



# 2020 Annual Report

Columbia Climate Action & Adaptation Plan



## 2020 ANNUAL REPORT

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The year 2020 was supposed to be the year where Columbia saw rapid growth in our efforts to prepare Columbia to be both more resilient to the impacts of an already changing climate and to reduce our contribution to global climate change. While progress has been made, the impacts of COVID-19 have affected our ability to implement a lot of key measures and emphasized the importance of the equity goals in the Climate Action & Adaptation Plan. This report provides the Columbia City Council, City staff and Columbia community with an update on what has been accomplished in 2020 and a look forward to 2021.

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## REPORT AUTHORS

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The Columbia Office of Sustainability (OS) is tasked with managing the implementation of the Climate Action & Adaptation Plan. OS Staff coordinates the internal CAAP teams and serve as liaison to the City Council's Climate & Environment Commission. This report was written with input from all three groups.



## ENGAGING THE COMMUNITY IN CLIMATE ACTION

Climate action and adaptation work is often viewed as being promoted by and benefiting a small elite. A clear connection between racial and environmental justice is often missed by decision-makers and community partners. Because the impacts of climate change disproportionately affect frontline communities, this connection needs to be made in Columbia. Additionally, people of color are rarely represented in the departments and organizations that shape plans and policies designed to mitigate climate change.

The Office of Sustainability is creating and piloting a Climate Ambassadors Program (CAAPtains) designed to empower leaders within communities to make an impact in their environment with the hopes of making Columbia a more sustainable place to live. We have been co-creating the program with neighbors on Quail Drive - an underinvested community in NE Columbia - with the hopes of addressing equity and sustainability. We believe it is important for our city to take part in empowering strong communities and providing resources as well as play a role in addressing systemic racism.

The program is developing in partnership with the National League of Cities - Leadership in Community Resilience and the Urban Sustainability Directors Network's Equity, Diversity and Inclusion Fellowship program.



## MEASURES: Community Emissions

Key performance indicators (KPIs) are an important component of the information needed to explain a community's progress towards its stated goals. KPIs will be available on the CAAP Dashboard and updated annually. Highlighted in this report are our initial KPIs - starting with a community greenhouse gas (GHG) emissions inventory. GHG inventories measure emissions from local activities, like burning fuel for transportation and buildings, and methane emissions from the landfill and treatment of wastewater. Since baseline year of 2015, Columbia has reduced the community greenhouse gas emissions 5.9% - the equivalent of over 155 million pounds of coal not being burned.

The CAAP community emissions reduction (from 2015 baseline) goals:

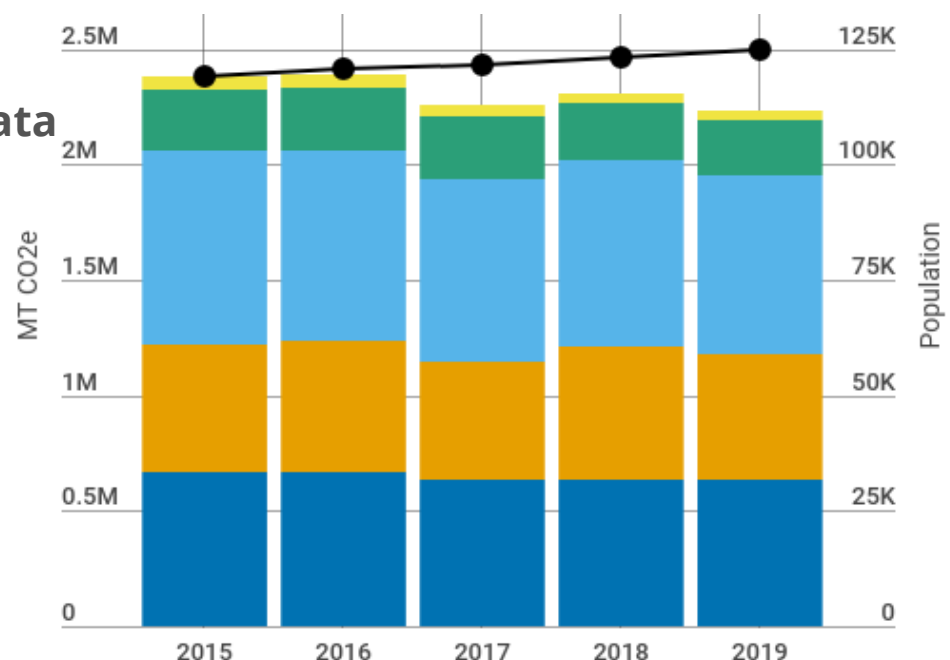
- 35% by 2035
- 80 % by 2050
- 100% by 2060

# - 5.9%

DECLINE IN COMMUNITY GHG  
EMISSIONS SINCE 2015

In 2020, we were able to receive more reliable transportation emissions data through Google's Environmental Insights Explorer (EIE). Data is available dating back to 2018 and will be the data source for inventories going forward because it is more accurate than previous methods.

