Technical Appendix

Emissions reduction projections are rooted in data, in-depth literature reviews and MARC and partner technical expertise. The assumptions and algorithms shown below and in attachment (GHG Reduction Calculation Spreadsheet) were vetted by national and international experts.

In the building sector, significant consultation with local architects, developers, builders and contractors support construction assumptions, which in turn were used to yield GHG reduction estimates. Evergy, the region's largest electric utility, reviewed assumptions based on a decade of demand-side management programs. Energy use modeling and GHG reduction quantification for all measures has been conducted utilizing internally developed tools using locally available data where available. See GHG emissions calculations (Appendix C, Section G) for equations and variables used. Where data is not directly available, data was adopted from the most representative source available in the following order: research data produced by our peer metropolitan planning organizations in the Midwest, state-reported data, regionally delineated federal data, and national average estimates. National average estimates were obtained either directly from federal government sources or as sourced in the commercially available GHG tool, Climate View.

In the transportation sector, local expertise (e.g., KCATA, WAY TO GO and BikeWalkKC) was complemented by transportation modeling (e.g., MOVES4). In the urban greening sector, Burns & McDonnell (the stormwater project consultant), created a detailed model to estimate GHG reductions based on land use change projections. First, detailed hydrologic assumptions about the runoff generated by both new development and re-development were used to quantify stormwater runoff volumes. The type and extent of green stormwater infrastructure (GSI) needed to manage these hydrologic conditions was ascertained. Finally, federal, academic and consulting sources were to project carbon sequestration from the application of different GSI and land restoration practices.

BarkleyOKRP, a premiere communications firm, vetted communications assumptions through detailed demographic and market segmentation analysis, focus groups, literature reviews and sensitivity analysis about the impact and potential adoption rates of proposed behavior change for different measures.

Measure: Buildings and Energy

GHG reduction estimate method(s) – Modeling, engineering estimates for inputs
Model/tools used, name of developer/provider and references – In-house designed energy model with input from Climate View and SSG. Vicinity provided engineering estimates. Input estimates from marketing research by BarkleyOKRP, Entegrity, Arnold Development Group, BE-Ex, Evergy, Rocky Mountain Institute, Kansas City Home Builders Association, International Code Council, National Weather Service, DOE-EERE, eGrid and EPA Emissions Hub.
GHG reduction estimate assumptions *(key assumptions in estimating GHG emission rates, emission factors, inputs, cost and performance data and energy prices)* – Estimates are based on Kansas City average building sizes by type, but actual reductions in GHG may vary from the average-modeled building due to such factors as size, age of building, original building codes, past retrofits and building maintenance history. Energy intensity is based on the current eGrid and EPA emissions calculator. Average energy efficiency reduction estimates are associated with the application of various HVAC and building envelope improvements. The effect of continuous adoption of the most recent energy code has been projected out to 2050 with a 10% annual adoption rate of the newest available code to illustrate the difference in when various communities will embrace the new codes.

Reference case for emissions and activities – Business as usual (BAU) conditions have conservatively used 2023 average energy intensities and usage rates. This funding would integrate with DOE grant funding for improving energy efficiency in nonprofits.
Measure specific activity data *(used for estimating GHG emissions for each measure)* – Energy savings were calculated for HVAC and building envelope improvements. Energy audits will determine the type of intervention with subsequent annual comparison of year-over-year energy use adjusted by degree days. Calculations include the amount of energy use shifted from fossil fuels to solar.

***GHG emissions reduced by 2030*:** 277,180 M-Tons CO_2e
***GHG emissions reduced by 2050*:** 1,445,200 M-Tons CO_2e

BUILDINGS AND ENERGY EFFICIENCY: Greenhouse gas emission reduction associated with building improvements is based upon carbon reduction due to energy efficiency from home weatherization and HVAC improvement or replacements. There may be some minimal fuel switching away from natural gas, but largely GHG reductions are due specifically to a decrease in the amount of energy consumed.

BE-1 Resilience Hub
Resilience hubs, assumed to have a footprint of 15,000 ft^2 and 8 ft walls, were modeled before and after 70% energy efficiency improvement in HVAC, 15% improvement in walls and 10% improvement in ceilings. These dimensions reflect the average size and type of building envisioned for community resilience centers. Actual measures considered for implementation at a selected hub will be determined after an energy audit has been completed and compared against ASHRAE 100 standards for energy efficiency in existing buildings. Specific potential activities include adding insulation to walls and attics, sealing cracks around windows and doors, weather stripping on doors, reflective window films, insulation and ductwork improvements, high efficiency HVACs or heat pumps when possible. Improvements could also include some window replacements in critical situations. The level of funding dedicated to this work has been determined in consultation with engineering consultants, building owners, building managers and administrators.

