A Greener, Healthier Denver: 13 actions Denver should take in the next six months to reduce air pollution and tackle climate change

July 11, 2023 - Danny Katz, CoPIRG Executive Director

To ensure a healthier future for our city and our region, we must do all we can to eliminate the pollution and practices that are fueling dangerous ozone days, drought and extreme weather that comes from a warming climate.

Some of the largest sources of both ozone pollutants and greenhouse gas emissions in Denver and the metro region are tailpipe emissions from the transportation sector and the fossil fuels that are used to heat and power our homes and businesses.

Key strategies that need to be used include:

- Converting from gas-powered vehicles, home appliances and lawn equipment to cleaner, electric-powered technologies
- Expanding travel options so people have the freedom to ride transit, bike and walk instead of driving
- Switch to renewable electricity to heat, cool and power our homes and businesses
- Reduce energy waste - the cleanest kilowatt-hour (kWh) is the one we don't use

Switching to electric-powered everything, eliminating waste, ramping up renewable electricity and expanding travel options will not just reduce air pollution and tackle climate change. It will bring additional benefits including:

- Cost savings for government and taxpayers - A recent CoPIRG report found that if governments across Colorado switched their vehicle fleets to electric-powered, it would save us $152 million in lifetime expenses. In addition, switching to 100% renewable electricity in Denver buildings will save $1 million per year.
- Reducing traffic fatalities - Making streets safer for cleaner travel options like walking and biking, and expanding transit, which is the safest form of travel, is a critical strategy for reducing traffic fatalities from the record 84 that we experienced in 2022.
- Saving residents money -
    - Switching to an electric vehicle offers big savings on fuel, maintenance and repair. According to the AAA Colorado, it costs about **4.0 cents per mile to fuel an electric vehicle versus 18.5 cents per mile for a gas vehicle**. Add in lower costs for maintenance and repair and an electric vehicle driver can save thousands of dollars per year.
    - Replacing trips with transit, walking and biking can cut transportation costs by reducing the number of vehicles you need to own. In Colorado, the average cost of owning and operating a new vehicle in 2022 was $11,451, but the most expensive monthly RTD pass costs $2,400 annually. The cost of new e-bikes and traditional pedal power is also significantly cheaper than a new car.

- The price of gas to heat our homes and businesses this winter skyrocketed 40%. Shifting away from this volatile fuel via technologies like heat pumps or rooftop solar can shield residents from these volatile bills.
- Energy efficiency across the system can save money because the cheapest kilowatt-hour (kWh) is the one you don't need to use.

Denver, the region and the state have plenty of goals - we know where we need to get to

The state, regional planning organizations and air quality councils and the City and County of Denver have completed extensive goal-setting and have many detailed plans to tackle air pollution and climate change. There are big targets coming up in 2025 and 2030. Actions in the next six months will be critical to ensure we are on pace to meet them.

Tackling Climate Change: Denver has a goal to reduce greenhouse gas emissions by 65% by 2030 from a 2019 baseline and to eliminate 100% of emissions by 2040.

Electric Vehicles: Transportation is the second-largest source of climate pollution in Denver and the largest statewide. In Denver's Electric Vehicle Action Plan, the city has a goal to have 15% of light-duty vehicle registrations in Denver be electric vehicles by 2025, 30% by 2030 and 100% by 2050. As of April 2020, the plan found that electric vehicle adoption rates need to increase to meet these goals.

As of June 8, 2023, Denver had 14,646 electric vehicles on the road - 21 electric vehicles per every 1,000 people - out of an estimated overall light-duty vehicle population of 644,000.

Renewable Energy: Denver has a goal of 100% of the community-wide electricity use contributing to 100% renewable electric system by 2030. Xcel Energy's electrical grid, which serves the City and County of Denver, reached 39% renewable energy in 2021 and is anticipated to hit 60% by 2030: there is a gap for Denver to close.

One significant, untapped opportunity, especially given our generally sunny weather, is solar. Currently, Denver generates 1.2% of its power from distributed solar (like rooftop panels and community solar garden subscriptions) versus a goal of 30-40% by 2030. Nationally, by the end of 2021, Denver ranked 11th in the country for total installed solar photovoltaic (PV) capacity, with 135.5 megawatts (MW).

