# City of Kent Ohio Climate Action Plan

*March 22, 2023*

# Acknowledgments

This plan would not be possible without the numerous individuals and organizations that contributed to the creation of this Climate Action Plan and advocated for climate action for many years leading to the release of this plan.

## Sustainability Ad Hoc Committee

Current: Leah Graham, Judy Nelson, Lorraine McCarty, Bill Wilen, Melanie Knowles, and Andy Scholl
Former: Andrews Boateng, Rick Hawksley, Julie Morris, Lis Regula, Renee Ruchotzke, Ann Ward, and Harrison Wicks

## City of Kent Administration

## Kent City Council

- Ward 1: Garret Ferrara
- Ward 2: Jack Amrhein
- Ward 3: Robin Turner
- Ward 4: John Kuhar
- Ward 5: Heidi Shaffer Bish
- Ward 6: Tracy Wallach
- Council-at-Large: Michael DeLeone
- Council-at-Large: Gwen Rosenberg
- Council-at-Large: Roger Sidoti

## City of Kent Sustainability Commission

## Contributors

Dawn Collins, Portage County Solid Waste Management District Director / Leah Graham, Outreach/Recycling Coordinator, Kent State University / Melanie Knowles, Sustainability Manager, Kent State University / Doug Pearson, Ph.D., Associate Vice President for Facilities Planning and Operations, Kent State University / George Joseph, Superintendent, Kent City School District / Joyce Mihalik, former Chief Operating Officer, NOPEC / Michelle Hartman, Interim Executive Director, Kent Area Chamber of Commerce / Claudia Amrhein, General Manager/ CEO, PARTA. / Kent Environmental Council

## Consultant

KERAMIDA

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# Acronyms

| | |
|---|---|
| **AFOLU** | Agriculture, Forestry, and Other Land Use |
| **CAP** | Climate Action Plan |
| **CAC** | Community Action Council of Portage County |
| **ESPC** | Energy Savings Performance Contract |
| **GHG** | Greenhouse Gas |
| **GPC** | Global Protocol for Community-Scale GHG Inventories |
| **ICLEI** | International Council for Local Environmental Initiatives *now* ICLEI - Local Governments for Sustainability |
| **IECC** | International Energy Conservation Code |
| **IPPU** | Industrial Process and Product Use |
| **IRA** | Inflation Reduction Act |
| **MEMP** | Municipal Energy Management Plan |
| **NOPEC** | The Northeast Ohio Public Energy Council |
| **PCA** | Paris Climate Agreement |
| **RFP** | Request for Proposal |
| **SME** | Subject Matter Expert |

The Kent community has a long history of environmental and social activism. Time and time again, local and regional community members, groups, and institutions have stepped forward to give of their time, talent, and energy in truly amazing and immeasurable ways.

Their stories and achievements, though too long to list specifically in this introduction, are worthy of our acknowledgment and gratitude, as the Climate Action Plan presented today stands on the foundation of this deep, local history, actions past and present, and hopes for a resilient future that so many have worked tirelessly to build.

Into this very fertile soil, we are now introducing Kent's Climate Action Plan, a guide containing initiatives focused on reducing our Greenhouse Gas Emissions. By adopting this plan, Kent City Council is taking bold action to address the environmental crisis of our time so that we may remain resilient in the face of the unique challenges a changing climate poses to our beautiful landscapes and our vital economic and social systems.

Implementing the Climate Action Plan initiatives will provide economic and financial benefits to our City, and a healthier environment, with improved quality of life for those living, working and playing in Kent. I have great faith that the Kent community will once again step forward to meet the challenge.

- Judy Nelson -

# Establishing a Climate Strategy

Kent, Ohio, known as the Tree City, has a rich history of progressive environmental action, from the restoration of the Cuyahoga River to the development of energy-efficient municipal buildings. Over the years, the community has addressed climate action and sustainability in multiple meaningful ways. This report presents the first formal Climate Action Plan, which aims to lead Kent in its commitment to align with the Paris Climate Agreement.

In 2017 the Kent City Council passed a resolution to support the Paris Climate Agreement (PCA). The complete resolution can be found in Appendix A. The PCA is the first ever legally binding international treaty on climate change. It is binding to the 195 parties (194 countries and the European Union) that signed it. The PCA aims to combat global warming by keeping the mean global temperature below 2° C above pre-industrial levels and preferably limiting the increase to 1.5° C.

For the PCA to achieve this goal, climate neutrality must be achieved worldwide by 2050, which requires GHG emissions to be reduced as soon as possible. Many cities in the USA and worldwide have pledged to comply with PCA requirements, recognizing that addressing climate change is paramount to their successful social and economic life and resiliency.

This Climate Action Plan (CAP) lays the foundation for Kent to fulfill its commitment to the PCA. The plan focuses on the following five strategic areas for reducing the city's GHG footprint:

- Stationery Energy
- Transportation
- Waste
- Agriculture, Forestry, and Other Land Uses
- Education and Outreach.

**The collective purpose of the strategies is to build a foundation in Kent for continuous improvement in climate action.**

# Approach

## Benchmarking & GHG Gap Analysis

KERAMIDA assessed five peer communities that have published Climate Action Plans. Peers were evaluated to establish best practices and provide a baseline for the climate action planning process. KERAMIDA also performed a gap analysis of the 2016 GHG inventory, compared to the Global Protocol for Community-Scale GHG Inventories

## Community Engagement

The City of Kent and KERAMIDA hosted thirteen Subject Matter Experts (SME) interviews, one city council presentation, and one community engagement event to begin developing greenhouse gas (GHG) reduction strategies that resonate with and support the Kent community.

## Feasibility Interviews

The proposed strategies were reviewed with SMEs to determine feasibility and troubleshoot potential roadblocks. The strategies will remain dynamic and additional feedback is encouraged.

## Climate Scenario Summary

Five potential future climate change scenarios applicable to the Midwest region of the country were reviewed and summarized to inform strategy development. Increased temperatures, changes to precipitation patterns, and increased extreme weather events were identified as the three most significant future climate risks.

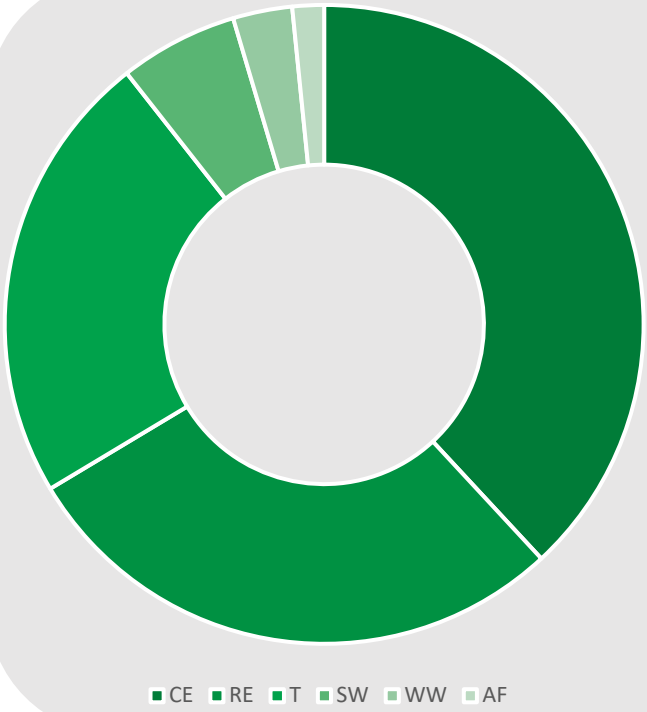
## Strategy Road-Mapping

Over one hundred potential GHG mitigating strategies were considered for the Kent CAP. KERAMIDA worked with the City of Kent and used information from the benchmarking assessment, climate scenario summary, SME interviews, and community engagement sessions to distill the number of potential recommendations to fifteen final strategies for the CAP for the City of Kent, OH. The strategies presented in this CAP establish a foundation for aggressive and pragmatic climate action.