BE-2 Investment in Quality Housing
Programs supporting single-family home repair and weatherization. Estimates of GHG reduction are based on modeling a 2,200 ft^2 home with 8 ft walls as the average home size in the metro. Work under this program could include any of the same elements described for resilience hubs but this program will also provide an opportunity to insert layers of energy efficiency into traditional home repair processes by upgrading insulation, fixtures, and various building components while more general repairs are occurring. Investment will be made into deeper retrofits projected to respond to energy audit findings. This could extend from HVAC improvements or replacement to changing to an electric water heater. Home energy efficiency estimates assumed a 70% HVAC improvement, 45% improvement in ceilings and floors and 30% improvement on building envelopes.

A second program under this banner is a low-cost weatherization program, also modeled based on a 2,200 ft^2 single family home with 8 ft walls. This widely available program will make smaller GHG reductions through a kit including simple do-it-yourself (DIY) improvements such as window reflective films, press on rope caulking for windows and doors, lighting swaps to LEDs, low flow faucets and shower heads and similar actions. Estimates of effectiveness are based upon EERE statements regarding average percentage energy efficiency gained by per installation; EIA data on electricity and natural gas use in Midwest single family housing was used to determine specific GHG quantities. Modeling assumed a combined 30% energy efficiency improvement on the envelope and a modest 5% improvement in HVAC efficiency.

Multifamily housing. Apartment complexes and other multifamily dwellings were modeled as 30,000 ft^2 buildings with 8 ft high ceilings and an average of 30-35 units per building. Specific investments will respond to the results of an energy audit. Based on the advice of building professionals, addressing envelope improvements may be challenging for residents. This work, then, is likely to focus on HVAC improvements or replacement with heat pumps as well as changing to electric water heaters. Home energy efficiency estimates used a 70% HVAC improvement, 10% improvement in ceilings and floors and 15% improvement on building envelopes.

Adoption of Energy Efficiency Codes. Policy development and subsequent workshops will promote adoption of ongoing improvements in the energy efficiency codes. Investment in resources for builders and homebuyers can be expected to advance the adoption of codes by 10% of the new building stock per year. The Home Builders Association estimates that approximately 3,000 homes are built in the metro annually. Previous outreach campaigns on behalf of code adoption indicate that the 10% adoption rate is realistic for surrounding jurisdictions.

BE-3 Public, Non-Profit, Urban Farm & Commercial Building Improvements
Efficiency improvements in public, non-profit, and commercial buildings were modeled as larger 30,000 ft^2 buildings with 10 ft ceilings. Urban farm buildings were modeled at a more modest 3,000 ft^2 with 8 ft ceilings. Again, GHG reductions have been made based primarily on HVAC improvements as advised in feedback from building owners, operators, management, and administration. Given the footprint of the building, improvements in the envelope are generally less cost effective; therefore, efficiency improvement estimates used a 70% HVAC improvement, 10% improvement in ceilings and floors and 15% improvement on building envelopes.

CLEAN AND RENEWABLE ENERGY SOLUTIONS: Greenhouse gas emission reduction associated with clean and renewable energy solutions are based upon carbon reduction due to fuel switching away from natural gas and fossil fuel sourced electricity.

BE-4 Deploy renewable energy solutions
The Vicinity Kansas City energy facility. This downtown district energy provider has invested heavily in the utilization of a highly efficient combined heat and power (CHP) process, resulting in electricity production with 75% fewer carbon emissions compared to the current electrical grid. Current heating boilers use natural gas for routine heating. Vicinity has a proposed plan to install two power transformers and an electric boiler powered by sustainable energy purchased from the regional utility, Evergy. Accelerating this project would avoid GHG that would otherwise be generated for a full decade. Conservative GHG reduction estimates are provided using only existing customers, but Vicinity intends to expand services by nearly 64% in response to continuing redevelopment in the downtown area.

Solar investment. The global solar atlas shows high potential for rooftop and ground solar investments with over 1,500 kWh/year generated per kW of installation. The electric utility, Evergy, already has an integrated net metering program to allow excess renewable energy to support the existing grid. Limitations are set at 30 kW systems for residential and 100 kW systems for commercial, industrial, and public institutions. Urban farms are anticipated to develop eight kW systems while resilience hubs, multi-family, commercial, non-profit and government installations are planned as 30 kW installations. KC-ACT will maximize the use of Solar for All funds as possible.