In addition, by 2025, Denver has a goal of using 100% renewable electricity in its 256 facilities and buildings. By the end of 2022, 60% of all electricity consumed by municipal facilities was powered by renewable energy sources or credits.

Net Zero Emissions Buildings: Buildings and homes are responsible for 64% of greenhouse gas emissions in Denver. The city has a goal that, by 2030, its building code will require all new construction of buildings and homes to achieve net zero energy. Denver defines Net Zero

Energy buildings and homes as all-electric. This means these buildings only use electricity instead of fossil fuels to heat, cool and operate.

Ozone Pollution Exceedances: Denver is within the non-attainment zone for ozone pollution, meaning our area exceeds the EPA's air quality limits for ozone. In fact, the region has failed to meet ozone air quality standards for more than a decade. To meet current EPA air quality standards the region must cut ozone pollution from approximately 84 ppb down to 70 ppb - about a 17% cut.

Expanding Mobility Options: Denver's Mobility Action Plan has a goal to reduce single-occupant vehicle commuters to 50% from 73% in 2017, and increase transit commuters and walking/biking commuters to 15% respectively.

Reducing Traffic Fatalities: Denver's Mobility Action Plan also calls for eliminating traffic fatalities by 2030 via a Vision Zero program, which would, in part, require making walking, biking, rolling and accessing transit safer and easier.

The Next Six Months

Every new Mayor and City Council member has high expectations when they come into office. But it can also take time to staff up and roll out a comprehensive action plan to meet problems as large and as urgent as climate change and our air pollution crisis.

In order to help the Mayor and City Council make meaningful progress in the next six months, while also simultaneously staffing up and finalizing their own bold, comprehensive plan for their first terms, CoPIRG recommends Denver take the following 13 simple, measurable actions.

Our recommendations can be acted on now. Some are actions the Mayor can take via executive order or the City Council can pass via ordinance. Others leverage the power of the city's bully pulpit and maximize opportunities and funding that already exist. Others leverage the city's role in the region, as one of the largest population and economic drivers, and identify regional or state decisions that Denver needs to weigh in on to ensure success for its residents and businesses.

This is not meant to be a complete list. A comprehensive list of recommendations from the Denver Climate Action Task Force can be found here.

We offer these 13 recommendations as measurable and meaningful actions that can be taken quickly. The benefits from each of them will strengthen Denver's ability to take the next step, and the next that will be ultimately needed to solve climate change and bring the region the clean air it deserves.

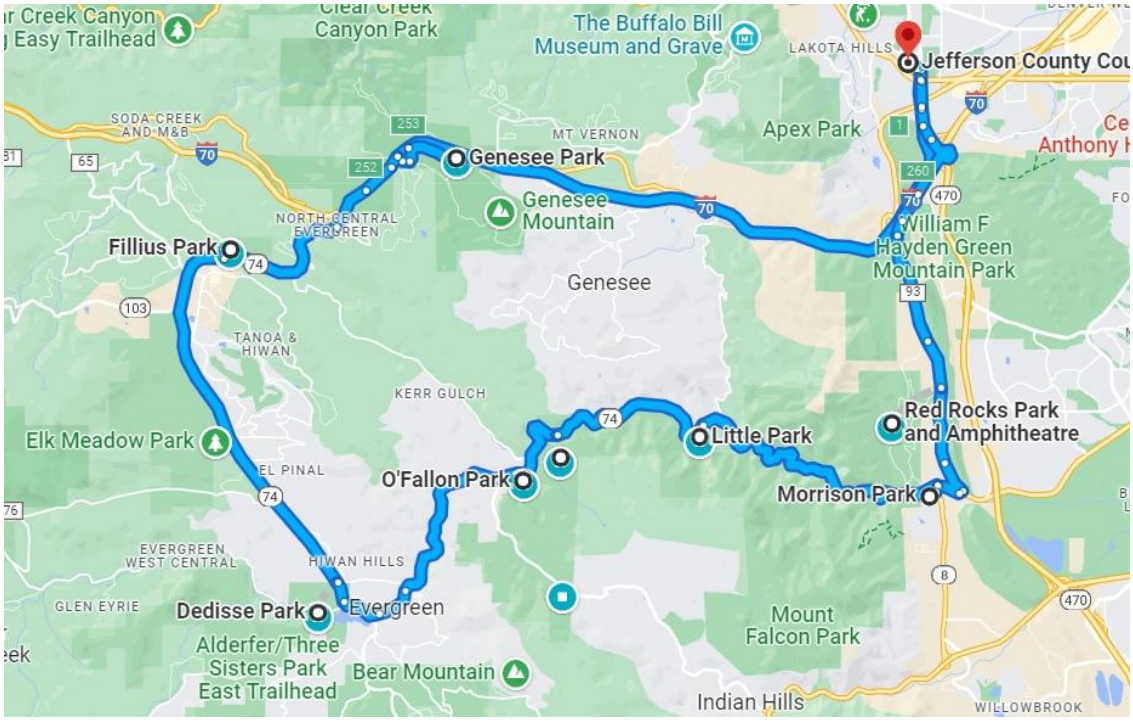
Commit to only purchase zero-emissions vehicles for Denver's fleet

