City of Allentown Climate Action Report

Submitted by Allentown Environmental Advisory Council

July 29, 2021

Introduction

In an effort to address the threat of climate change, the Commonwealth of Pennsylvania released an updated Climate Action Plan in April 2019, the first version of the Plan to include greenhouse gas (GHG) emissions reduction goals. The Plan includes over 100 actions that leaders can take to reduce emissions and combat climate change, fifteen of which are quantitatively modeled for environmental and economic impact. Empowering local leaders to take action was one of the driving factors for releasing this Plan.

As part of this plan, the Pennsylvania DEP partnered with ICLEI to initiate a municipal outreach program to help municipalities conduct a greenhouse gas inventory and develop a climate action plan for themselves. The program envisions the municipality working with a student intern at a local college to conduct the greenhouse gas inventory in the fall semester and begin developing a climate action plan in the spring semester.

The City of Allentown was one of twenty municipalities that participated in DEP's program for the 2020- 2021 academic year. In the fall of 2020, a Muhlenberg College student intern worked with the City of Allentown Environmental Advisory Council to obtain the needed data and establish a GHG emissions inventory baseline with guidance from PA DEP and ICLEI. The full GHG Inventory report is available on the City's website and is attached below as Attachment A.

In addition to this fundamental first step, in the spring of 2021 the City of Allentown began developing a comprehensive inventory of climate actions that the City has already implemented, those that the City is in the process of implementing, those that the City has considered but not yet begun to implement, and those that the City has not yet considered but are being recommended by the City's Environmental Advisory Council. This work was begun by the same Muhlenberg intern under DEP's municipal outreach program.

The climate action inventory will be made available on the City's website when it is finalized. The comprehensive climate action inventory will be an important component of the City's input to the regional climate action plan currently under development by the Lehigh Valley Planning

Commission. The City intends to develop its own climate action plan in conjunction with the LVPC's regional effort.

In light of the greenhouse gas inventory and comprehensive climate action inventory, the City of Allentown decided in the spring of 2021 to respond CDP's Climate Change Questionnaire for the first time. A copy of the response is available on the City's website and attached below as Attachment B. The results of the GHG inventory and many of the actions identified to date in the climate action inventory are reflected in the City's CDP Questionnaire response. The process of responding to the CDP questionnaire has enabled the City to think through many of the elements of a climate action plan, including climate hazards, adaptation measures, adaptation goals and mitigation actions.

GHG Inventory

The data was collected in accordance with the requirements of the U.S Community Protocol for Accounting and Reporting Greenhouse Gas Emissions. Data was collected for the 2018 calendar year for emissions related to residential energy, industrial energy, commercial energy, transportation and mobile sources, solid waste, water and wastewater. Emissions were calculated using Clearpath, one of the leading online software platforms for completing greenhouse gas inventories, forecasting, and monitoring at the community-wide scale. The 2018 baseline was suggested by ICLEI due to the amount of available data, both public and collected from utilities.

The greenhouse gases included in the inventory are: carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4). As each greenhouse gas has a different impact on the atmosphere, with the global warming potential of each varying widely, the calculated emissions are standardized into one unit—carbon dioxide equivalents (CO_2e).
In 2018, the City of Allentown reported their population to be 121,433. In the same year the city generated 2,402,569 metric tons (MT) of CO_2e. This would make the CO_2e per resident 19.79 MT CO2/person.

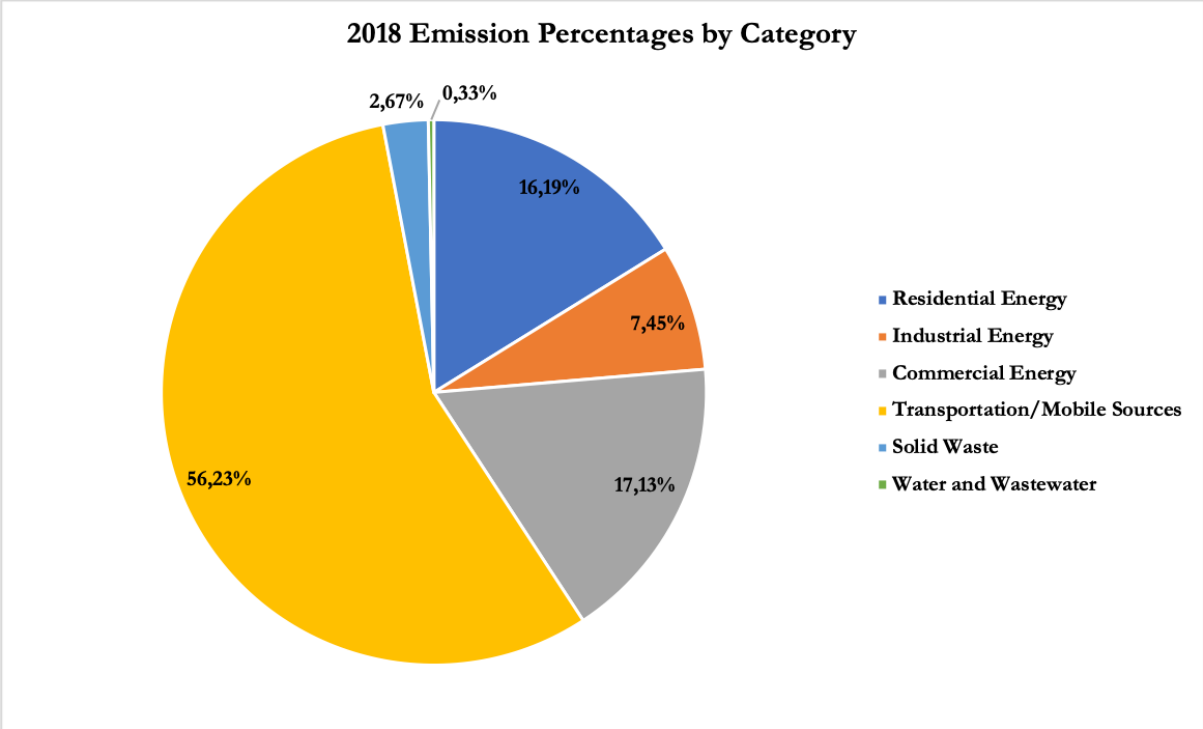
Emissions by Category (Table)