Measure: Transportation
GHG Reduction Estimate Method(s) – Modeling, engineering estimates for inputs.
Model/tools used, name of developer/provider and references – In-house designed energy model. On-road vehicle emissions estimated with EPA Greenhouse Gas Emissions Calculator. Input estimates from

marketing research by the BarkleyOKRP, Denver Regional Council of Governments, National Institute for Transportation and Communities, Congress for the New Urbanism, DOE, EIA and EPA Emissions Hub.
GHG Reduction estimate assumptions – Estimates of GHG reduction due to mode shift can be affected by surrounding land use, connectivity, comfortable traveling conditions, safety concerns, cost of fuel for vehicles, physical health of community members and other factors. Assumptions for potential mode shift increase have been made based on peer city experiences, local surveys, and past bike count data.
GHG emissions related to electric vehicles can be affected by technology improvements in batteries to reduce range anxiety, costs of vehicle purchase and ease of locating/using charging infrastructure.
EV leverage is based upon a ratio defined by “The Market for Electric Vehicles: Indirect Network Effects and Policy Design” (Shanjun Li, Lang Tong, Jianwei Xing, and Yiyi Zhou, March 2017) Average lifespan of a vehicle was assumed to be 15 years.
Reference case for Emissions and Activities – The BAU conditions used as a basis for mode shifting are estimated using population density obtained from the census coupled with local research on “reasonable walking distance” of ¼ mile to determine a catchment area of potential users. This is then combined with the number and frequency of short trips.
Measure specific activity data – used for estimating GHG emissions for each measure – Reductions in vehicle miles traveled (VMT) associated with mode shift to active transportation – measurable by surveys and traffic counts, reductions in emissions due to increased adoption of electric vehicles, and energy use reduction resulting from switching streetlights and signals to LEDs.

GHG emissions reduced by 2030: 68,867 M-Tons CO_2e
GHG emissions reduced by 2050: 278,013 M-Tons CO_2e

TRANSPORTATION: An array of actions achieves greenhouse gas emission reductions associated with transportation. Key factors include shifting individual attitudes toward walking and biking, moving the vehicle fleet toward electric power and embracing LED lighting to reduce power consumption. Until land development principles densify population and commercial services, there will be a limit on how much this transformation can occur, but we can advance programs and policies that improve the comfort of non-vehicular transportation and extend the trip distance which can be easily transited.

T-1 Connecting neighborhoods with green corridors
Mode shift. There is a significant opportunity to reduce vehicle produced emissions by getting individuals to take short trips by walking or cycling. However, the current percentage of routine trips taken by active forms of transportation is about 2%. By creating green, shaded corridors with separated walk/bike lanes, it will be more enticing to replace a trip by vehicle with walking or biking. We have modeled a 2% increase in walking and biking associated with corridor improvements that could attract users within ¼ mile of the trail or a transportation facility.

Streetlights and other signage. Another important element for perception of safety is the provision of sufficient lighting along pedestrian and cycling corridors. Adequate lighting extends the time of day when people will take advantage of active transportation; these features need to be powered by LED with a solar based power supply whenever possible. Review of existing design standards and pedestrian projects indicate a ratio of 30 streetlights per mile as an acceptable number.

T-2 Linking Trails and Protecting Bikeways
A second program designed to facilitate an individual’s decision to use active transportation is an investment in linking trails and protecting existing bikeways. Safety is a paramount concern for travelers. Gaps in bicycle and pedestrian infrastructure present safety concerns when traveling to a destination. Implementing short segments of trail or installing protective measures along existing bikeways can have

an outsized effect along a longer corridor. GHG reductions associated with these improvements (e.g., the Bi-state Riverfront Heritage Trail) are modeled at a mode shift percentage of 6% to reflect both the traffic directly attributed to the improvement and the increased use of surrounding trails leveraged by creating a cohesive and contiguous infrastructure system.

T-3 Invest in e-bikes and associated infrastructure

Rebates and bike purchases. Survey research conducted by the Denver Regional Council of Governments indicates that availability of e-bikes resulted in longer average trip length and a higher number of trips taken per week. Using this information, we modeled the additional number and greater length of e-bike trips to assess the GHG offset from what would otherwise be a fossil fuel powered vehicle. Average e-bike trip lengths modeled an increase from 2.2 miles to 5 miles and a 10% increase in the number of active transportation trips taken. We propose over 5,000 e-bike rebates and a doubling of the existing e-bike availability in the regional bikeshare program.