*Details on the different steps of the approach are included in Appendix B*

# Greenhouse Gas Inventory

The City of Kent completed a community-wide GHG inventory using the ICLEI Clearpath Pro program based on data requested in 2016. The results of the inventory are summarized in figure 1 below. KERAMIDA completed a GHG inventory gap analysis comparing the 2016 City inventory with the Global Protocol for Community-Scale GHG Inventories. The analysis identified data gaps in the following categories: manufacturing, energy industries, non-specified sources, fugitive emissions, waterborne navigation, aviation, and incineration. Figure 2, on page 8, illustrates the gap analysis results.




## Figure 1 - 2016 Kent Community GHG Inventory Results

| Commercial Energy | Residential Energy | Transportation |
|---|---|---|
| 38.1% | 28.3% | 23% |
| **Solid Waste** | **Water & Wastewater** | **AFOLU*** |
| 6% | 3% | 1.6% |

*The percentage of overall emissions, sectors aligned with ICLEI Clearpath Pro program*
**Agriculture, Forestry, and Other Land Use*

Greenhouse gases are a family of gases that warm the Earth's atmosphere by trapping heat. The most common GHGs are carbon dioxide, methane, and nitrous oxide. Anthropogenic GHGs, or GHGs originating from human activity, are the primary driver of climate change. For this reason, reducing anthropogenic GHG emissions is crucial to mitigating further climate change.

A GHG Inventory is a list of GHG emission sources and the resulting emissions. GHG emissions are organized into three scopes.
Scope 1: Direct emissions from sources owned or controlled by the City.
Scope 2: Indirect emissions associated with purchasing utilities.
Scope 3: Indirect GHG emissions emitted from assets not owned or controlled by the City.

# Greenhouse Gas Inventory Update

The City will update the community GHG inventory in accordance with the BASIC level of the Global Protocol for Community-Scale GHG Inventories (GPC). More information on the GPC can be found in Appendix C. The GHG inventory update will be for data from 2022, creating a baseline for strategy benchmarking. Figure 2 below illustrates the results from the GHG gap analysis performed by KERAMIDA. Green highlighted cells represent data required for BASIC level accounting. Cells with white X's represent partial data collected for the 2016 Kent GHG inventory. Green cells without a white X represent a data gap; new GHG data must be collected for these sources. Data from the 2016 inventory will be reviewed for accuracy to determine if they can be used in the updated inventory.

## Figure 2 - GHG Gap Analysis Results

| GHG Emission Source | Scope 1 | Scope 2 | Scope 3 |
|---|---|---|---|
| Stationary Energy | | | |
| Residential Buildings | x | x | |
| Commercial and Institutional Buildings and Facilities | x | x | |
| Manufacturing industries and construction | | | |
| Energy industries | | | |
| Agriculture, forestry, and fishing activities | x | | |
| Non-specified sources | | | |
| Fugitive emissions from mining, processing, storage, and transportation of coal | | | |
| Fugitive emissions from oil and natural gas systems | | | |
| Transportation | | | |
| On-road transportation | x | | |
| Railways | x | | |
| Waterborne navigation | | | |
| Aviation | | | |
| Off-road transportation | x | | |
| Waste | | | |
| Solid waste disposal | x | | |
| Biological treatment of waste | x | | |
| Incineration and open burning | | | |
| Wastewater treatment and discharge | x | | |
| Industrial Process and Product Use (IPPU) | | | |
| Industrial processes | | | |
| Product Use | | | |
| Agriculture, Forestry, and Other Land Use (AFOLU) | | | |
| Livestock | | | |
| Land | | | |
| Aggregate sources and non-Co2 emission sources on land | | | |

*Green cells indicate emission sources that must be reported to align with BASIC-level reporting for the Global Protocol for Community-Scale GHG Inventories. Cells with a white X indicate that at least partial data was collected for the associated emission source in the 2016 Kent GHG Inventory.*

# Stationary Energy

**Stationary Energy Strategies** include strategies to reduce GHG emissions from fuel combusted within the city boundary, GHG emissions from grid-supplied energy consumption within the city boundary, and GHG emissions associated with transportation and distribution losses from grid-supplied energy consumption.

# Municipal Energy Management Plan

Energy consumption (commercial and residential) represents Kent's largest source of emissions. Reducing energy consumption through efficiency measures is a pragmatic strategy to reduce community GHG emissions and save residents money. To help community members improve energy efficiency, Kent will pursue internal or external financing to create a Municipal Energy Management Plan (MEMP). The MEMP will build upon the strategies outlined in this CAP and should be considered a continuation of the CAP.

A MEMP will guide the City of Kent toward improving the community's economic vitality, health, and wellness while reducing community GHG emissions. The MEMP will need to be written by proven experts and should identify initiatives to reduce environmental impact and save taxpayer dollars. The MEMP should consider at least the following strategies and expand on the strategies outlined in this CAP.

- Large-scale energy savings performance contracts
- LED transitions for municipal lighting
- Energy efficiency revolving fund
- Energy efficiency procurement policies
- Local grid resiliency

**Energy savings performance contracts** are budget-neutral funding mechanisms that allow building owners to reduce energy and water use while increasing operational efficiency.

**LED transitions for municipal lighting** are a rapid return on an investment strategy already begun in Kent. LEDs use 1/3 of the electricity as typical municipal lights and last nearly 20 years.

**Energy efficiency revolving funds** are financial tools that increase the availability of debt financing for energy efficiency and renewable energy projects while minimizing borrowing costs.

**Energy efficiency procurement policies** encourage purchasing selected products to meet energy efficiency criteria. Energy-efficient products will reduce GHG emissions and save money.

**Local grid resiliency** will become increasingly vital as climatic impacts continue to disrupt power distribution networks. Resilient and stable grids are efficient, connected, smart, and flexible.

# Subsidized Energy Audits

Energy audits help building owners identify energy-saving opportunities and therefore reduce greenhouse gas emissions from electricity and natural gas consumption. A combination of the following options offers Kent the best opportunity to provide no-cost or subsidized energy audits to more individuals and businesses in Kent.

### Sliding Scale Energy Audits

Subsidize energy audits, on a sliding scale based on income, with funds from the NOPEC Energized Community Grant program. The average single-family home size in Kent is 1,558 square feet at an average of $2.50 per square foot of energy costs. Using future aggregation of NOPEC grants, the City could assess funding opportunities for a subsidized sliding-scale energy audit for residential single-family homes. Energy audits will provide the foundation for building owners to identify the necessary retrofits and weatherization opportunities to address in the near future.

### Energy Audit at Point of Sale

Develop a policy for legislative consideration that real property sellers will obtain a certified energy audit and provide this information to potential buyers before the sale. Legislation like this exists across the nation and is implemented in various ways. In other communities, some examples require homes that are ten years or older to disclose comprehensive home energy efficiency details to buyers, or home energy data is collected and used to create an Energy Disclosure Report.

### Community Spotlight

The Community Action Council of Portage County (CAC) currently offers Kent residents whose income is within 200% of the Federal Poverty Guidelines no-cost home weatherization assistance, including:

- Weatherization review to determine the most cost-effective weatherization services
- Safety inspection on combustion appliances (e.g., heating units, gas stoves, etc.)

In addition to no-cost home weatherization assistance, CAC offers income-qualifying Kent community members summer utility payment relief, extended payment arrangements with utility companies based on a percentage of household incomes, in-home energy audits, energy efficiency installations, and summer food programs for children.

# GHG Reduction Ordinance

A GHG Reduction Ordinance is a multi-phase strategy for building owners with facilities larger than a prescribed square footage ("owners"). In phase 1 (Benchmarking), owners will be encouraged to track building energy and water usage using the EPA's ENERGY STAR portfolio manager. In Phase 2 (Transparency), owners can submit benchmarked data to the City. In phase 3 (Reduction), owners will be encouraged to set energy reduction targets in accordance with the Paris Climate Accord. One year after reduction targets are set, owners will be prompted to update their ENERGY STAR portfolio manager annually to display progress that will be shared on a public dashboard.