- **Background**: Denver's Executive Order 123 from 2013 should be updated so the city is only purchasing electric vehicles - starting with light-duty vehicles.
- **Why**: In Denver, the transportation sector is the second largest source of greenhouse gas emissions and the largest source of ozone pollutants. Electric, zero-emissions vehicles are cleaner and cheaper to fuel and maintain than gas-powered vehicles. For example, by replacing retiring light-duty vehicles with EVs rather than gasoline-powered cars, cities can see a 63% reduction in greenhouse gas emissions compared with a scenario in which retiring fleet vehicles are replaced with gasoline-powered vehicles. In addition, a shift to electric fleet vehicles would result in a 92% reduction in volatile organic compounds (VOC) emissions compared with the emissions produced by gasoline-powered vehicles; a 23% reduction in NOX emissions; and an 11% reduction in PM2.5 emissions. Further air pollution reductions will be realized in future years as the electricity grid transitions away from dirty, polluting forms of energy such as coal and gas toward cleaner forms of energy such as solar and wind power. The city would also see cost savings, with the biggest savings coming in fuel costs (approximately 68% reduction) and maintenance costs (approximately 37% reduction).
- **Action**: The Mayor should approve an executive order that directs all agencies to only purchase electric vehicles.

Launch a Denver Parks shuttle that connects Denver and RTD services to Denver Mountain Parks

- **Background**: Denver maintains 22 parks and 24 conservation areas in its Mountain Parks system, offering thousands of acres of hiking, fishing and other outdoor recreation. However, the main way of accessing those parks is by driving. Many of these parks are accessible off I-70, Highway 74 and Highway 285. Denver could operate a shuttle system starting at the RTD Jefferson County Government Center station (accessible to Denver residents via RTD's system) that loops up I-70, onto Highway 74 to Evergreen, down to Morrison and back over to the Government Center station again. Assuming approximately 8 buses, 12 hours of service, 10-minute frequencies, on Saturdays and Sundays between Memorial Day weekend and Labor Day weekend, a basic operating cost would be $500,000 (calculated by using cost data from RTD's 2019 Networked Family of Services Service Performance report - diving cost by hours and multiplying by 1.25 to account for higher salaries since 2020). Operating costs could be reduced by partnering with Jefferson County on the service given the overlap with Jefferson County Parks too. If the city partners with an entity like RTD that has 16-passenger vans, it could avoid purchasing its own vans.
- **Why**: Offering a transit option will reduce pollution from vehicles traveling to these beautiful areas and relieve pressure from vehicles on the trailheads and parking lots. It also expands access to our Mountain Parks to people who don't own a vehicle. Most importantly, it adds significant value to the overall transit system by expanding the number of transit accessible destinations, recruiting more people to use it and removing the final reason for some (access to the mountains) to own a car.