Bikeshare. Whether e-bikes or traditional bikes are made available to the walking public, they improve the likelihood that someone perceives an increase in acceptable trip distance. Again, this can increase both the number and length of trips shifted away from vehicles. Data from existing bikeshare facilities in Kansas City indicate that surrounding communities have experienced mode shift increases of 7.5%. To determine GHG reductions, we modeled the effect of the population within 1.5 miles of a bikeshare facility shifting 7.5% of their trips to bicycling. Average distance traveled per trip was 2.2 miles, reflecting the likelihood of the mode shift being confined to shorter routine trips.

T-4 Expand EV infrastructure

Modeling conducted with MOVES4 drives home the potential to cut transportation GHG emissions through fleet electrification and EV charging. Closely related to range anxiety, potential EV purchasers exhibit the concern that charging points beyond the home are insufficient or inoperable. Ongoing regional planning among large municipalities is developing EV infrastructure guidance to ensure that charging stations are sufficiently available and equally distributed to meet the needs of their populations. Research from the University of Chicago evaluated the leveraging potential between EV stations and vehicles and found that for every 1-¼ stations a new EV is purchased. Under this program 35 public stations would be developed with the leverage of 28 EVs purchased.

T-5 Transition to zero emissions vehicles

Local governments are leading the way on adoption of EV into their fleets. In addition to the infrastructure planning discussed above, city administrations are active in installing charging infrastructure and purchasing vehicles to use it. GHG emissions reductions have been determined based on typical annual mileage and the mpg for replaced vehicles. Lifespan is expected to be comparable to a new vehicle's internal combustion engine (ICE) counterpart. Average mileage and fuel efficiency (mpg) have been taken from EIA and reduction estimates have been produced with the EPA calculator.

MEASURE- URBAN GREENING

GHG Reduction Estimate Method(s) – Modeling and local university research

Model/tools used, name of developer/provider and references – A carbon sequestration model was produced by Burns & McDonnell for MARC and the KC Chapter of American Public Works Association (APWA). Input estimates for the model were made based on research from Nowak, David J., and Crane, Daniel E. (2002). Carbon storage and sequestration by urban trees in the USA. Environmental Pollution. 116(3): 381-389., Average of regional and tree sequestration studies (Nowak 2014, Shifley 1982, McPherson 2005 and Kavehei, E., Jenkins, G., Lemeckert, C., Adame, M. (2019). Carbon stocks and sequestration of stormwater bioretention/biofiltration basins. Ecological Engineering, 138, 227-236 and Green Infrastructure Performance Metrics Report 2020, Mid-America Regional Council Estimated with i-

Tree in its Appendix document p. 54. Additional input was provided from marketing research conducted by BarkleyOKRP.

GHG Reduction estimate assumptions - Estimates of sequestration are notoriously variable. However, we reviewed local research available to ground emission factors for various land cover types. These have been used to assess sequestration under different conditions. In recognition that sequestration potential improves as trees and native prairie mature, GHG estimates have used sequestration rates that begin very low but increase over time. A prairie can mature over three years, but trees – especially hardwoods – can take years. The 2002 research by D. Nowak was used to create a sequestration rate based upon average expected diameter breast height (DBH) of trees by age. When trees are shorter than DBH, sequestration has been based upon tree volume treated as a cone using height and radius of the base at ground level ($\frac{1}{3} \pi r^2 h$). Estimations assume an initial two-year-old seedling. Estimation of future land (re-) development has been assessed using the Regional Economic Models, Inc. model "REMI" which evaluates national projection of population and job categories to quantify future regional development expansion or contraction. The most recent results suggest that our population will continue to grow at slower and slower rates, largely due to demographic shifts.

Reference case for Emissions and Activities – BAU conditions for urban greening include some small demonstration projects developed over the last ten years and stormwater construction standards that used a stormwater manual of best management practices produced by MARC/APWA in 2005. Similarly, stream setbacks have been adopted by many jurisdictions during this period, however the size of the setback and permitted uses vary from municipality to municipality.

Measure specific activity data – used for estimating GHG emissions for each measure - Sequestration estimates derived from projected/modeled acres of (re-) developed land required to meet stormwater design standards adopted by the KC Chapter of APWA. Riparian area restoration and native prairie installations quantified by acre using reported projects augmented by GIS analysis.