2018 Totals	CO_2e (Metric Tons)	Percent of Total
Residential Energy	388,977	16.19%
Industrial Energy	179,079	7.45%
Commercial Energy	411,503	17.13%

Transportation/Mobile Sources	1,350,888	56.23%
Solid Waste	64,245	2.67%
Water and Wastewater	7,877	.33%
Totals	2,402,569	100%
Corrected Total*1*	**2,394,692**	**--**

The electricity used for waste and wastewater is provided by PPL and already counted as part of the CO2 emissions associated with electricity usage. The Corrected Total removes this double-counting

Figure 1- 2018 Emissions Percentages by Category



Climate Hazards

The following climate hazards have been identified by the Lehigh Valley Planning Commission and/or the City of Allentown:

- Extreme precipitation – rain storms: Increasingly severe rainstorms are causing more water runoff problems and floods that damage property, roads and other infrastructure. The City's sewer and stormwater systems are also increasingly stressed from high rainfall events
- Extreme precipitation – heavy snow: Very heavy snowfalls are disrupting transportation systems, adversely impacting public transportation, the City's delivery of services, as well as businesses and residents in the City that rely on functioning roadways
- Extreme hot temperature – heat wave: Increasing temperatures are expected to cause increases in vector-borne illness, increased risk of respiratory disease, heart disease, airborne allergies and death
- Storm and wind – lightning and thunderstorms: Increasingly severe storms can cause power outages which can disrupt City services such as traffic signals, street lighting, water and sewer services
- Rising Groundwater: Inflow and infiltration into the City's sewer system due to significant precipitation, snowmelt and elevated groundwater levels contribute to potential sewage system overflows particularly where there are blockages from roots and coagulated fats and grease in smaller diameter pipes

Adaptation Measures Underway

In light of the above climate hazards, the City is undertaking the following adaptation measures:

- **Incorporating Climate Change in Allentown's Comprehensive Plan:** In 2019 Allentown finalized its next 10-year comprehensive plan, titled "Allentown Vision 2030" which provides a strategic framework for the next decade of growth and incorporates climate action into the plan. The plan was developed with significant stakeholder engagement and input.

The Allentown Vision 2030 community planning process provided a variety of ways to receive insights, feedback, and ideas for the future of Allentown. The process was designed to capture voices across all of Allentown. Engagement included the Community Collaboration Meetings, surveys, interviews, and focus groups, as well as input from the Allentown Vision 2030 Community Ambassador Program and the Allentown Vision 2030 Steering Committee.

In some phases, the conversation was literal - through interviews and focus groups, Allentonians conveyed their hopes and concerns for the city. In other stages, the planning team created ways to listen, such as a citywide survey that was taken by over a thousand people. In person, citywide conversations happened through Community Collaboration Meetings where community members shared their voices and ideas. This was done through facilitated group activities and prioritization exercises, such as voting on key actions that would help achieve the collective goals of Allentown Vision 2030. There were four total Community Collaboration Meetings. All meeting materials, as well as presentations and facilitated activities, were available in English and Spanish. Each Community Collaboration Meeting built on one another to guide the recommendations outlined in the plan.

In March 2019, the City of Allentown Department of Community and Economic Development opened the Allentown Vision 2030 Community Engagement Hub in a donated storefront in downtown Allentown. The Community Engagement Hub invited community members to drop in, learn about the Allentown Vision 2030 planning process, and participate in activities to capture their priorities and feedback on plan development. The Community Engagement Hub is a model to make city government, programs, and projects more accessible and transparent for citizens. The Hub was open from 12-5pm every Monday, Wednesday, and Friday in March through October 2019, and was used as a meeting space for local neighborhood groups and non-profits. During its open hours, the Hub engaged hundreds of Allentown residents, workers, and visitors in the Vision 2030 planning process.