**Phase 1 - Benchmarking**
Benchmarking is the process of establishing a baseline and tracking performance over time. In this case, the focus is on electricity consumption in large buildings. Benchmarking can provide year-one savings of 1.5% due to increased attention to building energy performance.

**Phase 2 – Transparency**
Once building data is shared with the City, it can be made publicly accessible through a digital dashboard. Transparent building energy use data provides a more complete picture of the real estate market, leading to market evolution across segments and local geographies.

**Phase 3 – Reduction**
Encouraging large building owners to submit reduction goals and publish progress will reduce energy consumption and therefore reduce GHG emissions from the stationary energy sector without municipal capital input. Building owners will benefit from reduced utility expenses and improved facility value.

Figure 3 - Proposed Implementation Schedule

| | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|
| Buildings > 10,000 SF | Voluntary benchmarking | Phase 1 - Benchmarking | Phase 2 - Transparency | Phase 3 - Reduction, goal setting | Phase 3 - Reduction, goal reporting |
| Buildings > 5,000 SF | Voluntary benchmarking | Voluntary benchmarking | Phase 1 - Benchmarking | Phase 2 - Transparency | Phase 3 - Reduction, goal setting |

# Building Codes

Updating energy codes on a regular cycle will reduce building energy usage and therefore reduce GHG emissions from stationary energy. Ohio is one of many states with mandatory statewide building codes, and therefore cities cannot adopt municipal-level building codes. Building codes for renovations and new construction follow the Ohio Board of Building Standards, and there is no structured review period for energy codes. Kent cannot adopt municipal-level energy codes that differ from Ohio state energy codes. Kent can advocate for state-level policy change and evaluate the capacity of municipal buildings to follow updated energy codes.

**Community Spotlight - RESOLUTION NO. 2008- 202**

In 2008, the Kent City Council passed a resolution requiring all new construction of city buildings larger than 5,000 square feet to meet LEED Silver standards. In 2018, the Kent Police Department moved into a new building built to LEED Silver standards, and a new LEED Silver City Hall will be completed soon (pictured on the right).

## Advocacy

Kent will partner with communities across the state to advocate, via a City Council resolution, for state energy codes to be updated to the latest version of the International Energy Conservation Code (IECC) (residential) and ASHRAE Standard 90.1 (commercial). Should resolutions not lead to state-level change, Kent and partner communities should strongly consider hiring a professional lobbying firm to work with state lawmakers to change building codes and building code revision cycles.

## Municipal Code

LEED Silver is a strong foundation to build, but building codes must be updated to capture the latest best practices. Kent can develop legislation for all new construction and renovation of municipal buildings to meet the latest version of IECC or ASHRAE Standard 90.1, whichever best fits the building use case. The Inflation Reduction Act (IRA) has multiple sections providing funding for local governments to update and implement building code modifications (IRA Sec. 50131 & IRA Sec. 13304).

# Expand Solar Energy

There are several options for procuring renewable energy, including on-site self-generation, community solar, utility supply options and community choice aggregation. Each option has pros and cons, but they should all be considered for residential and commercial electricity customers in Kent. Electricity produced via photovoltaic cells directly reduces GHG emissions from stationary energy. The City of Kent will gain more insight into the funding mechanisms for solar opportunities and investigate these projects further.

### Partner with Solar United Neighbors Ohio

Solar United Neighbors is a 501c3 nonprofit organization that helps communities develop solar co-ops. A solar co-op is a group of property owners that combine their buying power to save money purchasing on-site solar systems (e.g., rooftop photovoltaic, photovoltaic canopies, ground-mounted photovoltaic, etc.) Members of solar co-ops (usually between 20-50 property owners) can issue an RFP on behalf of the co-op, which will result in more competitive bids than single property RFPs. Solar United Neighbors also helps co-ops apply for solar financing, understand local net-meters regulations, and project building solar potential.

### Support House Bill 450

House Bill 450 (HB 450) is currently being considered by Ohio lawmakers. If passed, HB 450 will allow for the development of community solar projects under 50 megawatts (1 megawatt can power about 190 homes). Community solar projects are solar facilities that benefit multiple customers (individuals, businesses, nonprofits, etc.). Customers lease a portion of the larger project; HB 450 will allow customers to lease up to 100% of building energy demand. Community solar customers under HB 450 will be entitled to net metering. Kent will assess the feasibility of solar projects under 50 megawatts (5 to 10 acres are needed per megawatt).

### Community Aggregation

Kent will work with NOPEC to sign customers up for NOPEC Preferred Pricing Green Energy Program. Kent will examine the opportunities for community aggregation within the community. In Ohio, local governments can aggregate the energy used by residents and arrange for the purchase of renewable energy for residents. To be eligible local governments must be certified by the Public Utilities Commission of Ohio and adopt an ordinance that approves either an opt-in or opt-out aggregation.

# Green Leasing

Energy efficiency and renewable energy can significantly reduce emissions in buildings, but traditional leasing practices create obstacles to investing in green projects. Green leasing allows tenants and landlords to collaborate and save energy, reduce costs, and achieve organizational sustainability goals. Green Lease Leaders was developed by the U.S. Department of Energy and the Institute for Market Transformation and sets the standards for what constitutes a green lease. Kent will develop a plan to incentivize the adoption of green leasing.

Green Lease Leaders has developed a standard with three levels of achievement for green leasing. Kent will incentivize the Gold Level of Recognition which includes:

1. Completing at least five credits
2. Completing two of three prerequisites

**Prerequisites**

- Provide sustainability contact and/or information
- Implement a cost recovery clause for energy efficiency upgrades benefiting tenants
- Multifamily - Implement energy efficiency improvements during unit turns

**Credits**

- Track common area energy use
- Track common area water use
- Disclose whole-building ENERGY STAR score to the tenant annually
- Ensure brokers or leasing agent(s) have energy training
- Implement landlord energy management best practices
- Incentivize tenants to purchase on-site renewables if offered by the landlord and competitively priced
- Meter tenant spaces for electricity use
- Request annual tenant energy disclosure
- Minimum energy efficiency fit-out for tenants
- Establish a tenant energy efficiency engagement and training plan
- Establish a whole building performance reduction target in Carbon or Energy Use Intensity (EUI) units
- Establish social impact goals that positively contribute to the health and resiliency of the people and communities in and around buildings

# Transportation

**Transportation Strategies** include strategies to reduce GHG emissions from fuel combustion on-road transportation occurring within the city boundary, GHG emissions from grid-supplied energy consumed within the city boundary for on-road transportation, and GHG emissions from a portion of transboundary journeys occurring outside the city boundary, and transmission and distribution losses from grid-supplied energy consumption.

# Electric Vehicle Infrastructure

Electric vehicle (EV) infrastructure refers to the infrastructure necessary to support EV use, such as charging stations. When coupled with renewable electricity, EVs directly reduce GHG emissions from transportation. This includes both public and private charging stations. Public charging stations are available for use by any electric vehicle driver. Increasing access to EV charging stations will encourage community adoption of EVs by making charging more convenient, reducing "range anxiety," and allowing access to cost savings. Kent will lay the groundwork for EV infrastructure development by creating a feasibility study before investing any resources into physical development. The study can be done internally or with external advisement. The following topics need to be addressed in the feasibility study of the current and future EV landscape; appraisal of charging options, appraisal of power options, operations/business models, funding opportunities, and municipal and school district fleet replacement.

**Current and future EV landscape**

The EV landscape refers to EV users and infrastructure. The current landscape represents how many residents currently own EVs and how the EVs are charged. Projecting a future landscape will inform Kent of the eventual needs of the community. Parking garages, on-street parking, retail stores, and Kent State University are all excellent options for expanding the EV landscape.

**Appraisal of charging options**

There are multiple ways for EV owners to charge their vehicles, and all options must be considered. The feasibility study needs to focus on public charging options, specifically expanding public options to be visible, evenly distributed, and high-capacity. Additional factors to consider are traffic patterns, housing density, and technical feasibility. For-profit charging companies need to be considered among the options. For-profit charging companies work with local businesses to deploy charging stations and develop business models to profit from customers.