- **Action**: Allocate money in the budget to launch a Denver Mountain Parks loop shuttle program.



Possible route of Denver Mountain Parks shuttle - Staff

Triple the number of participants in the Renewables & Resilience Incentive Program for Human Service Providers

- **Background**: Denver can currently fund up to 100% of the costs associated with installing solar panels, battery storage and EV charging for Human Service Providers. This program came out of a gap identified in the 100% Renewable Electricity Action Plan and will help Denver meet our renewable energy goals.
- **Why**: According to the program description, this will have a number of community benefits:
    - Reduce fossil fuel consumption - A solar system that covers 100% of electricity costs would avoid 1,185 metric tons of greenhouse gas emissions
    - Protect public health - Burning less fossil fuel improves both indoor and outdoor air quality
    - Increase resiliency - Solar, battery storage, and vehicle-to-building EV charging can provide backup power to buildings during power outages, avoiding higher utility costs during heavy demand
    - Saves providers money - These enhancements free up resources and money for human service providers to focus on their core mission by lowering operating costs and allowing more funding to go to critical support services.
- **Action**: Eight Human Service Providers received awards in 2023. Denver should add another 16 by January, 2024.

Highlight transit options in the mayor's message on the Denver International Airport people mover

- **Background**: Denver International Airport has a people mover that connects the three concourses and the terminal. As the train moves from Concourse A to the Main Terminal, a recorded welcome message greets people. Often, that message is from the Mayor and could contain information about transit.
- **Why**: Thousands of people use the DIA people movers every hour. It is a significant opportunity to educate and elevate the transit options that exist. Given that millions of people use DIA every year, shifting even a small percentage of travelers to the trains and buses that already operate, would reduce vehicle trips and pollution.
- **Action**: The Mayor should encourage people to use transit options as part of their message recorded for the DIA people mover.

Support the Regional Air Quality Council's (RAQC) recommendation to stop the sale of the dirtiest gas-powered lawn and garden equipment in the region

- **Background**: On July 7 of this year, the RAQC approved measures including a 2025 prohibition on the sale of the dirtiest new gas-powered push lawn mowers and handheld landscaping tools such as leaf blowers and trimmers, and seasonal use restrictions on this same type of equipment for public entities and commercial operators that kick in in 2025 and 2026 respectively. The measures must be approved by the Air Quality Control Commission (AQCC) this fall before they are enacted.
- **Why**: Gas-powered lawn equipment produces a shockingly high amount of ozone pollutants. For example, operating the "best-selling commercial leaf blower" for just one hour results in as much ozone-forming emissions as driving a staggering 1,100 miles – approximately the distance between Denver and Calgary, Canada. To tackle this pollution, regional solutions will be more effective than a city policy - air pollution does not recognize municipal lines. A 2022 CoPIRG Foundation report showed that fully shifting the lawn and garden sector in the region away from gas-powered equipment could achieve **nearly 20% of the cuts needed** to bring ozone concentrations down below EPA health-based air quality limits. A suite of financial incentives exists to help make the switch to electric lawn equipment including:
    - A new state tax credit that provides a 30% discount on electric lawn equipment
    - A $3,000 matching grant program from the RAQC for small businesses
    - RAQC grants up to $100,000 for public agencies such as municipalities, counties, public schools and universities to make the switch
    - The Mow Down Pollution voucher program worth up to $75 to $150 towards the purchase of electric equipment
    - Federal tax credits of up to $7,500 are available through the Inflation Reduction Act for some large electric mowers.
- **Action**: The City and County of Denver should formally support the RAQC proposal to phase out the dirtiest gas-powered lawn equipment and call for passage at the AQCC this year.