### Columbia, MO GHG emissions w/ population data





## MEASURES: Municipal Emissions

Our municipal emissions inventory measures the impact of day-to-day operations of the City of Columbia as an organization. This includes building and facility energy use and waste produced; and fuel use by transit, fleet and employee commuting vehicles. The distribution of City of Columbia's operational emissions across sectors matches that of the Community's sector emissions. With 73% of emissions coming from facility energy, 24% from transportation and 3% from waste process emissions.

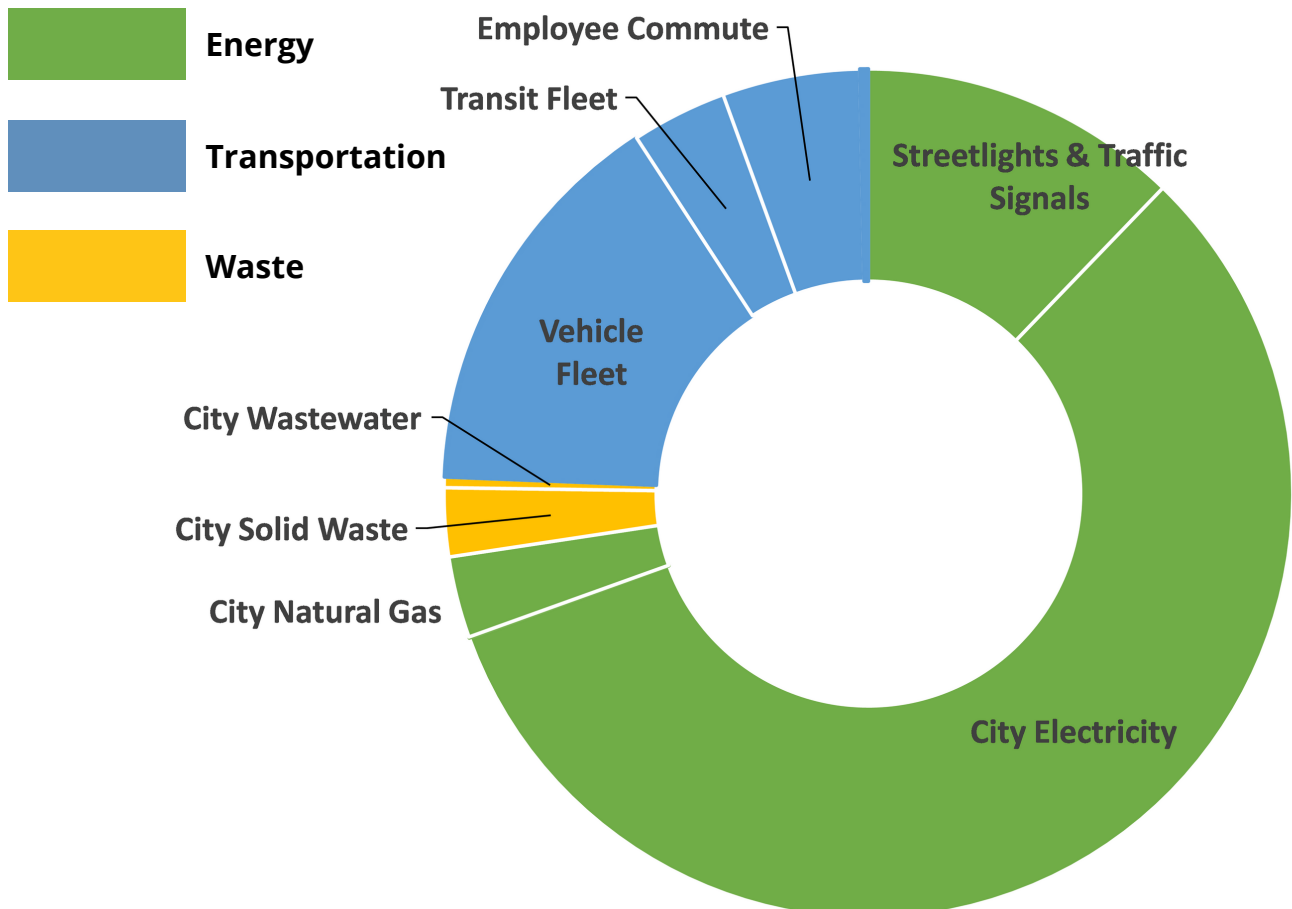
The CAAP municipal emissions reduction goals are 50% by 2035 and 100% by 2050 from 2015 levels.