**Appraisal of power options**

EV Charging stations pull a large amount of electricity from the grid, so the power landscape needs to be reviewed with Kent and local utility aggregators. This will ensure that the grid has the capacity to support the EV infrastructure before installation. Additionally, Kent will explore options for zero-emission charging through renewable energy procurement.

## Operations and business models

The long-term sustainability of Kent's EV infrastructure will be dependent on the financial viability of EV charging stations. Topics to be considered include; available operating models, enforcement issues and regulatory considerations. Kent will need to ensure that the municipality is EV-compatible through ordinances and zoning. Even if city codes do not prohibit EV infrastructure development, they must be optimized to encourage EV ownership and equitable distribution of charging stations.

## Funding Opportunities

Kent will seek funding opportunities while the EV infrastructure feasibility survey is completed. The cost of installing charging stations varies based on numerous factors, but on average, the capital cost for one station is between $12,000 and $15,000. There are many opportunities to fund the development of EV infrastructure, including IRA provisions for tax credits for individuals. Funding opportunities are also expected to continue to grow in the coming years. Kent needs to align funding opportunities with municipal feasibility. As of 2022, The City has already secured a dual station for the new administration building.

## Electric Vehicle School Buses

Replacing diesel buses with clean electric school buses improves air quality for children, saves school districts money, improves the resilience of the electrical grid, and reduces the carbon emissions that drive climate change. The opportunities for school bus fleet managers to replace conventional, highly polluting diesel vehicles with clean electric models are rapidly increasing. Federal funding for school bus electrification is greater than ever, there is a growing awareness in communities of the urgent need to reduce vehicle emissions, and manufacturers are offering an increasing variety of electric models.

# Bike and Walk Infrastructure

Walking and cycling are the cleanest ways to get around a city, and both can have enormous benefits for health, greenhouse gas emission reduction, air quality, road safety, and equity. To make walking and cycling more attractive options, Kent must focus on safety, convenience, culture, and comfort for people on bike and foot. These goals should be aligned with Kent's 2004 Bicentennial Sustainable Transportation Plan. Over the next five years, Kent will focus on the following goals:

**Complete the rehabilitation of East Main Street**

Starting in 2025, Kent will transform a five-lane road to make East Main Street a more bikeable road between Kent State, commercial, and residential properties.

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**Finalize agreement with Akron for Lake Rockwell Trail**

Kent aims to develop the Lake Rockwell Trail over Akron's water mains that will connect to regional trails providing new access points and increasing walkability and bikeability to multiple schools.

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**Complete the connection between Portage Hike and Bike Trail**

Kent aims to find funding for the Portage Hike and Bike Trail section that is walkable but not yet bikable. By 2025 the City aims to have started this project in phases.

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**Rehabilitate the Stow Street pedestrian bridge**

The City will work with Portage County Engineer to rehabilitate the Stow Street pedestrian bridge to increase pedestrian accessibility in the City.

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**Add bike lanes to Hudson Road leading into Kent**

By 2025, the City of Kent plans to have started construction of bike lanes on Hudson Road to increase bikeability leading into town.

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**Improve the safety of State Route 43 at the gateway coming into Kent**

Kent will partner with Davey Tree to develop safety improvements to State Route 43 to slow vehicles at the gateway coming into town.

# Waste


**Waste Strategies** include strategies to reduce GHG emissions from solid waste generated within the city boundary and disposed of in landfills or open dumps within the city boundary, GHG emissions from waste generated outside the city boundary and disposed of in landfills or open dumps within the city boundary, and emissions from solid waste generated within the city boundary but disposed of in landfills or open dumps outside the city boundary.

# Food Waste Diversion

Kent State University (Kent State) utilizes an anaerobic digestion system at its largest dining facility to divert hundreds of pounds of food waste from the landfill daily. The anaerobic digestion process converts food waste to renewable energy, allowing Kent State to decrease its environmental impact while creating renewable energy. Kent State and the City of Kent can partner to pilot a community anaerobic composting process using the same technology currently in place.

## Partnership Opportunity

The following steps are suggested to establish a partnership between Kent and Kent State to digest residential organic waste:

1. Perform a literature review to understand best practices from town-gown anaerobic digestion system partnerships.
2. Conduct a small-scale pilot program with residents. A pilot program will allow Kent State and Kent to work through logistic roadblocks, including waste contamination, drop-off, Kent State staffing, and capacity management.
3. Should the pilot go well, it can be expanded to accept additional waste from more residents. Supplementary steps beyond an expanded pilot will likely be more than five years out and, therefore, outside the scope of the CAP. Potential next steps could include:
    - Curbside collection
    - On-site anaerobic digestion
    - On-site use of natural gas to generate electricity or steam for the Kent State campus


## Anaerobic Digestion Process

Pre- and post-consumer food waste from Kent State is ground on-site using a customized, industrial-strength food service grinder as part of the Grind2Energy system. Once ground, the food waste is stored in a large storage vessel as a dense slurry. Once the vessel is full, Kent State's composting partner, the Quasar Energy Group, transports the food waste to its facility in Cleveland for anaerobic digestion. Anaerobic digestion produces two byproducts, natural gas and nutrient-rich fertilizer. Natural gas is used to fuel vehicles or create electricity. The nutrient-rich fertilizer is used as a soil supplement.

# Updated Waste Hauling RFP

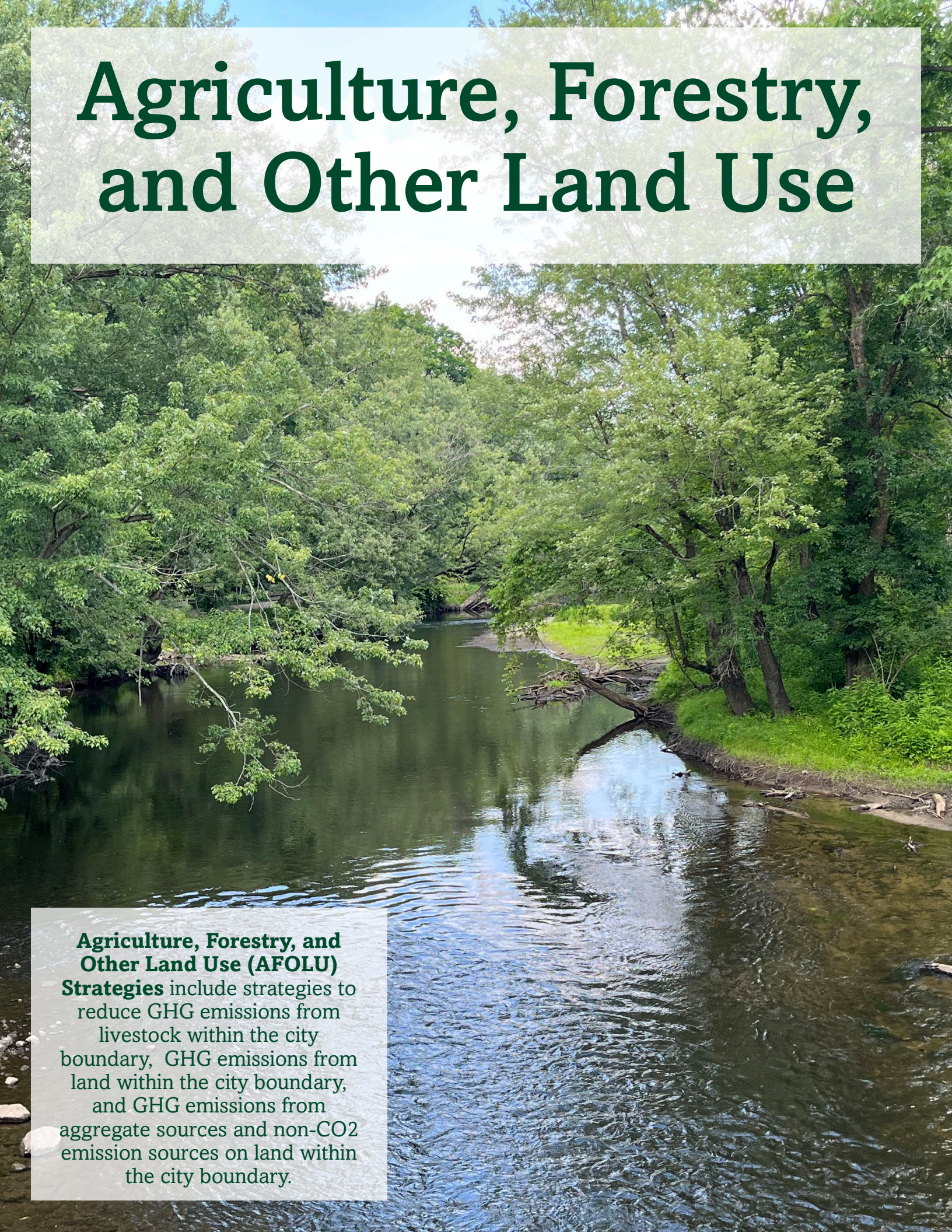
Kent will release a request for proposal (RFP) for a waste hauling contract in the summer of 2023. This represents an opportunity to include language requiring the new waste hauler to use low-emission vehicles. A portion of GHG emissions associated with waste is from the fuel burned to transport that waste from Kent to the area landfill. Low-emission waste-hauling vehicles will reduce the amount of emissions from the hauling of waste.