The plan developed as a result of this extensive stakeholder process describes five Urban Systems as a comprehensive way to understand the City of Allentown, and to encompass many different forces and factors that make up the systems of the city. Under each system is a set of principles and policies, projects, and programs that will enhance these systems.

The five Urban Systems are:
Economic Development
Housing
Accessibility and Connectivity Services and Amenities
Living Systems

Under each Urban System, there is a list of Principles and corresponding actions under the principles. The Principles can be defined as the goals for each System. The actions that accompany each Principle detail how the goals will be accomplished. Climate components are woven into many portions of the plan, especially in the Living Systems section of the plan. These include a wide array of goals and principles to mitigate the City's climate impacts,

increase climate resilience and adapt to the currently changing climate. The Plan provides a coordinated and collaborative approach for City Departments and Bureaus, our public, private, non-profit, and institutional partners to work together on Plan implementation. Implementation of some elements (such as a comprehensive zoning review) has begun, but other elements will take more time.

- **Stormwater Policy**: The City's Stormwater Management Program is comprised of many elements to reduce runoff volume, pollution and localized flooding, while promoting public safety and improving the water quality of the streams and the Lehigh River which flow through Allentown. Long-range goals of the program include upgrading or replacing aged infrastructure, understanding and addressing stream impairments, and educating and partnering with the community. A stormwater utility fee has been implemented following extensive public outreach conducted at neighborhood meetings throughout the City with the assistance of local group leaders. A Credits and Incentives Program has been developed which uses a tiered system to promote the voluntary installation of bmps that provide more efficient treatment of stormwater above and beyond land development/ Chapter 102 requirements.

  The City is in the process of developing a Community Engagement Program. Allentown residents and businesses will be able to apply for City funding to implement projects that will reduce the pollution of stormwater and ultimately improve the water quality of our streams and rivers. The goal of the program is to provide an incentive for the community to voluntarily implement stormwater stewardship practices that will help the City meet long-term water quality targets. Under the program, the City will pay a portion (and sometimes all) of the cost for a property owner to install approved practices that reduce pollution and flooding. Metrics are tracked as data is calculated for all voluntarily installed BMPs which reduce pollutants as measured in pounds per year. Additionally, this program allows for funding to allow for the development of educational outreach opportunities for the community to include residents and school children. One type of outreach activity, for example, includes rain barrel giveaways. As part of its protocol under the Public Outreach Program, the Stormwater Bureau identifies groups and tracks all outreach activities and the metrics involved with each to include surveys and distributed materials.

- **Reducing Urban Heat Islands:** The City's Act 167 Stormwater Management Ordinance, Article 1387, was updated in 2007 to include Low Impact Development (LID) practices to include avoiding the introduction of impervious surfaces. In 2021, a policy decision was made to promote green roof installation through automatic removal of impervious surface associated with their footprint, despite storage capacity. Green roof installation is further promoted through the award of credits provided to reduce the utility fee. Additionally, the City promotes the reduction of

impervious surface through its appeals process which allows for residents to reduce their stormwater fees by actively managing the impervious surfaces of their properties.

- **Implementing a Sewer Collection System Inspection and Maintenance Plan**: Lehigh County Authority, the operator of the City's Water and Sewer Systems, performs maintenance on the Sewer Collection system, including inspecting, televising, cleaning, and flushing the system, as well as performing necessary repairs and rehabilitation. The program includes daily, weekly, and monthly preventative maintenance to flush and jet areas where blockages are known or anticipated to occur. Additional collection system areas are added to the preventative maintenance program based on inspections and televising the lines. .

Adaptation Goals

In addition to undertaking the measures described above, the City of Allentown has adopted the following climate-related adaptation goals:

- **Eliminate Sewer System Overflows:** Inflow and infiltration (I&I) from significant precipitation, snowmelt, and elevated groundwater levels contribute to extraneous flows. City sewage is conveyed by gravity to its treatment plant. Velocities within most of the gravity collection system are slow for a significant amount of the time and result in the settling of materials. This settling causes blockages. The problem is compounded by customers improperly disposing of materials, principally fats, oils, and grease (FOG), which congeal and promote blockages. Tree roots are also responsible for blockages. SSOs, which are caused by blockages typically, occur within smaller diameter pipes. In order to address maintenance of the collection system for the issues noted, in compliance with the Lease, LCA developed a Collection System Inspection and Maintenance Plan (CSIMP) to provide a systematic approach for inspecting, televising, cleaning, and flushing the collection system. The CSIMP includes daily, weekly, and monthly preventative maintenance to flush and jet areas where blockages are known or anticipated to occur. Additional collection system areas are added to the preventative maintenance program based on inspections and televising the lines.