**- 10.4%**

DECLINE IN MUNICIPAL GHG  
EMISSIONS SINCE 2015

Columbia's 2019 Municipal emissions were 51,515 MTCO<sub>2</sub>e - the equivalent emissions of 11,129 passenger vehicles driven for one year and represents a 10.4% decline from our baseline 2015 emissions.

### 2019 Municipal GHG Emissions by sector



## MEASURES: Key Performance Indicators (KPIs)

The Climate Action & Adaptation Plan has 161 actions. Success might not always, or only, show up in emissions inventories. The following are the current KPIs that we have baseline, target and trend data on for measuring progress of CAAP implementation. It is important to note that in order to improve our ability to measure progress toward goals, additional support is necessary to identify and collect needed data.

**G** = On track **Y** = Needs work **R** = Needs more work

Status	Sector	Key Performance Indicator	2015 Baseline	2019 Actual	2019 Target	2035 Target	2050 Target
<b>Y</b>	Energy	Renewable Energy (Percentage of total)	7%	15%	20%	71%	100%
<b>G</b>	Energy	Building energy GHG emissions (MTCO <sub>2</sub> e)	1.7M	1.5M	1.5M	602K	119K
<b>G</b>	Energy	Community / on-site solar capacity (MW)	.316	2.3	2	10	10
<b>R</b>	Buildings	Residential energy use (MMBtu / household)	79	75	73	46	27
<b>R</b>	Buildings	Municipal Site Energy Use Intensity (EUI) (% change in Wx Normalized Site EUI)	0	-.05%	-10%	-50%	-70%
<b>G</b>	Transportation	Municipal Fleet Emissions (MTCO <sub>2</sub> e)	15K	12.6K	13.7K	8.7K	7.4K
<b>R</b>	Transportation	Transportation GHG emissions (MTCO <sub>2</sub> e)	635K	638K	584K	378K	327K
<b>Y</b>	Waste	City Recycling Rate (Tons of recycling/Tons of waste)	11%	10%	15%	28%	68%
<b>Y</b>	Natural Resources	Per Capita Water Consumption (Gallons per resident)	38.3K	37.1K	36.8K	30.7K	26.8K

Additional information on KPIs and action progress can be found on the community dashboard:



[www.CoMoClimateAction.org/](http://www.CoMoClimateAction.org/)

DASHBOARD ACTION PLAN NEWS AND EVENTS



City of Columbia Climate Action and Adaptation Plan

## 2020 PRIORITIES

In October 2019, City staff presented a report to City Council with a brief overview of current initiatives underway and setting our 2020 priorities. The report introduced the 10 goals, 15 strategies and 20 actions that City staff CAAP Teams focused on for 2020. The City Manager formed internal CAAP Teams around these priority areas. These teams, representing 52 employees from 15 City Departments, currently act as the creative engines to identify, design and champion projects and programs that support CAAP goals. The teams meet monthly and also coordinate with working groups from the Climate & Environment Commission, where priorities overlap. The 2020 activities and 2021 priorities from CAAP Teams are on pages 8-12.

### CAAP Team Team Mission

CAAP Project Management	Providing strategic direction, logistical support and overall vision to guide the successful implementation of the CAAP, including facilitating both the process and the work product.
CAAP Core	Serve as a cross-functional team of CAAP Team co-leads to manage the execution of the CAAP goals across teams.
Clean Energy	Implementing the renewable energy strategies and actions of the CAAP to achieve the goal of 100% renewable energy in Columbia.
Healthy Housing	Identifying policies and programs that increase safe, healthy and affordable housing in Columbia; with an emphasis on rental housing improvements for energy efficiency and indoor environmental quality.
Clean Transportation	Focusing on improving efficiency of the municipal fleet, opportunities for electric vehicle infrastructure, access to active transportation and reducing vehicle idling.
Good Stewards	Identifying and championing opportunities for improvement in the built and natural environment that is owned by the City of Columbia.
Resource Stewardship	Tasked with reducing landfill waste and encouraging water conservation.