GHG emissions reduced by 2030: 92,981 M-Tons CO_2e
GHG emissions reduced by 2050: 2,790,333 M-Tons CO_2e

URBAN GREENING & STORMWATER MANAGEMENT: Unlike buildings, energy and transportation, urban greening focuses on the promise of sequestration that can be unlocked with investment in trees and native plants while managing stormwater for stream stability and water quality in more frequent weather conditions. Specific estimates for energy conservation from heat island reduction were not included in the analysis, though they are certainly germane.

UG-1 Increase & Maintain Tree Canopy

Trees serve several purposes in GHG reductions including direct emissions reduction through the effect of shade on energy used for cooling, heat island reduction, and the indirect emissions reduction resulting from greater levels of mode shift. (Trees also uptake ozone and create depositional area to reduce fine particulate matter.) These advantages are important to recognize but can be difficult to quantify and confirm. Therefore, our GHG calculations only address the carbon sequestration provided by trees. Modeling of carbon sequestration from trees uses a variable sequestration rate based on tree age and associated average DBH. Trees will be planted 40 ft apart with a density of 1 tree per 100 ft^2. The number of trees planted under KC-ACT includes trees along green corridors, orchards at resilience hubs, around retrofitted buildings where possible, in open green space and integrated with green stormwater infrastructure.

UG-2 Sequestration of Carbon in Natural Areas

Areas with native prairie possess high sequestration rates potential due to the depth of root systems and rapid maturity with an initial three years of maintenance. (Approximately ¾ of prairie biomass is below ground.) Prairie plantings that have been integrated as a green infrastructure element are included in those calculations. In addition, there are 35 acres projected for prairie planting outside stormwater management. This acreage is likely to be distributed in smaller parcels. The emissions factor of 4.36 M-tons CO_2 per acre has been locally defined as part of a published study.

Riparian and natural areas improve water quality, reduce flood risks, maintain streambank stability, store carbon and act as an ongoing carbon sink. A study conducted by Burns & McDonnell used to inform stormwater standards in Kansas City identified the miles of stream system and established a 81.5 ft buffer area around them to define the riparian zone associated with natural streams. Analysis of existing land use types identified over 45,000 acres that could be enhanced to provide greater sequestration. The work to undertake those improvements would be initiated with this funding, with the assumption that all those acres would be restored by 2050 due to the adoption and implementation of new standards. These KC-ACT assumptions seem reasonable, given that the region has a total of 225,000 riparian acres and 7,200 lineal miles of streams and rivers. Much of that land is in private ownership.

UG-3 Adopt stormwater standards

In addition to formally establishing a stream setback standard that would protect existing riparian zones, new design standards proposed as a 2025 revision to APWA standards recognize the increase in extreme design conditions. They also provide the guidance necessary to develop greenfield sites that are protective of people, nature, and property. This includes a range of green infrastructure techniques like rain gardens, swales and wetlands which will significantly expand the area dedicated to both manage stormwater and sequester carbon. Estimates of land dedicated to green infrastructure have been assessed based on development patterns from REMI and average proportion of site dedicated to green stormwater infrastructure.

Growth will not only occur on the periphery of the metropolitan statistical area (MSA). The redevelopment area is expected to exceed 29 mi^2 by 2050. The application of stormwater standards will also be required as those lands transition to other uses. A second series of assessments by Burns & McDonnell reviewed the impact of the new standards on green infrastructure requirements. These estimates and the sequestration rates from corresponding literature were used to estimate replacement of impervious surfaces with green infrastructure and the sequestration it can provide.

MEASURE- FOOD, AGRICULTURE & WASTE

GHG Reduction Estimate Method(s) – Modeling, academic research for inputs

Model/Tools used, name of developer/provider and references – KC-ACT uses an in–house designed model for compost emissions reduction. An engineering estimate of GHG reduction from gasification was provided by The Element C6 Research & Development in the document "Green House Gases Data Report." The EPA Emissions Hub was used to obtain emission factors. Additional input was provided from marketing research by BarkleyOKRP.

GHG Reduction estimate assumptions - Estimations of sequestration in regenerative agriculture will be limited by the acquisition of urban farmland for cultivation. Currently, this does not appear to be a limiting factor. The sequestration rate specific to agricultural production is based on national level research. Compost emission factors assume associated transportation and emissions due to equipment turning wind rows. We have project partners expressing interest in acquiring electrical equipment including tractors and loaders. This would further decrease GHG beyond those shown.

Reference case for Emissions and Activities – Under BAU, there is one major commercial compost producer in our market which is limited by their capacity to process compost. The urban farming community (e.g. Cultivate KC) has programs to promote the expansion of farms and community gardens using regenerative practices, but program capacity is limited in its ability to develop professional farmers.