- **Increase the resilience of the City's stormwater infrastructure to prevent or mitigate the impacts of flooding:** Inspect and repair approximately 200 stormwater inlets per year; clean 1000 inlets per year; inspect 80,000 linear feet and line 5000 linear feet of stormwater pipes per year; inspect and repair 190 public and private stormwater detention and treatment facilities per year. Additional initiatives related to this goal include

implementing a voluntary stream monitoring program, establishing new (and adjusting existing) Best Management Practices (BMPs), prioritizing areas for future stormwater treatment retrofit projects, and involving volunteers and students in our monitoring efforts.

Mitigation Actions

The following are among the more significant mitigation actions undertaken by the City:

- **Street Light LED conversion:** The city upgraded approximately 25% of cobra-head street lights to LED. City plans to complete 50% of cobra-headed lights to LED by summer of 2021 and 100% by 2022. All pedestrian style street lights are planned to be converted to LED by 2024.

- **Installation of high-lift VFD pumps**: The high lift pumping system conveys treated water into the water distribution system. The new variable drives will be more efficient and capable of handling greater volumes of water.

- **Water Use Efficiency Project:** The City has negotiated a program with the operator of its water system (Lehigh County Authority) for the operator to perform leak detection and repairs on 110 miles of the City's distribution pipes each year, resulting in checking the entire system every three years. This program resulted in savings of 57,485,057 gallons of water in 2020

Next Steps

The City of Allentown will continue to develop a comprehensive inventory of climate actions (including mitigation and adaptation measures) and will take the following steps as identified in the climate action section of the Allentown Vision 2030 Comprehensive Plan:

1) Prepare a Climate Action Plan that integrates with regional plans.
2) Collaborate with local universities and schools on research and projects that can engage citizens in the solutions.
3) Pursue grants from state agencies like the PA Department of Environmental Protection, PA Department of Conservation and Natural Resources, as well as local and national foundations to fund early stages of education and planning.
4) Consider integrating climate action and resilience planning into Neighborhood Planning Framework to help structure climate and resilience goals into concrete and actionable plans.

5) Partner with the City of Allentown Environmental Advisory Council to further define the Climate Action Planning approach.

Attachment A

City of Allentown 2020 Greenhouse Gas Inventory Report

Hannah Chiesa, Intern for The Allentown EAC

Table of Contents

Introduction

The City of Allentown is committed to developing a climate action plan to reduce its greenhouse gas (GHG) emissions and adapt to the impacts of climate change. This commitment is stated in the City's recent comprehensive plan (Vision 2030).

The first step in developing a climate action plan is to establish a baseline of the city's GHG emissions. This enables the City to identify the most important sources of GHG emissions and to focus its resources on climate actions that would make the greatest difference. With this inventory, the City can establish sensible GHG reduction goals and targets, track progress against baseline emissions, and assess the effectiveness of selected mitigation measures.

This report presents the outcome of the GHG inventory undertaken in the fall of 2020 by the Allentown EAC through a Muhlenberg internship under a DEP-funded program utilizing ICLEI's emission calculation methodologies and tools. The inventory established a 2018 baseline of emissions within the City boundary. We expect this inventory to be updated every 2 – 3 years.

Looking forward, the next steps will include conducting vulnerability assessments and identifying, evaluating and implementing climate actions to achieve emission reductions as well as actions to address the physical and transitional impacts of climate change. The Allentown EAC expects to partner with the City in these efforts and already has begun (through a continuation of the Muhlenberg internship) to develop an inventory of climate actions that are underway, have been proposed in Vision 2030, or should be considered based on actions being taken by similarly-situated cities. We expect a report on the Climate Action Inventory to be issued later this year.

Methodology

This GHG Inventory was created with the guidance and assistance from ICLEI and funding from the Pennsylvania Department of Environmental Protection. The data was collected in accordance with the requirements of the U.S Community Protocol for Accounting and Reporting Greenhouse Gas Emissions. Data was collected for the 2018 calendar year for emissions related to residential energy, industrial energy, commercial energy, transportation and mobile sources, solid waste, water and wastewater. Emissions were calculated using Clearpath, one of the leading online software platforms for completing greenhouse gas inventories, forecasting, and monitoring at the community-wide scale. The 2018 baseline was suggested by ICLEI due to the amount of available data, both public and collected from utilities.

The greenhouse gases included in the inventory are: carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4). As each greenhouse gas has a different impact on the atmosphere, with the global warming potential of each varying widely, the calculated emissions are standardized into one unit—carbon dioxide equivalents (CO_2e).

Institutional Data

Institutional data is essential as part of the Inventory because it establishes a frame of reference and enables the comparison of Allentown's level of emissions in relation to other cities, communities, or municipalities of similar size. In 2018, the City of Allentown reported their population to be 121,433. In the same year the city generated 2,402,569 metric tons (MT) of CO_2e. This would make the CO_2e per resident 19.79 MT CO2/person.