## RFP Language Examples

From the period [insert timeframe] through the end of this Contract (including extensions, if any), [insert percentage] collection vehicles regularly used by the Contractor shall be compressed natural gas-fueled collection vehicles (CNG) or meet regulations set in the EPAs Phase 2 Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles. Back-up vehicles used less than thirty (30) days per year shall not be subject to the age, mileage, and other requirements that apply to regularly-used vehicles but shall be presentable, in safe working order, and shall be subject to all other conditions of this section.

Any heavy-duty trade waste hauling vehicle shall use the best available retrofit technology, specifically, technology that has been verified by the United States Environmental Protection Agency ("EPA") for reducing the emission of pollutants that achieves reductions in particulate matter emissions at the highest classification level for diesel emission control strategies that are applicable to a particular engine and application that has been approved for use by the commissioner or is installed with an EPA certified engine year 2007 or later.

# Agriculture, Forestry, and Other Land Use



**Agriculture, Forestry, and Other Land Use (AFOLU) Strategies** include strategies to reduce GHG emissions from livestock within the city boundary, GHG emissions from land within the city boundary, and GHG emissions from aggregate sources and non-CO2 emission sources on land within the city boundary.

# Urban Tree Credits

This initiative aims to create a carbon credit program for trees in Kent. A carbon credit represents one metric ton of carbon dioxide (CO2). Companies, cities, or organizations that want to reduce their carbon footprint can purchase carbon credits to offset emissions they cannot reduce. An urban tree credit is the amount of carbon a single tree captures from the atmosphere and the financial value associated with that carbon removal. As a tree grows larger, it can capture increasing amounts of carbon, thus making it more valuable over time in terms of monetary credit value. Cities that plant trees can make this urban tree credit (or carbon credit) available for purchase to those who are interested in offsetting their emissions.

**Tree Inventory Updates**

This initiative is centered around continuing to document Kent's existing tree canopy. A Tree inventory (of more than four years) will reveal the age, species, size, and condition of the trees the City manages. The inventory will be the foundation for a longer management plan for maintaining and expanding the City's tree canopy. It is important that throughout the process of creating a tree inventory, the City follows the City Forest Credit (CFC) inventory requirements (both for new plantings and preservation) to ensure the City will have the data available to create a carbon market if desired.

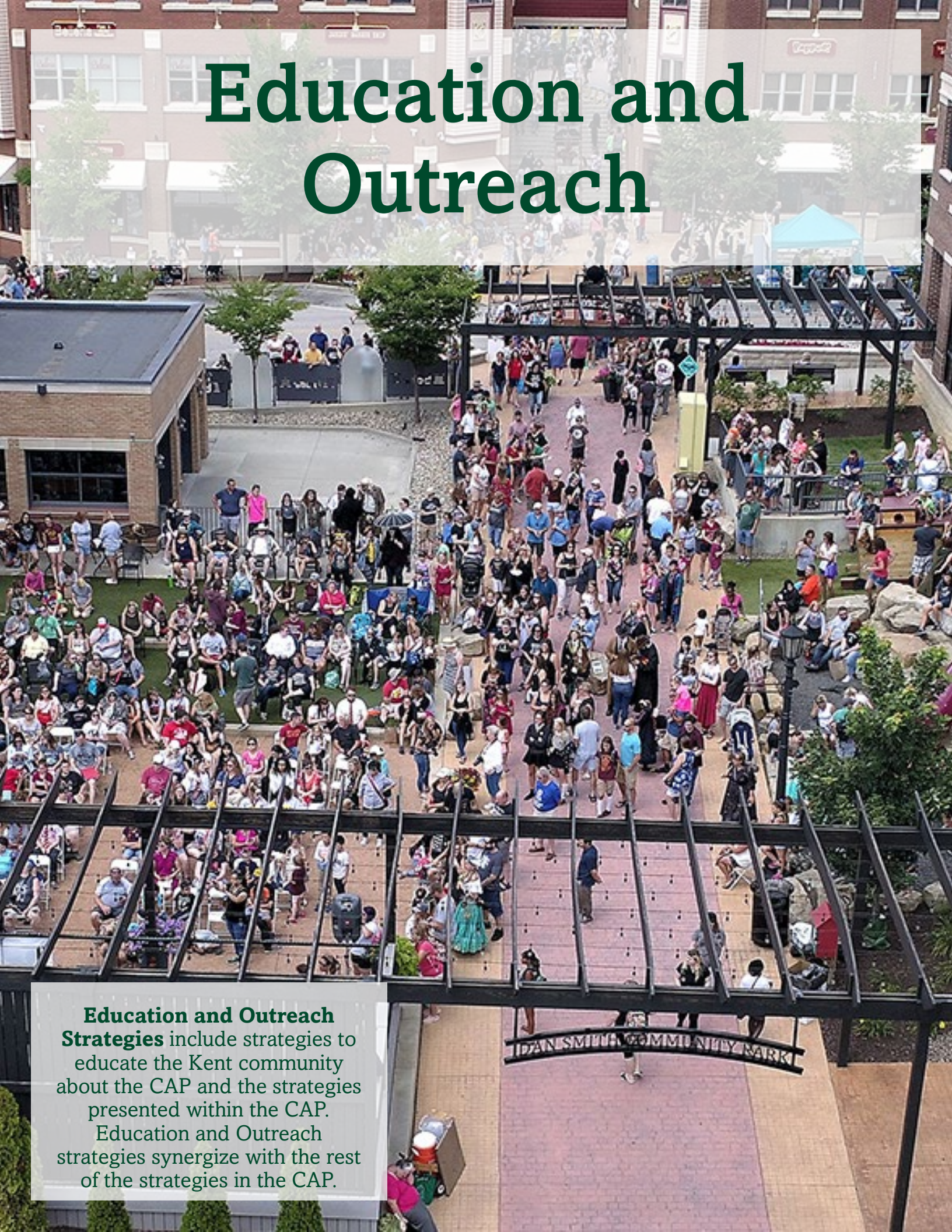
**New Tree Plantings**

Using the current tree inventory, a strategy can be developed to plan new tree plantings in areas with a low canopy density, increased risk of flooding, high energy burden, and high asphalt concentrations. While most of Kent's neighborhoods are fully planted, the tree inventory can be used to identify the areas with the greatest planting need. New tree plantings should be documented in line with the CFC requirements to ensure that the proper data is collected to create a carbon market if desired. CFC is a non-profit carbon registry for urban forestry projects.

**Local Carbon Market**

Developing a carbon market within Kent can create a new financing mechanism for climate initiatives. Kent should work with CFC, a nonprofit carbon registry that manages carbon protocols and impact standards for metropolitan areas in the United States. CFC works with cities and other urban forestry leaders around the nation to assign an urban tree credit to each tree planted in an urban tree canopy. CFC connects urban forest leaders with companies interested in purchasing carbon offsets or investing in certified planting projects with health, equity, and environmental impacts.