Apply for the federal Reconnecting Communities and Neighborhoods grant to transform the Colfax viaduct between Auraria campus and Federal Blvd - increasing walking, biking and transit options

- **Background**: The Colfax viaduct runs from Auraria campus (approximately 7th St/Osage St) past train tracks, I-25, Meow Wolf and the South Platte River to Federal Blvd, where it culminates in the Colfax cloverleaf. It runs through and connects parts of the city that will see huge transformation in the next decade with significantly more housing and commercial space coming to Sun Valley, Mile High Stadium, Ball Arena, Elitch Gardens and the Auraria campus. This concrete structure has three lanes of traffic flowing in each direction and has an interstate level cloverleaf at Colfax and Federal disrupting two of Denver's main streets. Currently, the viaduct offers limited walking, biking and transit options or connections and both these streets are part of the regional High Injury Network and Critical Corridors, streets with the highest density of killed and serious injury crash cases. Colfax is a state highway so any improvements to the road will need to be coordinated with, or even led by, CDOT.
- **Why**: To reduce pollution from vehicles we must give people more and better safe options to complete trips by walking, biking and accessing transit. The federal Reconnecting Communities and Neighborhoods grant is designed to do exactly that. It offers $3.16 billion to plan and construct projects that improve access to daily destinations such as jobs, education, healthcare, food, and recreation. This part of Denver has lots of these types of destinations and will only get more as it develops further. In addition, this will allow communities to reconnect by retrofitting and mitigating highways and interstates that create barriers to community connectivity, another priority of the grant. It also emphasizes prioritizing disadvantaged communities (the neighboring areas of Sun Valley and Valverde have some of the highest asthma rates in the state). The Colfax viaduct into the Colfax cloverleaf is well-positioned for a federal grant. Since 2017, groups like the West Colfax Business Improvement District have implemented a robust stakeholder process to reimagine this area. There is broad community support and some conceptual plans have already been completed. Applying for a planning grant in 2023 would allow Denver time to also apply for an implementation grant before the funding dries up in the next few years. There are multiple agencies that are allowed to apply.
- **Action**: By the September 28th due date, work with CDOT and local partners to apply for and win a Reconnecting Communities and Neighborhoods grant to transform the Colfax viaduct, expanding travel options and reducing pollution in an area that will see a huge increase in residential and commercial development on top of the landmark sports arenas and campuses that are already there.

Colfax viaduct with possible improvements and noted redevelopments - provided by West Colfax BID

Secure a better interconnection process for solar customers

- **Background**: Before any solar project is completed, that project must get connected to the grid. This is an important step to ensure grid stability, especially as our grid transitions away from a small number of power generators (think large power plants) to thousands of smaller power inputs from solar roofs across the city.
- **Why**: Time is money. Denver recently launched the SolarAPP+ program, which significantly cuts down the time it takes to process and approve building permits and run compliance checks. Making solar easier on the front end for residents and licensed contractors will accelerate and smooth solar adoption at a time when we need more people to "go solar." However, there are still delays on the interconnection side, with multiple stories from multiple news outlets.
- **Action**: Intervene and advocate on behalf of Denver residents and businesses for more streamlined and efficient ways for Xcel Energy to complete interconnection for customers including appropriate penalties if they miss deadlines. One current PUC proceeding regarding this is 23AL-0188E.

Advocate for the adoption of the Advanced Clean Cars II rule at the Air Quality Control Commission

- **Background**: In 2019, Colorado's Air Quality Control Commission (AQCC) adopted the Zero Emission Vehicle (ZEV) rule, which requires each car manufacturer to ensure an increasingly larger percent of the new cars they send to Colorado are electric-powered through 2025. When ZEV is implemented, an estimated 4-8% of each automobile company's new cars sent to Colorado will be electric-powered, ensuring consumers have more options and more choices for electric vehicles. Colorado is now considering

the succeeding rule, Advanced Clean Cars II (ACCII), which would continue to ramp up benchmarks until we achieve 100% zero-emissions vehicle sales by 2035.