Emissions by Category (Table)

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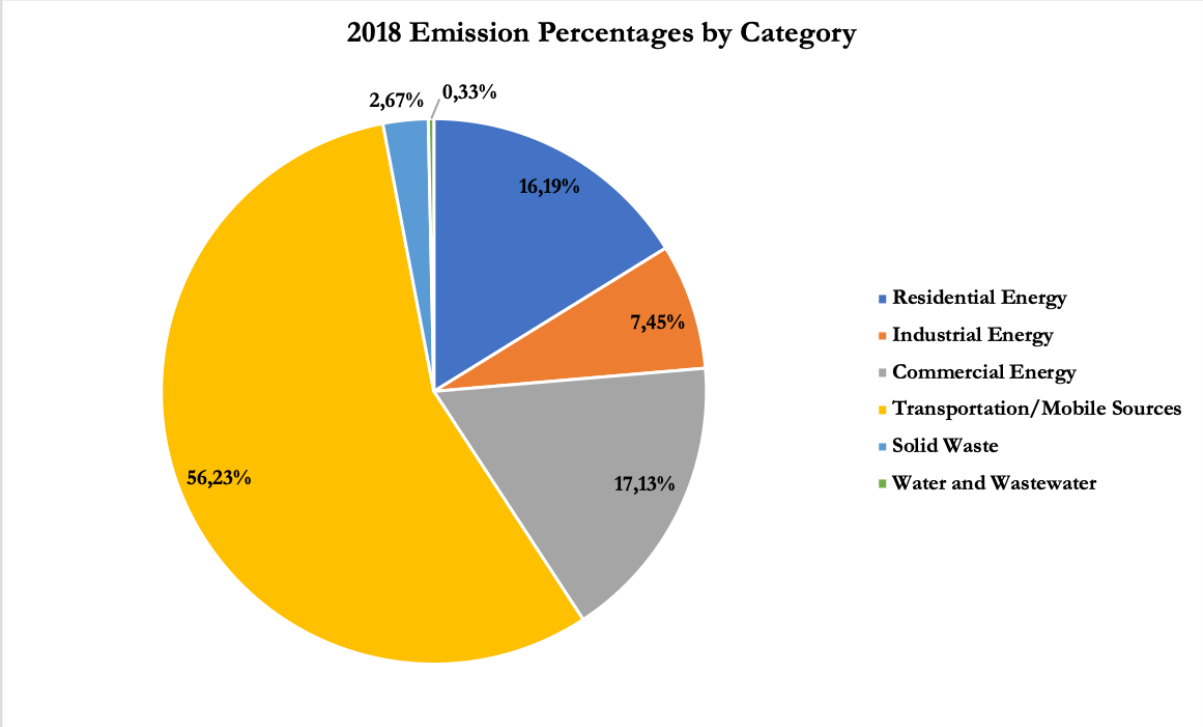


2 The electricity used by waste and wastewater is provided by PPL and is therefore double counted in the inventory. Therefore, the corrected total accounts for the double counting and removes it, showing both total amounts.

Residential Energy

Residential Energy was broken down into five sources: propane, distillate oil No.2, wood natural gas, and electricity.[3] Overall, residential energy created 388,977 metric tons CO_2e. Electricity produced the greatest quantity of emissions in this category. With a total of 250,666 metric tons CO_2e, this represented 64.44% of total residential energy emissions. The next highest producer of residential energy emissions was natural gas, which created 94,034 metric tons of CO_2e. The non-utility fuels (propane, wood, distillate oil No.2) created a combined total of 44,277 metric tons CO_2e, representing 11.38% of Allentown's residential emissions.[4]

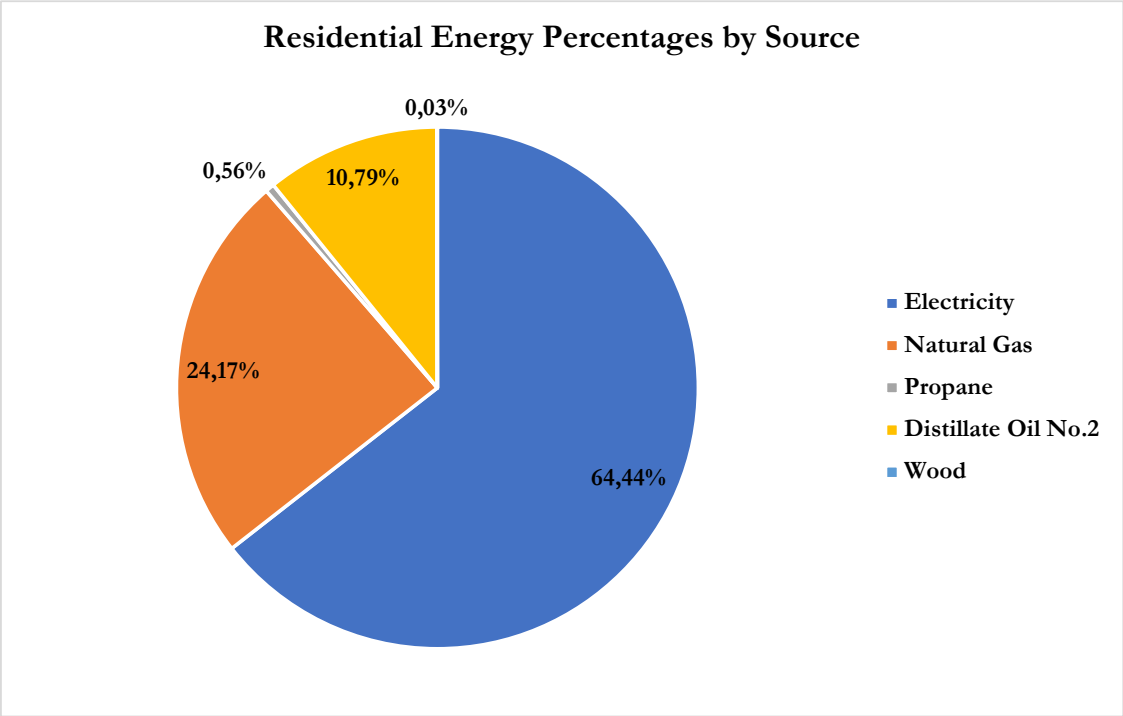
Residential Energy by Category (Table)