## CAAP Team: Project Management

Some highlights from 2020 for overall CAAP management come from the "Monitoring & Evaluation" section of the adopted CAAP are demonstrated in this report. These include:

- Conducting annual GHG inventories
- Establishing performance metrics and a tracking structure
- Evaluating and reporting progress through this report and online dashboard.

This team is also charged with communication, outreach and educational opportunities that support CAAP implementation. Some examples from 2020 and to be expanded in 2021 include:

- Design and piloting of a Climate Ambassadors program for equitable community outreach.
- Expansion of internal & external education opportunities. Including a community-based educational program focusing on STEM themed topics with Columbia Public Schools and the STEM Alliance.
- Monthly CAAP e-newsletter with current efforts, events, and ways to be involved.



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### *I take* CLIMATE ACTION

*I put over 500 commuting miles on my bike this year. That's 500 fewer miles in my car! I'm a true believer in the **e-bike**. I just feel really good about myself, and **it makes me really happy!***

BARBIE

Commutes by Electric Bicycle  
Each Day, Rain or Shine

”

Photograph and profile by Kim Wade, Silverbox Photography

## CAAP Teams: 2020 Activities and 2021 Priorities

The interdepartmental CAAP Teams worked in 2020 to recognize current efforts towards CAAP priorities and to identify opportunities for improvement. The following updates and priorities are a snapshot of the teams' work. This list is not exhaustive of all projects happening within the organization. As the implementation of the CAAP continues to evolve, the identification and reporting on successes will continue to improve.

### CAAP Team: Clean Energy

Energy-related emissions from electricity and natural gas used in homes, businesses and industry account for 70% of Columbia's total GHG emissions. Adopting clean energy is by far the most impactful modeled CAAP strategy and the current trend for Columbia Water & Light's (CWL) portfolio of renewable energy is increasing.

- In 2021, CWL will be providing a plan for how to meet their renewable energy goals.
- CAAP Team: Clean Energy will be supporting the information and education needs related to meeting the CAAP renewable energy goals.



Photograph and profile by Kim Wade, Silverbox Photography





Photograph and profile by Kim Wade, Silverbox Photography

## CAAP Team: Healthy Housing

While we are seeing reductions in energy-related emissions, the trend for energy used in our residential sector has remained flat. In partnership with the Missouri Energy Initiative, the "Unlocking Energy Efficiency in Columbia, Missouri's Residential Rental Market" case study was completed as a first step in understanding costs/benefits for Columbia's rental housing. Raising awareness over the nationally recognized Home Energy Score, and Efficiency Score, is a key next step for achieving progress on residential energy efficiency.

- Increasing market awareness of Home Energy Score and Efficiency Score by defaulting visibility to public on Green Building Registry.

## CAAP Team: Resource Stewardship

The Resource Stewardship team are monitoring two current rate changes that should have an impact on CAAP Goals related to waste diversion and water conservation. The Solid Waste Utility is transitioning to a pay-as-you-throw rate structure. The expected outcome of the rate adjustment will be a decrease in waste generated, an increase in recycling participation, and an incentive for the reuse/repurposing of large household items. The team is also monitoring water use data since a new tiered water rate structure went into place in 2019. The new structure and new water conservation incentive programs are intended to reduce water waste and encourage conservation.



## CAAP Team: Good Stewards

Good Stewards consists of two areas: municipal buildings and municipal lands. The Buildings team has been reviewing building energy disclosure policies from our regional partner cities for applicability in Columbia. Before proposing anything community-wide, City facilities will serve as a pilot by benchmarking and communicating energy performance. We are currently tracking the energy use intensity of 24 of our occupied facilities. The CAAP has a goal of 20% building energy reduction between 2019 and 2024. In 2021, they will be:

- Developing a policy and program to publicly display energy use intensity for City buildings.
- Working with the design team for Fire Station 11 for CAAP alignment.

Good Stewards: Lands focuses on the natural areas that the City of Columbia manages - including parks and right-of-ways. In 2021, Good Stewards will be:

- Inventorying city-owned lands and reviewing the City's current land management practices to inform the development of a conservation management strategy.
- Researching carbon sequestration potential of City-owned land for opportunities.

