		
Overarching Actions					
17	Scenario 1: Oregon Cap-and-Invest (Draft SB 557, Section 4 goals) Note: This "action" is predicated on many of the other actions already considered in Eugene's CAP LLS (e.g. Eugene TSP), and therefore there is considerable overlap and double counting between this and other actions.	(430,000)	-96%	(7,200,000)	-160%

*This column shows max cumulative potential in 2030

*This column shows max cumulative potential in 2030

Opportunities to Close the Consumption-based Gap

Existing Gap

The CRO's greenhouse gas goal (GHG Goal) is an average annual emissions reduction of 7.6% to 2100 beginning in 2016. Eugene's 2013 Community Consumption-based GHGs are equal to about 2,750,000 MT CO₂e (using market-based electricity accounting). Based on the CRO GHG Goal Target, Eugene's annual community fossil fuel consumption will need to be equal to or less than 720,000 MT CO₂e in 2030. Eugene's 2030 forecast with CAP 2.0 reductions are projected to be similar to 2013 emissions, which leaves a gap of about 2,000,000 MT CO₂e that will need to be addressed with additional actions to reach the CRO targets.

Recommended Additional Actions to Close the Gap

Achieving CRO goals as applied to 100% of Eugene's consumption-based (CB) emissions inventory is the most challenging of any of the CRO targets and goals. This is because roughly 66% of Eugene's consumption-based emissions occur outside of Eugene's geographic boundaries (and direct control) during production of imported goods and food consumed in Eugene.

Reducing consumption-based emissions requires a combination of public-led actions, individual household decision-making, and domestic and international climate policy. Public agencies can establish infrastructure to support the reduction of CB emissions, but ultimately large-scale reduction of these emissions will require a combination of household-level decision making and large-scale transformation of the global energy system towards sources of renewable energy.

Consumption-based Actions:

- City to support development of a state-level program to reduce the carbon intensity of products imported into Oregon.
- **Action 18:** Community reduces the average square footage of single-family detached homes developed between 2019 – 2030. Smaller home size reduces emissions from a number of sources including: production of building materials (used to build and maintain the house), other consumer goods (used to fill the house), as well as reducing the homes energy use.
- City and local partners expand existing programming to extend building material lifespans.
- **Action 19:** Eugene optimizes the solid waste system to minimize GHGs
- **Action 20:** Community shifts dietary choices from high-impact to low-impact food types
- **Action 21:** Community reduces all possible edible food waste
- **Action 22:** City and community to reduce the carbon intensity of concrete products.
- **Action 23:** City to advocate for aggressive state, federal, and international climate policy that will increase the use of renewable energy in locations that produce the goods and food consumed in Eugene.

Figure 3: Consumption-based GHG gap compared to the reduction potential for additional action

Annual Gap - Consumption-based GHG Gap		2,000,000	MT CO ₂ e
		MT CO ₂ e	% of Gap
Consumption and Materials Management Actions			
Action Number			
18	Reduce the average size of new single-family homes (from 2,300 to 1,600 sqft.)	(50,000)	-3%
19	Eugene optimizes the solid waste system to minimize GHGs	(90,000)	-5%
20	Scenario 1: 25% of community reduces meat and dairy by 25%	(10,000)	-1%
	Scenario 2: 50% of community reduces meat and dairy by 50%	(40,000)	-2%
	Scenario 3: 100% of community reduces meat and dairy by 100%	(170,000)	-9%
21	Community reduces 100% of edible food waste	(50,000)	-3%
22	Community reduces the carbon intensity of concrete products	<i>Data not readily available</i>	
23	International Commitments to Paris Accord for future reductions (roughly a 25% reduction by 2030)	(270,000)	-14%

*This column shows max cumulative potential in 2030

EUGENE CITY COUNCIL AGENDA ITEM SUMMARY



Work Session: Franklin Boulevard Transformation Project Update

Meeting Date: May 22, 2019
Department: Public Works
www.eugene-or.gov

Agenda Item Number: 2
Staff Contact: Larisa Varela
Contact Telephone Number: 541-682-6887

ISSUE STATEMENT

The Franklin Boulevard Transformation Project will develop alternatives for redesigning Franklin Boulevard from I-5 to Alder Street with the goal of creating a safe and comfortable street for people walking, biking, using public transportation and driving. This work session is an opportunity for the City Council to learn about the project including the timeline, public involvement plan, and draft design concepts.

BACKGROUND

City of Eugene adopted land use and transportation plans identify Franklin Boulevard as one of six key corridors in Eugene. Key Corridors are streets that have or are planned to have frequent transit service (approximately every 15 minutes or less). Franklin is an especially important corridor because it serves as the spine of the regional EmX bus rapid transit system. The Franklin Boulevard Transformation builds off of the Walnut Station Specific Area Plan. In this vision from the Walnut Station Specific Area Plan, Franklin is transformed by:

Providing the retail services needed by residents of a vibrant neighborhood and an attractive and distinctive travel corridor that facilitates safe and efficient movement by all modes of transportation. Residents and visitors experience a unique and welcoming entrance to the city and the University of Oregon, arriving by bike, bus, car and foot. The multiway boulevard encourages use by pedestrians and shoppers by separating through traffic from local access traffic, increasing safety throughout the corridor and providing a quieter edge as well as parking options on the local access lane. Vibrant, green foliage in well-designed landscaping, pedestrian scale lighting and attractive, human-scaled architecture all blend to create a sense of vitality fused with elements of nature.

While the multiway boulevard street design concept may change through the Franklin Boulevard Transformation Project, any new design concepts that emerge will retain the values articulated in the Walnut Station Specific Area Plan vision.

The purpose of the project is to:

- Transform Franklin Boulevard from an automobile-oriented state highway arterial to a pleasant, safe, comfortable, high-quality walking, biking and transit street while providing for motor vehicle traffic.

- Be consistent with adopted land use and transportation plans developed by the City of Eugene, University of Oregon and/or Lane Transit District.
- Support increased residential density, changes in urban form and mixed-use development that we are currently and will continue to see being built on the corridor.

City staff are working with a team of design, engineering and public involvement consultants to develop designs for Franklin Boulevard that support both the project's purpose and the adopted Walnut Station Specific Area Plan. Initial design concepts were developed over a four-day design workshop in late January 2019. These designs will be refined into corridor alternatives over the next few months and then brought back to the community in May 29 - 30 for additional input. The concepts will be presented to City Council on Wednesday, May 15, 2019. The concepts can also be downloaded for viewing at: <https://www.eugene-or.gov/4123/Design-Workshop-Week>.

A triple bottom line analysis was used in the development of the Walnut Station Specific Area Plan. Once alternatives are developed for the Franklin Boulevard Transformation Project, selecting a preferred alternative will be informed by evaluation criteria that incorporate the triple bottom line.

PREVIOUS COUNCIL DIRECTION

[July 12, 2010, City Council Meeting](#)

Move to adopt an ordinance concerning the Walnut Station Mixed-Use Center, included as Ordinance Version A with Exhibits A through I (*motion passed with amendments*). Through this ordinance, City Council adopted the Walnut Station Specific Area Plan.

COUNCIL OPTIONS

This is an informational item. No action is requested.

CITY MANAGER'S RECOMMENDATION

This is an informational item only.

SUGGESTED MOTION

This is an informational item only.

ATTACHMENTS

None

FOR MORE INFORMATION

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