2018 Residential Energy	Usage	CO_2e (Metric Tons)	Percent of Total
Electricity	767,751,647 kWh	250,666	66.44%
Natural Gas	17,680,120 therms	94,034	24.17%
Propane	35,126.53 MMBtu	2,180	.56%
Distillate Oil No.2	563,780.34 MMBtu	41,977	10.79%
Wood	12,002.05 MMBtu	120	.03%
Totals	**--**	**388,977**	**100%**

Figure 2- 2018 Residential Energy Percentages by Source

3 Non-utility fuel data (propane, distillate oil No.2, and wood) was collected from the 2018 United States Census American Community Survey for selected housing characteristics in Allentown. The electricity data was obtained from PPL, and the natural gas data was collected from UGI.

4 Non-utility fuel data was calculated based off an estimation and allocation process through the use of natural gas customers and usage provided by UGI. Through this data, therms per customer was calculated and then converted to MMBtu per consumer and applied to the number of reported households using each non-utility fuel type.



Industrial Energy

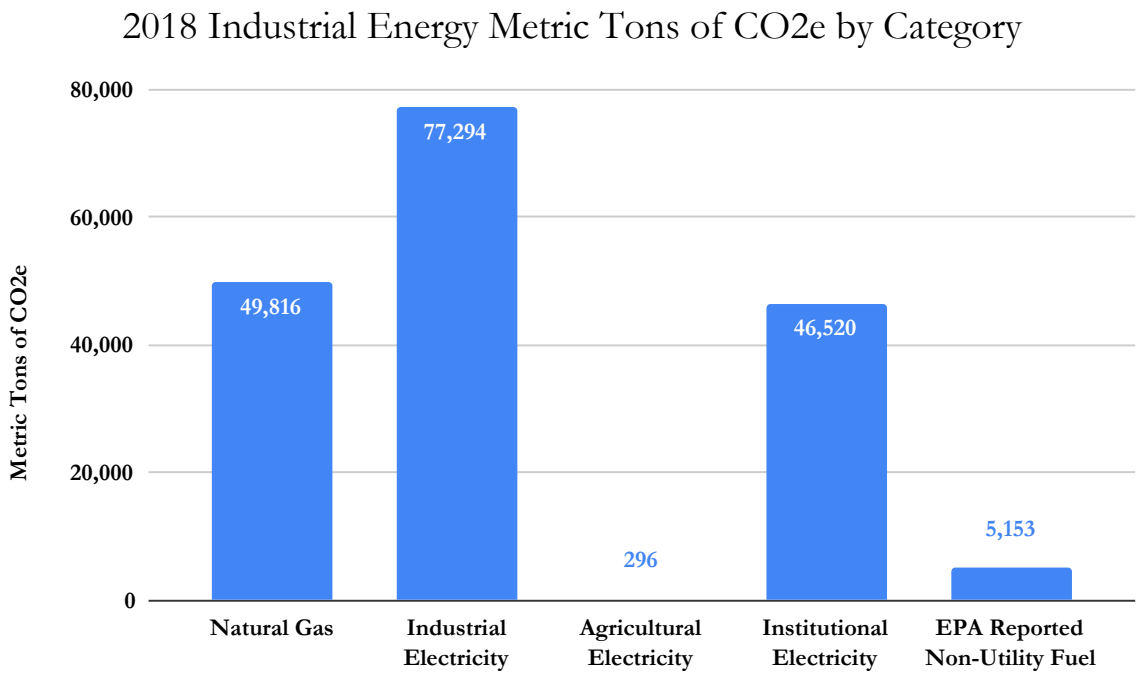
Industrial energy was broken down into five sources: natural gas, industrial electricity, agricultural electricity, institutional electricity, and EPA reported non-utility fuel.[5] Overall, industrial energy created 179,079 metric tons CO_2e, 7.45% of total emissions. Industrial electricity was the greatest producer of industrial energy emissions, representing 43.16% of total industrial energy emissions. Additionally, due to their intense use of electrical equipment, PPL released a significant amount of sulfur hexafluoride. Since they are such large consumers, they are required to report their emissions to the EPA. Therefore, "EPA Reported Non-Utility Fuel" represents the CO_2e equivalent from the sulfur hexafluoride emitted, which represents 2.88% of industrial energy emissions.