# Education and Outreach




**Education and Outreach Strategies** include strategies to educate the Kent community about the CAP and the strategies presented within the CAP. Education and Outreach strategies synergize with the rest of the strategies in the CAP.

# Energy Education

Energy represents the most significant portion of Kent's GHG inventory. Increasing energy literacy can build urban resilience through education. Energy literacy is an understanding of the nature and role of energy in our lives and the ability to apply this understanding to answer and solve problems. Social factors, including education, influence energy decisions. One way to manage energy resources is through conservation, including reducing wasteful energy use, using energy more efficiently, and reducing energy use altogether.

The table below provides a matrix of behavior change and non-behavior change activities that other cities have used to reduce energy reliance. Information, Promotion, Infrastructure, and Consulting organize the areas. The activity is then categorized by whether it can reduce dependence on energy (Stationary Energy) use or decouple mobility from energy consumption (Transportation).

| Area | Energy-Saving Activity | Stationary Energy | Transportation | Partners |
|---|---|---|---|---|
| Promotions | Promote NOPECs Energy Efficiency Financing to commercial property owners (PACE) and Portage County's Community Action Council's weatherization program | X | X | NOPEC |
| | Promotion of using public transport for sports tournaments/ Kent State games | | X | PARTA, Kent State |
| | Promotion of using public transport, car sharing, and bike sharing during the summer months | | X | PARTA |
| | Bike station in the city center | | X | Kent Cycle, Kent State |
| Consulting | Consulting on retrofitting strategies to increase the energy efficiency of buildings | X | | Local energy utilities |
| | Large employers encouraged to elaborate on mobility strategy | | X | Local businesses, New City-Business Climate Alliance |

| Area | Energy-Saving Activity | Stationary Energy | Transportation | Partners |
|---|---|---|---|---|
| Information | Information events on energy and campaigning (e.g., presentations). Table at Earth Day events, Heritage Festival, River Day, Music Festivals, Concerts in the Park, Saturday Haymaker Farmers Markets, etc. | X | X | Local energy utilities, nonprofits, HOAs, Kent State, cultural organizations |
| | Education programs for schools (energy & climate), engaging teachers already passionate about the subject. | X | | Kent State, Kent City School District, NOPEC |
| | Articles in the regional newspaper and city website on sustainable energy consumption | X | X | Local news outlets |
| | Sustainable traveling/tourism | | X | Central Portage VCB, Kent State Hotel and Conference Center |
| | Competition between households to save electricity | X | | Local energy utilities |
| | Being present at local exhibitions and fairs | X | X | NOPEC |
| | Tenant engagement and education on energy efficiency | X | | Local Rental Properties |
| | Sustainability signage around Kent | X | X | |
| | Host a community cleanup event through NOPEC's Event Scholarship Program | X | X | NOPEC |
| | Subsidies for energy-efficient buildings | X | | Local energy utilities |

# Academic Partnerships

The City of Kent has unique access to an institute of higher education and a local school system with a thriving workforce development program. Both educational resources can be leveraged to assist Kent with designing and implementing strategies from the CAP and other climate-mitigating programs.

### Kent State University Partnership

Kent State is set to release a sustainability plan. The City should leverage the shared sustainability goals by partnering with Kent State to offer students experiential learning opportunities. Experiential learning is a process where students learn through real-world action. Experiential learning benefits the students and the organization with which the student is partnering. To develop an experiential learning partnership, the City will partner with Kent State to develop a structure for receiving sustainability related projects, integrating projects into the current curriculum, and delivering agreed services

**Potential student projects include:**

- Community energy audits
- CAP marketing
- Urban tree inventory updates
- GHG inventory updates

### Kent School District Partnership

Kent City School District (KCS) is actively taking measures to decrease its environmental impact. One strategy that KCS is using is experiential learning. KCS participates in the Six District Educational Compact, which provides students with relevant, engaging, hands-on programming. The compact contains 26 focus areas including: Community Agriculture for Local Impact, Construction Technologies, Engineering, Forestry and Landscape Management, and Marketing Management. All these focus areas can be leveraged to provide experiential learning opportunities for high school students.  KCS also offers the Expedition Academy ("academy") program. The academy seeks to create an alternative learning experience by integrating subjects with outdoor skills and community service. The academy creates a learning experience that cultivates the academic and interpersonal skills needed in the workplace. The academy can be leveraged individually or in conjunction with Kent State and the Six District Compact to offer experiential learning opportunities for KCS students.

# CAP Outreach

Public engagement is a critical part of every climate action plan. The outreach strategy focuses on making community members aware that this landmark plan is in place and how they can play a role in its progress. This could be through various outreach strategies, such as creating simple videos that explain the CAP, a kickoff celebration, tabling at local events, and/or creating a webpage for elements of the plan. Every community decides to engage its community differently based on what works best for its residents. Fortunately, Kent has many advocates throughout the community that are interested in partnering with the City to help spread the word about the CAP implementation.

### CAP Webpage

Community interviews indicated a desire for access to the CAP and sustainability-related information via a webpage. This can effectively get the word out about various CAP-related initiatives, recruit volunteers, and keep the community in the loop on progress. Kent State students can be leveraged to help build a CAP webpage as a valuable experience for the students and an excellent resource for the City and community members.

### Educational Videos

Educational videos are an engaging way for residents to have a visual and audio aid that explains the progress the City is making. This is one way to provide transparency around the CAP and what is involved. There are several potential strategies, including a short overview of the plan or a webinar presentation link on the City's website for residents to watch later and offer as an educational resource.

### City-Business Climate Alliance

The City controls only a portion of Kent's GHG emissions - working with businesses is critical. Fortunately, Kent's Chamber of Commerce is interested in engaging businesses. A City-Business Climate Alliance is a local strategic collaboration between the City, Kent State, and the private sector to achieve Kent's climate goals, including meaningful reductions in GHGs, encouraging local shopping, designing and implementing adaptation measures, and building resilient systems.

### Climate Action Plan Kickoff

The purpose is to generate excitement and engagement while sharing knowledge with residents and ensuring community members know the value of their input. All groups participating in the plan's development will be invited, along with any other businesses, civil society groups, nonprofit organizations, student groups, faith organizations, or residents interested in learning more about Kent's CAP work. This can be held at Kent State or a library.

# Appendix A – Kent City Council Resolution No. 2017-83

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF KENT IN SUPPORT OF THE PARIS CLIMATE AGREEMENT, AND DECLARING AN EMERGENCY.**

**WHEREAS,** consensus exists among the world's leading climate scientists that global warming caused by emissions of greenhouse gases from human activities, which has led to climate change, is among the most significant problems facing the world today; and

**WHEREAS,** global climate change has led to increased occurrences of extreme weather events and to adverse impacts on ecosystems, demographic patterns and socio-economic activities; and

**WHEREAS,** responding to climate change provides communities an opportunity to be a leader in a green economy; developing products, services and knowledge that are required when transitioning to a climate-resilient future; and

**WHEREAS,** the City of Kent desires to protect and enhance the quality of life for all those who live, work, learn and play in our community, without compromising the ability of future generations to meet their own needs; and

**WHEREAS,** actions that reduce greenhouse gas emissions also have the potential to improve air and water quality, public health, energy security, social equity, our local economy and natural environment, and the quality of life in Kent; and

**WHEREAS,** the City of Kent has demonstrated its commitment to sustainability through a series of initiatives, including signing on to the U.S. Conference of Mayors' Climate Protection Agreement in 2007, the creation of a Sustainability Commission, energy efficiency improvements to existing city buildings, and a commitment to LEED certifications for new construction; and

**WHEREAS,** the City of Kent recognizes the important role that local communities will play in taking immediate action to significantly curb greenhouse gas emissions; and

**WHEREAS,** protecting our planet is of the utmost importance and requires a comprehensive effort at all levels-including government policies, industry standards, and household practices.