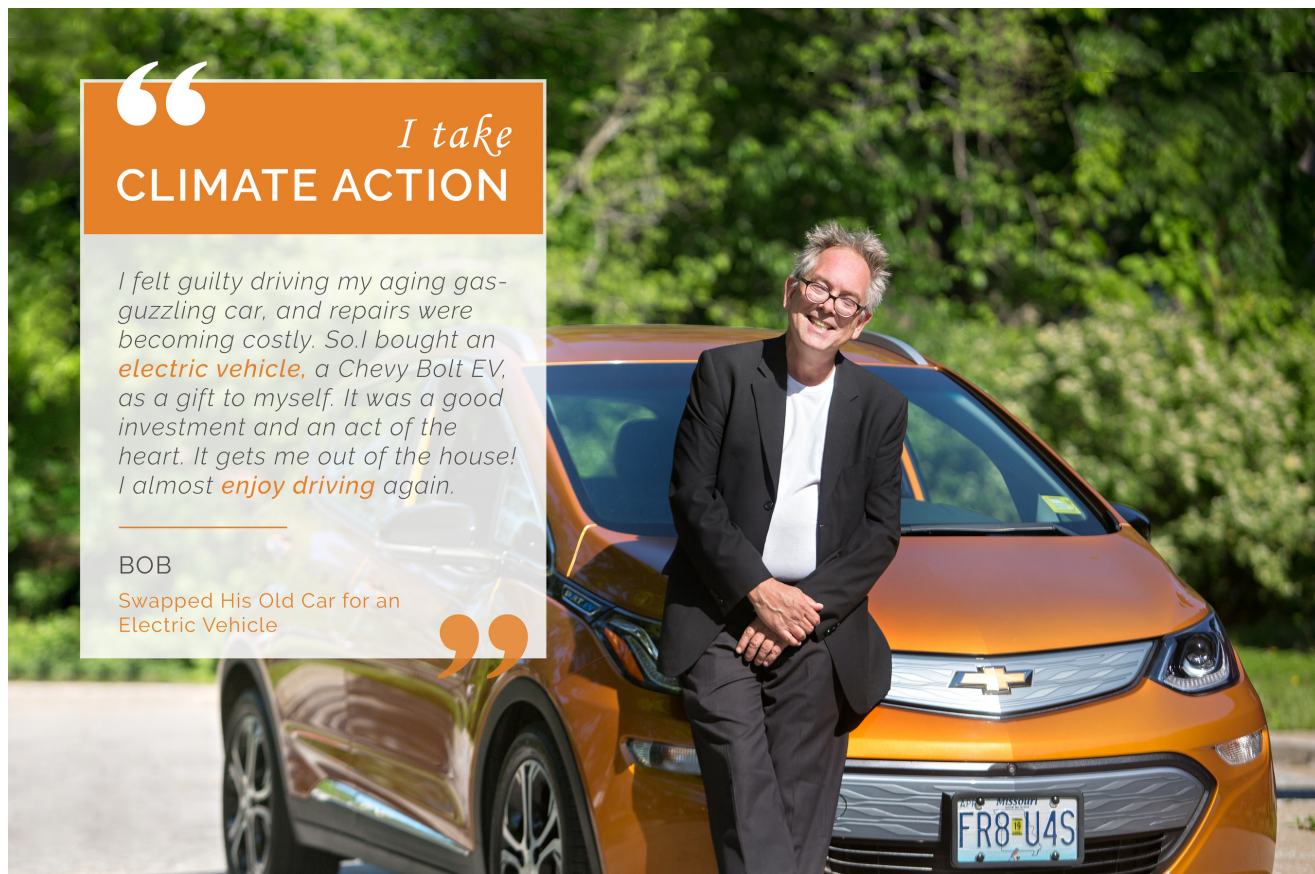


Photograph and profile by Kim Wade, Silverbox Photography

## CAAP Team: Clean Transportation

An Automatic Vehicle Locator (AVL) vendor was chosen in 2020 and we expect 50% of the fleet to actively participate in 2021. The AVL live GPS-tracking system will help us manage the fleet more efficiently, from fuel use to measuring and reducing idling time. In 2021, this team will be:

- Developing a fleet vehicle replacement policy that promotes alternative fuel vehicles.
- Developing a plan to increase opportunities for publicly available Level 2 charging for EVs.