- **Why**: Switching to tailpipe-free vehicles will cut pollution and save people money. In Denver, the transportation sector is the second largest source of greenhouse gas emissions and the largest source of ozone pollutants. Gasoline is also an expensive fuel. AAA Colorado estimates an *"electric vehicle owner will spend about 4.0 cents per mile to charge their vehicle at home, while the owner of a gas-powered vehicle will spend an average of 18.4 cents per mile to gas up."* Denver became a GoEV City in 2019 when it pledged to reach 100% electric vehicles across the city by 2050. To meet these goals, the city will need automobile manufacturers to ramp up production and sales of electric vehicles. Even though Denver is a large city, supporting a statewide approach and the ACCII rule is a more effective route to ensuring consumers have access to the electric vehicles we need to reduce emissions and clean up our air.
- **Action**: Advocate for the adoption of the Advanced Clean Cars II rule at the AQCC this summer and fall so Colorado can reach 100% electric vehicle sales by 2035.

Accelerate the adoption of heat pumps by doubling the number of people who receive Denver's home energy rebates for heat pumps from 425 in 2022 to 850 in 2023

- **Background**: Denver already has a number of rebates available for residents to switch from fossil fuels to electric heat pumps to heat their home or water. In 2022, the home energy rebates helped 425 make the switch.
- **Why**: According to the 2022 Office of Climate Action, Sustainability and Resiliency (CASR) annual report, about 20% of Denver's greenhouse gas emissions come from burning fossil gas, and buildings and homes use 97% of this gas for hot water and to heat our space. Switching to heat pumps is a critical solution to tackle climate change because heat pumps use electricity to heat water and homes. In addition, gas prices are volatile and skyrocketed 40% this winter - some people's utility bills doubled from the previous winter. Therefore, reducing reliance on volatile gas with heat pumps will save people money. Unfortunately, heat pump adoption has lagged in the region. In Xcel Energy's 2022 Colorado Demand-Side Management Annual Status Report, it found *"With the exception of mini-split heat pumps…heat pump participation fell substantially short of the filed goals"*. However, it also found, despite missing its goals, heat pump participation tripled since 2021 - it is growing, just not fast enough. By doubling the participation in 2023, Denver's rebate program can not only drive increased adoption but move the marketplace, which would lead local contractors to respond accordingly by ramping up training of their installation teams, modifying supply chains and updating marketing towards heat pump installs.
- **Action**: As we move toward winter, when resident heat bills jump, work with CASR and other agencies and community partners to increase promotion of Denver heat pump rebates and double adoption of heat pumps to 850 by January, 2024.

Fix the current "next-one-in-pays" grid capacity problem

- **Background**: Whether it's solar on roofs, new electric vehicle charging or building electrification, many pollution reduction strategies will require more capacity on the grid in different neighborhoods. Unfortunately, the current model puts too much responsibility and cost of upgrading the capacity on the applicant who breaches the threshold, even though every applicant before them also bears some responsibility. The city should achieve a good resolution on this "next one in" significant cost at the Public Utilities Commission (PUC) (Denver's Energy Policy Advisor, Alyssa Russell, is currently intervening on Proceeding No. 22A-0189E), as well as leverage its partnerships with Xcel Energy to solve this and improving planning so that as more load is added, efficiency measures and demand response strategies are prioritized to minimize the impacts and costs or grid expansion. (NOTE - this background information was developed from filings in PUC Proceeding No. 22A-0189E).
- **Why**: Reforming the system so the "next one in" who breaches grid capacity in a neighborhood is not solely responsible for the significant costs of upgrading load capacity, would remove a significant cost barrier for solar and electrification in parts of the city - a barrier that will just get worse as more people transition to clean energy and electric vehicles. For example, (See heat map) the huge costs for the "next one in" to add a solar or an electrification project in Montbello because of the current lack of capacity. Therefore, it is unlikely any applicant could afford moving solar or electrification projects forward in Montbello if they have to purchase the necessary grid upgrades for themselves and others. Failing to fix this problem will slam on the brakes for people to add more solar or electrification in some neighborhoods. Finally, better coordination with Xcel Energy around pairing needed grid upgrades with strategies that reduce energy waste and improve demand management could significantly reduce the impacts and costs of grid capacity improvements.
- **Action**: To fix the "next-one-in-pays" grid capacity problem, Denver should work through the PUC and with Xcel Energy to reform the upgrade process to remove barriers for applicants to continue to add solar and electrification improvements in every part of the city and advance energy efficiency measures to mitigate grid capacity expansion impacts.