**NOW, THEREFORE, BE IT RESOLVED** by the Council of the City of Kent, Portage County, Ohio, at least three-fourths (3/4) of all members elected thereto concurring:

**SECTION 1.** The City of Kent commits to consider for adoption a community-based climate action plan to be developed by the Sustainability Commission in response to the City's support of the Paris Climate Agreement and in accordance with this resolution.

**SECTION 2.** The City of Kent, with this Resolution, stands in solidarity with communities across the nation and the world in support of the Paris Climate Agreement.

**SECTION 3.** That it is found and determined that all formal actions of this Council concerning and relating to the adoption of this Resolution were adopted in an open meeting of this Council and that all deliberations of this Council, and of any of its committees that resulted in such formal action, were in meetings open to the public in compliance with all legal requirements of Section 121.22 of the Ohio Revised Code.

**SECTION 4.** That this Resolution shall be in full force and effect from and after the earliest time permitted by law.

# Appendix B – Detailed Approach

The City of Kent hired environmental and sustainability consultancy KERAMIDA Inc. to facilitate the creation of Kent's CAP. The City Council approved the project to establish three to five emission reduction strategies for each greenhouse gas emission sector. Below is a detailed summary of the approach used to construct the CAP. Special attention was paid to deeply understanding and integrating the rich culture of the Kent community.

## Climate Scenario Summary

The Climate Scenario Summary (CSS) aims to assess the physical risks that climate change poses to the City of Kent across many future climate scenarios. The United Nations Intergovernmental Panel on Climate Change (IPCC) describes possible climate futures, all considered possible depending on the amount of GHGs emitted in the future. These futures are referred to as Representative Concentration Pathways (RCPs), which are used for making projections on the following factors: physical impacts of climate change, population size, economic activity, lifestyle, energy use, land use patterns, technology, climate policy, and more. KERAMIDA selected the following RCPs for the CSS analysis.

- RCP 2.6 - IPCC's most stringent scenario. The pathway is unlikely to exceed 2°C. The increase of average surface temperature across the globe by the end of the 21st century (2100) is expected to be 0.3-1.7°C.
- RCP 4.5 – Intermediate scenario. The pathway is likely to exceed 1.5°C, more likely than not to exceed 2°C, and unlikely to exceed 3°C. The increase of average surface temperature across the globe by 2100 is expected to be 1.1-2.6°C.
- RCP 6.0 – Intermediate scenario without additional efforts to constrain emissions. The pathway is likely to exceed 2°C. The increase of average surface temperature across the globe by 2100 is expected to be 1.4-3.1°C.
- RCP 8.5 – IPCC's least stringent scenario without additional efforts to constrain emissions. The pathway is likely to exceed 2°C. The increase of average surface temperature across the globe by 2100 is expected to be 2.6-4.8°C.

In exploring the potential impact of climate change on the community of Kent, both opportunities and risks need to be considered. Climate-related physical risks are risks from physical changes in the ecosystems and environments where companies operate. Physical risks can be acute (e.g., increasing frequency and intensity of storms, hurricanes, and floods) or chronic (changes in precipitation patterns, sea level rise, and changes in mean temperatures).

The National Resources Defense Council (NRDC) created a climate health analysis for the state of Ohio taking an in-depth look at changes in both extreme heat and extreme precipitation. Both ends of the RCP spectrum were analyzed. Implementing reduction methods and targets aligning with the stringent 2°C global warming results in zero change in heavy precipitation. However, an increase in precipitation can be seen drastically across the country. Ohio sees a substantial increase, 4x the volume of current precipitation values.

All the above considered, the Climate Scenario Summary will need to be continuously reviewed and edited as global warming changes occur and trends become apparent very shortly. In the most recent IPCC Sixth Assessment Report, societal factors have been studied and taken into consideration resulting in a change from RCPs to Shared Socioeconomic Pathways (SSPs). Societal and social factors for the City of Kent are guaranteed to affect greenhouse gas emissions, therefore, should be included in a formal Sustainability Plan in the next few years.

## Benchmarking Analysis

KERAMIDA selected four cities and one county to benchmark. Both sustainability and climate action plans are included in the analysis. Sustainability plans are more holistic than climate action plans and include consideration for topics like natural preservation or increased employment rate. The five benchmarked peers were considered for one or more factors, including college towns, similar-sized cities, cities located in the Midwest, and proximity to Kent.

Each plan was reviewed for the following themes (including goals and actions) GHG goal(s), renewable energy, transportation, waste, water, university collaboration, education/outreach, and resilience. Below is a summary of the selected peers and the assessed themes.

## Benchmarking Results

| | Toledo-Lucas County, OH | Athens, OH | Oberlin, OH | Bloomington, IN | Lincoln, NE |
|---|---|---|---|---|---|
| Population | 431.279 | 24,978 | 8,252 | 79,168 | 292,657 |
| Size (Square Miles) | 341 | 10.05 | 4.92 | 23.16 | 99.05 |
| Plan Publish Year | 2014 | 2018 | 2019 | 2018 | 2021 |
| Plan Type | SAP | SAP | CAP | SAP | CAP |
| Transportation | x | x | x | x | x |
| Renewable Energy | x | x | x | x | x |
| Waste | x | x | x | x | x |
| Water | x | x | x | x | |
| University Collaboration | | x | x | | x |
| Education/Outreach | x | | x | x | x |
| Resilience | | | x | | x |

## Community Engagement

Community engagement is the foundation of KERAMIDA's approach to climate action planning. Each community has its own unique needs, challenges, and dynamics that must be accounted for within any plan or roadmap for change. A Climate Action Plan must be feasible for the community and work to benefit the community members and all its institutions. Therefore, community engagement was a top priority during the planning process to ensure that the voices and insights of the community were considered and included appropriately.

The KERAMIDA Livable Cities Team traveled to Kent the week of October 3rd, 2022, to conduct a thorough community engagement strategy, including a City Council presentation, a series of subject matter expert interviews, and a public engagement session.
City Council Presentation - KERAMIDA Senior Sustainability Manager presented to the Kent City Council on October 5th, 2022. KERAMIDA provided an overview of the approach for the Climate Action Plan and updated the council on the progress to date. The City Council was able to ask questions and provide helpful insight regarding expectations, priorities, and roadblocks to consider.

*Subject Matter Expert Interviews* – During KERAMIDA's six-day trip to Kent, the team met with over 13 different community members that could provide details and context critical for KERAMIDA's understanding of the community. These leaders may be called upon when it is time to implement these reduction initiatives; therefore, their insight into this climate action plan is of the utmost importance. These interviews covered topics such as existing sustainability initiatives, failed and successful efforts, details of operations, understanding of community expectations, available data and data collection, recommendations for initiatives, community culture, environmental justice, and more. Upon completing these conversations, KERAMIDA identified over 100 initiatives and actions to explore and research further.

*Public Engagement Session* – In addition to the subject matter expert interviews, it was important to hear community voices when developing the climate action plan. This plan has the potential to impact community members' daily lives, and their insight is invaluable to the planning process. A Climate Action Plan will only be successful if it works for the community and is, in large part, created by the community itself. On October 6th, 2022, a public engagement session was held at the Fire Department. Participants were educated on KERAMIDA's approach to climate action planning before breaking out into groups to discuss key questions, including:

- What social equity and environmental issues exist within the Kent community with the greatest need and/or attention from the CAP efforts?
- What roadblocks have historically prevented or slowed progress?

- What initiatives should KERAMIDA, and the City of Kent take into consideration for reducing GHG emissions?
- What climate-related mitigation strategies or actions have been successful and unsuccessful to date?

The community engagement portion of the climate action planning process informed KERAMIDA's final assessment of the reduction initiatives that can be undertaken considering Kent's capacity and culture.

## Feasibility Interviews

Upon the evaluation and selection of the top 15-20 reduction strategies for the city, the KERAMDIA team reconnected with a group of subject matter experts that had been interviewed in October to confirm the feasibility of the proposed initiatives. They were asked to complete a survey that evaluated the initiatives that were most applicable to each person's expertise. This included questions related to project timelines, time and resources required, staffing needs, cost, community support and recommendations for improvements that could be made to the implementation roadmap. The results of this survey confirmed the feasibility of the selected initiatives and helped troubleshoot potential roadblocks. The strategies will remain dynamic and additional feedback is encouraged.