Industrial Energy by Category (Table)

2018 Industrial Energy	Usage	CO_2e (Metric Tons)	Percent of Total
Natural Gas	9,386,103 therms	49,816	27.18%
Industrial Electricity	236,740,785 kWh	77,294	43.16%
Agricultural Electricity	906,153 kWh	296	.16%
Institutional Electricity	142,482,495 kWh	46,520	25.98%
EPA Reported Non-Utility Fuel	n/a	5,153	2.88%
Totals	**--**	**179,079**	**100%**

5 Reported non-utility fuel was collected from publicly available EPA emissions data. Natural gas data was collected from UGI. Lastly, Data on industrial, agricultural, and institutional electricity were collected from PPL.

Figure 3- 2018 Industrial Energy Metric Tons of CO_2e by Category

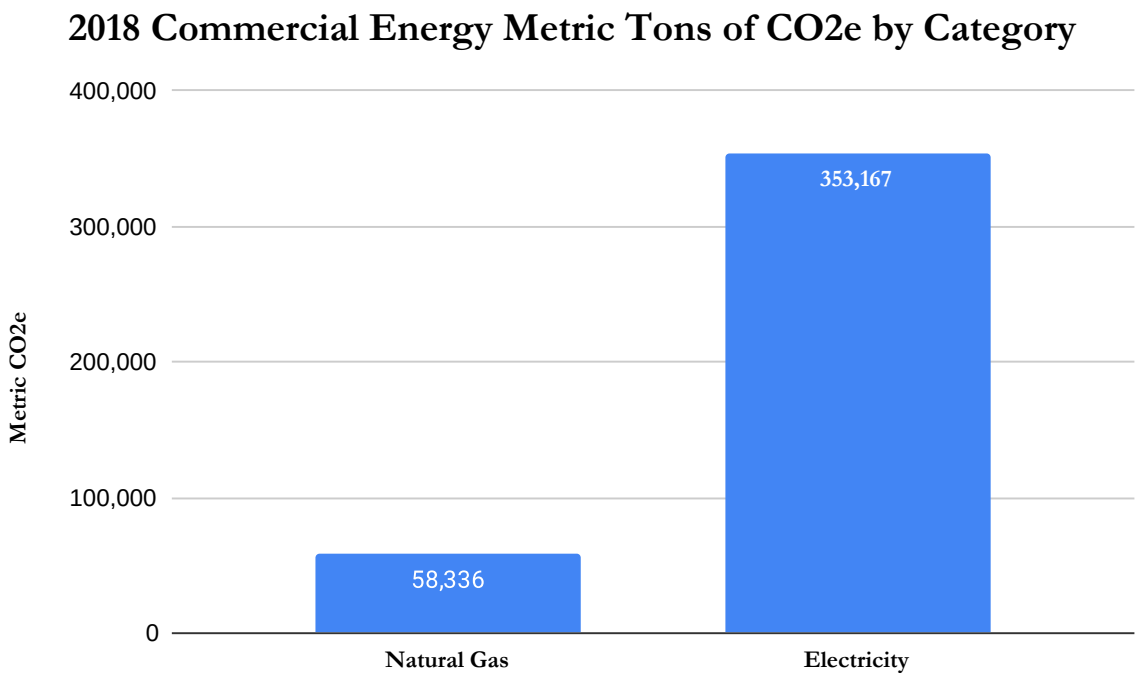


Commercial Energy

In 2018, Commercial energy represented 17.13% of Allentown's carbon emissions. This accounts for 411,503 MT CO_2e. Commercial energy was made up of two sources: natural gas and electricity.[6] Natural gas represented 14.17% of commercial energy emissions, which accounts for 58,336 metric tons CO_2e. The usage affiliated with these natural gas emissions were 10,968,110 therms. Commercial electricity generated significantly more emissions, 353,167 metric tons CO_2e were created. This accounts for 85.82% of Allentown's total commercial energy. The usage affiliated with these electricity emissions were 1,081,695,502 kWh.

Figure 4- 2018 Commercial Energy Metric Tons of CO_2e by Category

[6] Natural gas data was collected from UGI and electricity data were collected from PPL.