Figure AR-2. Hosting Capacity Map, Montello Neighborhood, Denver, Colorado.

Map from Denver's Energy Policy Advisor, Alyssa Russell, filing on Proceeding No. 22A-0189E

Launch a Green Savings Week that focuses the city's marketing and communication systems on educating the public about the green federal, state and local tax incentives

- **Background**: There is an unprecedented amount of money available federally and on the state level to help Denver residents reduce energy use, switch to cleaner electric vehicles, go solar or electrify their homes. Many organizations have information and breakdowns of the options - for example Rewiring America - but lack the bully pulpit that a city has to educate residents. By designating a Green Savings Week this fall, the Mayor's office and City Council could push out this information to residents and businesses through a concerted campaign via social media channels, newsletters, and communication collaboration with community partners.
- **Why**: Pairing federal and state tax incentives with the city's rebates and programs will increase the value for people and should accelerate the number who adopt these cleaner technologies. By putting the city's marketing and communications resources behind this effort, we could see deeper education than current outreach at a time when so much money is available via dozens of tax incentives, credits and rebates.
- **Action**: Launch a Green Savings Week in the fall, using city marketing and communication resources to educate Denver residents about the myriad of green tax incentives on a federal, state and local level, increasing the number of people who transition to cleaner energy, vehicles and homes.

Allocate at least $5.4 million in the 2024 budget for Vision Zero

- **Background**: For a few years, Denver's budget has included a line item for vision zero investments with the goal of reducing traffic fatalities and injuries. In 2022, the budget allocated $5.4 million and, in 2023, it allocated $5.3 million (which included $1.1 million that the City Council amended in for pedestrian safety signals). Vision zero investments vary, but small changes can make a difference. For example, in early 2020, the city used low-cost materials like paint and plastic posts at 15 intersections on East Colfax Avenue adding bulb-outs at the corners, pedestrian median refuge islands, and turning restrictions. Observational data showed that safety was improved, slowing vehicles down and yielding more to pedestrians.
- **Why**: If people perceive walking and biking as unsafe then they will likely drive, even when 43% of the region's trips are less than 3 miles, which is a bikeable distance, and 19% are 1 mile or less, which is walkable. In 2022, a record 84 people were killed in traffic crashes on Denver streets. At the same time, Denver is increasing mobility options to replace car trips - and it's working. In 2022, 4,751 residents purchased an e-bike through the rebate program, with average e-bike voucher redeemer replacing 3.4 car trips displacing 4.1 million vehicle miles and eliminating 1,447 tons of greenhouse gas emissions every year. Since 2018, Denver's micromobility scooter and e-bike program has provided 14 million trips. The last thing Denver should do is reduce investments in vision zero improvements. Future budgets should see an even larger investment.
- **Action**: Allocate at least $5.4 million to the Vision Zero program in the budget to continue to improve the safety of our streets for pedestrians, bicyclists and people accessing transit.

Pass an all-electric ordinance for new residential buildings

- **Background**: All-electric buildings use only electricity to heat, cool, and operate, rather than using fossil fuels. On May 1, 2023, Denver's new code went into effect for commercial and multifamily buildings that put Denver on the path to Net Zero Energy new buildings by 2030.
- **Why**: Buildings and homes are responsible for 64% of greenhouse gas emissions in Denver because of the fossil fuels that heat and cool them. Building a new all-electric home in Denver costs less up-front than constructing a new mixed-fuel home. Plus, all-electric homes benefit from lower utility bills and improved indoor air quality, all while reducing carbon emissions. Because homes we build now will last generations and will be much more expensive to upgrade or retrofit, it's urgent we act now. Building all-electric new homes is supported by funds from the federal Inflation Reduction Act, including the 45L tax credits for highly efficient new home construction.
- **Action**: By January 1, 2024, Denver should adopt an all-electric new construction ordinance for residential buildings, ensuring they only use electricity to heat, cool, and operate, rather than fossil fuels.

Taken together these 13 actions would lay a strong foundation for Denver to ensure we have a healthier future and clean up our air.