## Strategy Road-Mapping

Over one hundred potential GHG mitigating strategies were considered for the Kent CAP. Strategies were originally developed during the community engagement process. The strategies pulled from the community engagement process were analyzed by experts at KERAMIDA. Strategies that did not have an associated GHG emission reduction were cut. The remaining strategies were analyzed for community feasibility. Strategies determined to be too cost-intensive or long-term were cut.

A reduced number of strategies were presented to an internal working group of City administrators. The strategies were reviewed for feasibility. Any strategies deemed unfeasible by the working group were cut. The remaining group of strategies were researched in-depth and presented to SMEs during the Feasibility interview process. Strategies were refined according to SME feedback. A final set of strategies were selected for the CAP and were reviewed by the Sustainability Ad Hoc committee and city administration before the final CAP was published.

# Appendix C – GPC GHG Gas Index

| Index | Scope | GHG Emission Source |
|---|---|---|
| **Stationary Energy** | | |
| **1.1** | **Residential Buildings** | |
| 1.1.1 | 1 | Emissions from fuel combustion within the city boundary |
| 1.1.2 | 2 | Emissions from grid-supplied energy consumed within the city boundary |
| 1.1.3 | 3 | Emissions from transmission and distribution losses from grid-supplied energy consumption |
| **1.2** | **Commercial and Institutional Buildings and Facilities** | |
| 1.2.1 | 1 | Emissions from fuel combustion within the city boundary |
| 1.2.2 | 2 | Emissions from grid-supplied energy consumed within the city boundary |
| 1.2.3 | 3 | Emissions from transmission and distribution losses from grid-supplied energy consumption |
| **1.3** | **Manufacturing industries and construction** | |
| 1.3.1 | 1 | Emissions from fuel combustion within the city boundary |
| 1.3.2 | 2 | Emissions from grid-supplied energy consumed within the city boundary |
| 1.3.3 | 3 | Emissions from transmission and distribution losses from grid-supplied energy consumption |
| **1.4** | **Energy industries** | |
| 1.4.1 | 1 | Emissions from fuel combustion within the city boundary |
| 1.4.2 | 2 | Emissions from grid-supplied energy consumed within the city boundary |
| 1.4.3 | 3 | Emissions from transmission and distribution losses from grid-supplied energy consumption |
| **1.5** | **Agriculture, forestry, and fishing activities** | |
| 1.5.1 | 1 | Emissions from fuel combustion within the city boundary |
| 1.5.2 | 2 | Emissions from grid-supplied energy consumed within the city boundary |
| 1.5.3 | 3 | Emissions from transmission and distribution losses from grid-supplied energy consumption |
| **1.6** | **Non-specified sources** | |
| 1.6.1 | 1 | Emissions from fuel combustion within the city boundary |
| 1.6.2 | 2 | Emissions from grid-supplied energy consumed within the city boundary |
| 1.6.3 | 3 | Emissions from transmission and distribution losses from grid-supplied energy consumption |
| **1.7** | **Fugitive emissions from mining, processing, storage, and transportation of coal** | |
| 1.7.1 | 1 | Emissions from fugitive emissions within the city boundary |
| **1.8** | **Fugitive emissions from oil and natural gas systems** | |
| 1.8.1 | 1 | Emissions from fugitive emissions within the city boundary |
| **Transportation** | | |
| **2.1** | **On-road transportation** | |
| 2.1.1 | 1 | Emissions from fuel combustion on-road transportation occurring within the city boundary |
| 2.1.2 | 2 | Emissions from grid-supplied energy consumed within the city boundary for on-road transportation |
| 2.1.3 | 3 | Emissions from portion of transboundary journeys occurring outside the city boundary, and transmission and distribution losses from grid-supplied energy consumption |
| **2.2** | **Railways** | |
| 2.2.1 | 1 | Emissions from fuel combustion for railway transportation occurring within the city boundary |
| 2.2.2 | 2 | Emissions from grid-supplied energy consumed within the city boundary for railways |
| 2.2.3 | 3 | Emissions from portion of transboundary journeys occurring outside the city boundary, and transmission and distribution losses from grid-supplied energy consumption |
| **2.3** | **Waterborne navigation** | |
| 2.3.1 | 1 | Emissions from fuel combustion for waterborne navigation occurring within the city boundary |
| 2.3.2 | 2 | Emissions from grid-supplied energy consumed within the city boundary for waterborne navigation |
| 2.3.3 | 3 | Emissions from portion of transboundary journeys occurring outside the city boundary, and transmission and distribution losses from grid-supplied energy consumption |

| Index | Scope | GHG Emission Source |
|---|---|---|
| **Transportation cont.** | | |
| **2.4** | **Aviation** | |
| 2.4.1 | 1 | Emissions from fuel combustion for aviation occurring within the city boundary |
| 2.4.2 | 2 | Emissions from grid-supplied energy consumed within the city boundary for aviation |
| 2.4.3 | 3 | Emissions from portion of transboundary journeys occurring outside the city boundary, and transmission and distribution losses from grid-supplied energy consumption |
| **2.5** | **Off-road transportation** | |
| 2.5.1 | 1 | Emissions from fuel combustion for off-road transportation occurring within the city boundary |
| 2.5.2 | 2 | Emissions from grid-supplied energy consumed within the city boundary for off-road transportation |
| **Waste** | | |
| **3.1** | **Solid waste disposal** | |
| 3.1.1 | 1 | Emissions from solid waste generated within the city boundary and disposed in landfills or open dumps within the city boundary |
| 3.1.2 | 1 | Emissions from waste generated outside the city boundary and disposed in landfills or open dumps within the city boundary |
| 3.1.3 | 3 | Emissions from solid waste generated within the city boundary but disposed in landfills or open dumps outside the city boundary |
| **3.2** | **Biological treatment of waste** | |
| 3.2.1 | 1 | Emissions from solid waste generated within the city boundary that is treated biologically within the city boundary |
| 3.2.2 | 2 | Emissions from waste generated outside the city boundary but treated biologically within the city boundary |
| 3.2.3 | 3 | Emissions from solid waste generated within the city boundary but treated biologically outside of the city boundary |
| **3.3** | **Incineration and open burning** | |
| 3.3.1 | 1 | Emissions from solid waste generated and treated within the city boundary |
| 3.3.2 | 1 | Emissions from waste generated outside the city boundary but treated within the city boundary |
| 3.3.3 | 3 | Emissions from solid waste generated within the city boundary but treated outside of the city boundary |
| **3.4** | **Wastewater treatment and discharge** | |
| 3.4.1 | 1 | Emissions from wastewater generated and treated within the city boundary |
| 3.4.2 | 1 | Emissions from wastewater generated outside the city boundary but treated within the city boundary |
| 3.4.3 | 3 | Emissions from wastewater generated within the city boundary but treated outside of the city boundary |
| **Industrial Process and Product Use (IPPU)** | | |
| **4.1** | 1 | Emissions from industrial processes occurring within the city boundary |
| **4.2** | 1 | Emissions from product use occurring within the city boundary |
| **Agriculture, Forestry, and Other Land Use (AFOLU)** | | |
| **5.1** | 1 | Emissions from livestock within the city boundary |
| **5.2** | 1 | Emissions from land within the city boundary |
| **5.3** | 1 | Emissions from aggregate sources and non-CO2 emission sources on land within the city boundary |

The GPC accounts for GHG emissions attributable to activities within the city's geographic boundary. The GPC outlines two reporting levels. The BASIC level covers emission sources that occur in almost all cities. Kent will be updating the community GHG inventory based on BASIC level requirements. The BASIC+ level is more comprehensive and covers emissions sources not found in every municipality. BASIC+ requires more vigorous data collection and GHG emission calculation.

KERAMIDA

THE CITY OF
Kent, Ohio