Measure specific activity data – used for estimating GHG emissions for each measure- Sequestration estimates of biochar produced by facility project engineer based upon feedstock and production level, compost emissions estimated by volume of compost produced through commercial facilities and GHG elimination due to tons of gleaned edible food.

GHG emissions reduced by 2030: 183,845 M-Tons CO_2e
GHG emissions reduced by 2050: 941,278 M-Tons CO_2e

FOOD, AGRICULTURE & WASTE: Regenerative agriculture and circular economy concepts serve as carbon sequestration techniques that address the wasted opportunities of discarding usable or compostable products by integrating them back into the production processes, or into the food chain through gleaning and soil improvement.

FA-4 Circular Economy and Composting

Expansion of composting facilities. The existing commercial composting facility supporting our MSA is limited by available space for composting wind rows; there is recognized potential for increasing compost production by 140,000 tons with supportive funding. Most of the material composted commercially comes from schools, restaurants, and large institutions; however, there has been renewed interest by for-profit and non-profit organizations seeking support for the development of satellite residential composting locations. We anticipate supporting various composting initiatives to increase compost production by 70,000 M-Tons with more than 31,550 M-Tons of CO_2e reduced per year based on the types of available feedstock.

Gleaning. The non-profit, After the Harvest, has an existing program of volunteers who gather agricultural products from open fields once landowners have completed their mechanized harvest. In 2023, volunteers gleaned over one million pounds of food. The gathered food is redistributed to families and organizations in need; increasing the capacity of the program to gather additional food prevents GHG loss through decomposition.

Regenerative agriculture. There is substantial potential for small farm development on abandoned parcels of the urban core. Sequestration rates of 3.5 M-Tons of CO_2 have been provided by the Rodale Institute. A robust network of urban farmers is ready to incubate additional farms and expand apprenticeships to grow the community of growers.

Equipment. Typically, off-road farm equipment uses diesel fuel. Urban farms are ideally suited for electrically or propane powered equipment to minimize noise and emissions released in highly populated areas. In addition, these farms are small, so alternative fuel options are much easier to introduce. Funding would support the difference in cost between a standard diesel and the alternative fuel equivalent. Equipment could also include upgrades on refrigeration and other commercial facilities to improve energy efficiency.

CROSS-SECTOR MEASURES

OUTREACH COMMUNICATIONS AND CLIMATE ACTION: A communications plan promoting five activities has been developed to support the programs and goals advocated by KC-ACT. Audience receptivity to climate messaging has been statistically estimated based on a survey of KC Climate Segmentation conducted by YouGov. Marketing analysis was then completed to evaluate the size and receptiveness of audiences to messaging and subsequent actions. This analysis includes: (A) the number of people reached by messaging, (B) the proportion of the audience receptive messaging and (C) finally the percentage of those receptive audience members adopting promoted actions.

Weatherization for Low-Income Renters. Outreach to 412,559 households with 4% adoption by 2030 resulting in 16,502 homes implementing measures. The average net benefit is an energy efficiency improvement of 13.5% per home yielding 110,389 M-Tons CO_2e by 2030.

Efficiency Upgrades for Residential Homeowners. Outreach to 259,391 households with 7% taking action by 2030, resulting in 18,157 homes achieving an average energy efficiency improvement by 20% and reducing CO_2e by 52,795 M-Tons. Significant attention will be paid to expanding the percentage of the population taking advantage of IRA tax incentives/credits for energy efficiency and renewable energy.

Increase Urban Tree Canopy. Outreach to 246,331 households with 7% penetration resulting in 17,243 trees being planted by 2030. These trees will be sequestering 31 M-Tons of CO_2e/year by 2030 and 3,492 M-Tons of CO_2e/year by 2050.

Reduction of Car Trips, One Day of Not Using Your Car for Work Commute. Outreach to 1,208,848 people with 0.9% penetration resulting in 10,880 people avoiding a work commute once per week for a total of 543,982 trips per year by 2030. Average KC commute length is 12.5 miles per the regional household travel survey, so total travel distance avoided is 6.8 million miles and 47,805 M-Tons of CO_2e/year by 2030.

Residential Food Waste Composting. Outreach to 412,559 households with 1.7% penetration resulting in 7,014 households participating in home composting. The average household compostable waste is 257 lbs., so the total diverted compost is just over 900 tons by 2030 avoiding 13,547 M-Tons of CO_2e/year by 2030.