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### *I take* CLIMATE ACTION

*I felt guilty driving my aging gas-guzzling car, and repairs were becoming costly. So I bought an **electric vehicle**, a Chevy Bolt EV, as a gift to myself. It was a good investment and an act of the heart. It gets me out of the house! I almost **enjoy driving** again.*

BOB

Swapped His Old Car for an Electric Vehicle

”

Photograph and profile by Kim Wade, Silverbox Photography

## PRIORITY: Triple Bottom Line tool

City activities impact the people, environment, and prosperity of Columbia. In order to meet the ambitious goals of the CAAP, we must evaluate how we do business on a wider range of criteria. The CAAP Teams, with input from the Climate & Environment Commission, are developing a Triple Bottom Line evaluation process to identify and evaluate potential benefits and damages of our actions. This will be a large undertaking and piloting for this project is planned for 2021.

# CLIMATE & ENVIRONMENT COMMISSION

*Letter from Chair, Carolyn Amparan*

The Climate & Environment Commission (CEC) was created to advise staff on the implementation of the CAAP. They review annual greenhouse gas emissions inventories for progress on meeting greenhouse gas emissions reduction goals, and educate and engage the public on Commission priorities. In March 2020, the Climate & Environment Commission (CEC) sent a report to City Council highlighting their intended 2020 priorities ([REP 19-20](#)). Like many other boards & commissions, the CEC was not able to meet until July 2020 because of COVID-19, and so momentum was lost. The following is an overview of activities CEC was able to work on in 2020 and requests for 2021.

## Implementation:

- Identified partnership and overlapping mission opportunities with other Columbia Boards and Commissions and has begun to engage these additional bodies to achieve CAAP goals.
- Investigated decision making processes to drive CAAP goal consideration into the city planning process and recommended adoption of the Triple Bottom Line method in 2021.

## Energy:

- Provided a list of CAAP Priority Actions to the Integrated Electric Resource & Master Planning Task Force for inclusion in the upcoming Plan.
- Reviewed the annual Renewable Energy Report and provided feedback to the City Council and Columbia Water & Light.

## Housing, Buildings & Development:

- Reviewed Columbia Imagined for relationship to CAAP goals and developed an analysis for Community Development's Status Report.
- Reviewed and provided feedback on the "Unlocking Energy Efficiency in Columbia, Missouri's Residential Rental Market" case study.

## Transportation:

- Connected with the staff Clean Transportation CAAP Team.
- Reviewed existing street design standards policy to understand why an updated policy is needed and identify specific details to align with road safety best practices

## Natural Resources:

- Created a framework to develop educational programming for Natural Resource CAAP projects to help build support for how we manage land.



## CEC BUDGET PRIORITIES

The CEC understands that implementation of the CAAP will take funding and resources to be successful. The majority of the responsibility will fall on City staff. As a result, the CEC would like to make the following recommendations to the City Manager and City Council for inclusion in the budget for Fiscal Year (FY) 2022 - each of these items relates to a Priority Action from the CAAP.

### Implementation

- Each relevant department to identify projects in the FY 2022 budget to accomplish CAAP goals, strategies or action items. Projects should be labeled with the relevant CAAP number for the goal, strategy or action item from the plan. (I-2.2.1)
- Provide funding or resources to prepare a report to include in the City Manager's proposed FY 2022 budget on the existing and proposed projects that improve mitigation and adaptation efforts. (I-2.2.2)
- Provide funding and resources to implement the Triple Bottom Line project evaluation process throughout 2021 to be utilized in 2021 project decisions as well as FY 2022 planning. Identify necessary model data to assess impacts and provide funding to acquire data as needed. Assign/add a staff resource to lead the deployment (1/2 Full time equivalent (FTE) for first 6 months, 1/4 FTE for second 6 months) (I-2.1.3, I-2.1.4)
- Provide additional funding and resources for the Office of Sustainability to coordinate and drive CAAP implementation across all departments. (I-3.4)

### Housing, Buildings and Development

- Provide funding and resources for deployment of an energy efficiency standards program for rental housing. Plans should include funding for outreach and education of landlords, property owners and property managers. (H-1.1.3)
- Provide funding and resources for the deployment of an energy performance rating/labeling programs for homes at the time of sales and upon rental license renewal. Plans should include funding and resources for outreach to homeowners, landlords, property managers, developers and real estate agents. (H-1.1.4)
- Provide additional funding and resources to measure and improve energy usage in every city building and benchmark the buildings with an energy score rating. (H-1.3.4)

(continued on next page)

## CEC BUDGET PRIORITIES (CONT'D)

### Transportation

- Provide funding to support staff involvement in an extensive public input process to develop a new street design standards policy that is consistent with community-identified needs and national best practices for Complete Streets policies. (T-1.1.2)
- Funding for a pop-up traffic calming program (e.g., equipment and staff coordination) as an intermediary safety improvement measure while the new street design standards policy is being developed. (T-1.1.2)
- Provide funding and resources to support staff to develop a comprehensive plan to achieve the goals of a fleet electrification policy. (T-2.1.1)
- Provide funding to add Electric Vehicle (EV) charging stations to public parking garages and public parking spaces possibly in parks. Register these EV charging stations with mapping services such as [openchargemap.org](https://openchargemap.org), [plugshare.com](https://plugshare.com) and [energy.gov](https://energy.gov). (T-2.1.2)

### Natural Resources

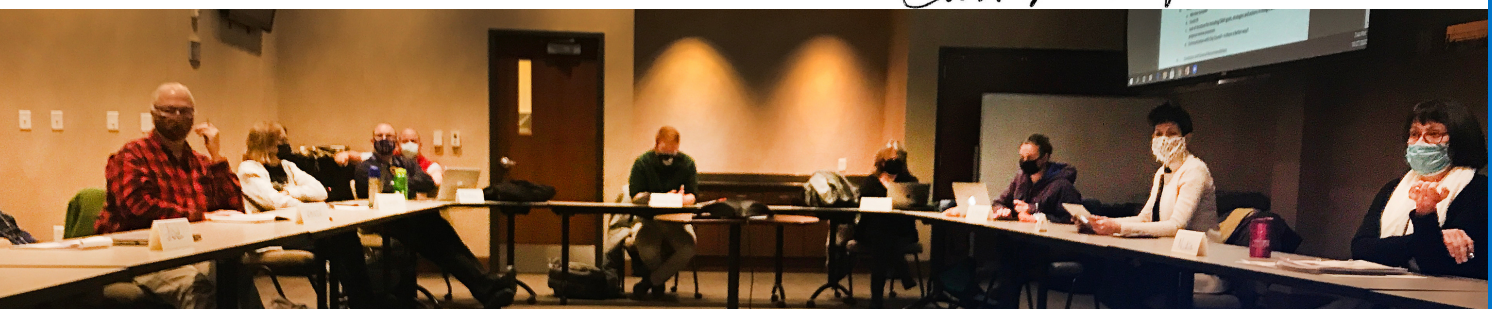
- Provide funding and resources for the management of publicly-owned natural areas to enhance and maintain diverse native communities. (NR-1.1.1)
- Provide funding and resources for the promotion of water conservation programs and promotion of incentives for water conservation from Water and Light (W&L). (NR-2.1.3)
- Update the water rate structure for W&L customers to lower the base rate and shift the true cost of high volume water users including peak summer water plant capacity to those high volume users through the Tier 3 rate. Provide funding to conduct necessary studies to make the change to the base rate possible. Provide funding for outreach to the community and all customers regarding the rate changes. (NR-2.1.1)

### Health, Safety and Well-being

- Provide resources to continue the pilot Climate Ambassadors program and expand it to additional neighborhoods (CAAP I-3.3.4) and leverage this program to identify and support community-led, neighborhood-focused resilience actions (eg. identifying best practices, establishing resilience hubs and implementing neighbor-based emergency response. (HS-1.1.4)

Thank you for your commitment to climate action,

*Carolyn Amparín*



## BE PART OF THE SOLUTION

There are multiple ways you can be involved in local climate action. You can:

- Volunteer to serve on a board or commission
- Become a Climate Ambassador
- Participate in incentive programs for efficiency
- Check out the CAAP Dashboard for more ideas at [www.CoMoClimateAction.org](http://www.CoMoClimateAction.org)



“

### *I take* CLIMATE ACTION

*I planted this **garden** so that I could grow **organic food** for my family. I don't use chemicals. We like vegetables, and I wanted my children to eat African foods, like nyanya chungu (African eggplant). We are **saving a lot of money!***

RUHUMURIZA RICHARD  
with family

Converted Entire Yard to a Large  
Organic Vegetable Garden

”

Photograph and profile by Kim Wade, Silverbox Photography



573.874.CITY

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