Transportation and Other Mobile Sources

In 2018, transportation and other mobile sources accounted for the greatest number of emissions throughout the inventory. Generating 1,350,888 MT CO_2e, this represents 56.23% of Allentown's carbon emissions. Transportation is broken down into seven sources: motorcycles, light trucks, heavy trucks, passenger vehicles, off-road gasoline vehicles, off-road diesel vehicles, and off-road "other" vehicles.*7* Passenger vehicles represented the highest number of emissions in Allentown's transportation. With 1,958,627,516.89 annual vehicle miles traveled (VMT), this accounted for 716,020 MT CO_2e, which represents 29.8% of Allentown's carbon emissions.*8*

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7 Data for motorcycles, light trucks, heavy trucks and passenger vehicles were collected from PennDOT travel data. All Off-road emissions were calculated from the EPA's 2017 National Emissions Inventory (NEI) Data and an allocation process was conducted based off county and city population.

8 For this data we used Penndot travel data for rural, small urban, and urbanized areas. This data had a subsection that included Allentown, Easton and Bethlehem. To perform the allocation for Allentown we used an allocation process based on city and county populations. Additionally, we needed to determine what percentage of each vehicle type made up the allocation amount. For this we used the Penndot highway vehicle type classification. We used the data from the "urban" section and calculated percentages of each type of vehicle. There are many categories that were combined to make up heavy trucks-- each category to the right of "bus" on the chart were combined to create the heavy truck percentage. We combined these due to the fact that a heavy truck has at least two axles and six or more tires. We then applied these percentages to the allocation to determine the VMT associated with each vehicle type. Additionally, we assumed that passenger vehicle, motorcycle and light trucks were operating on gasoline, with only heavy trucks operating on diesel. Lastly, each VMT was multiplied by 365 to create the annual VMT data for each vehicle type.

Transportation and Other Mobile Sources by Category (Table)

2018 Transportation	Annual VMT	CO_2e (Metric Tons)	Percent of Total
Motorcycles	20,232,669.55	7,396	.55%
Light Truck	431,192,344.85	218,187	16.15%
Heavy Truck	217,566,888.13	357,168	26.44%
Passenger Vehicles	1,958,627,516.89	716,020	53%
Off-Road Gasoline	n/a	15,474	1.14%
Off-Road Diesel	n/a	30,755	2.28%
Off-Road "Other"	n/a	5,888	.44%
Totals	**2,627,619,419.42**	**1,350,888**	**100%**

Figure 5- 2018 Transportation Metric Tons of CO_2e by Category

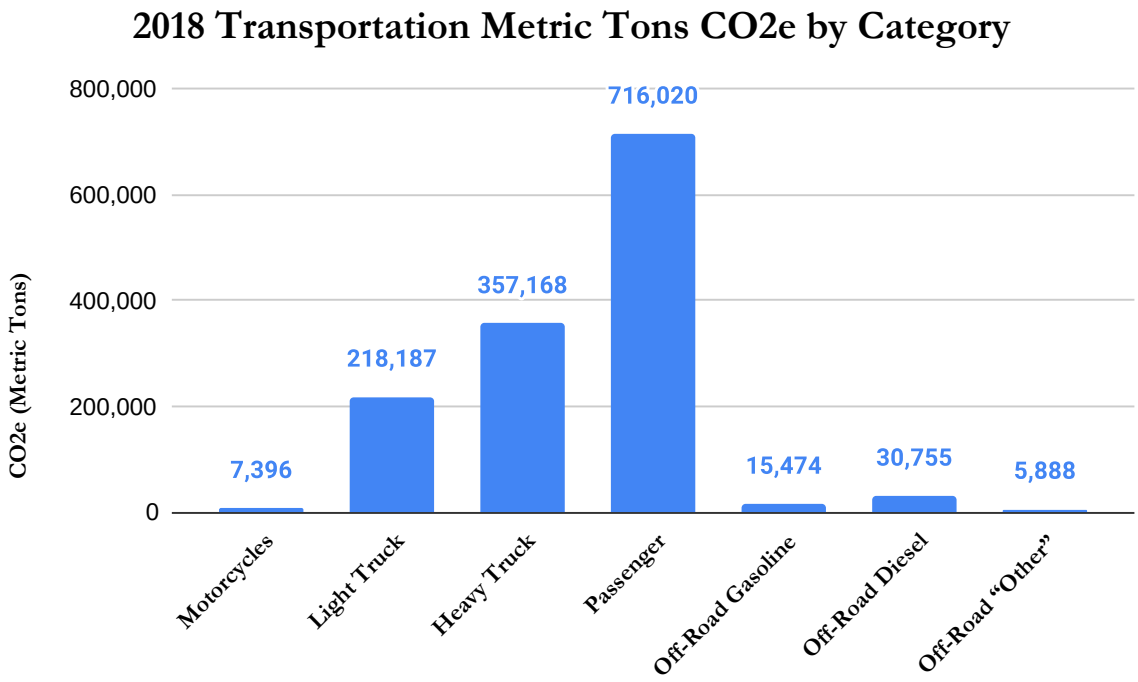
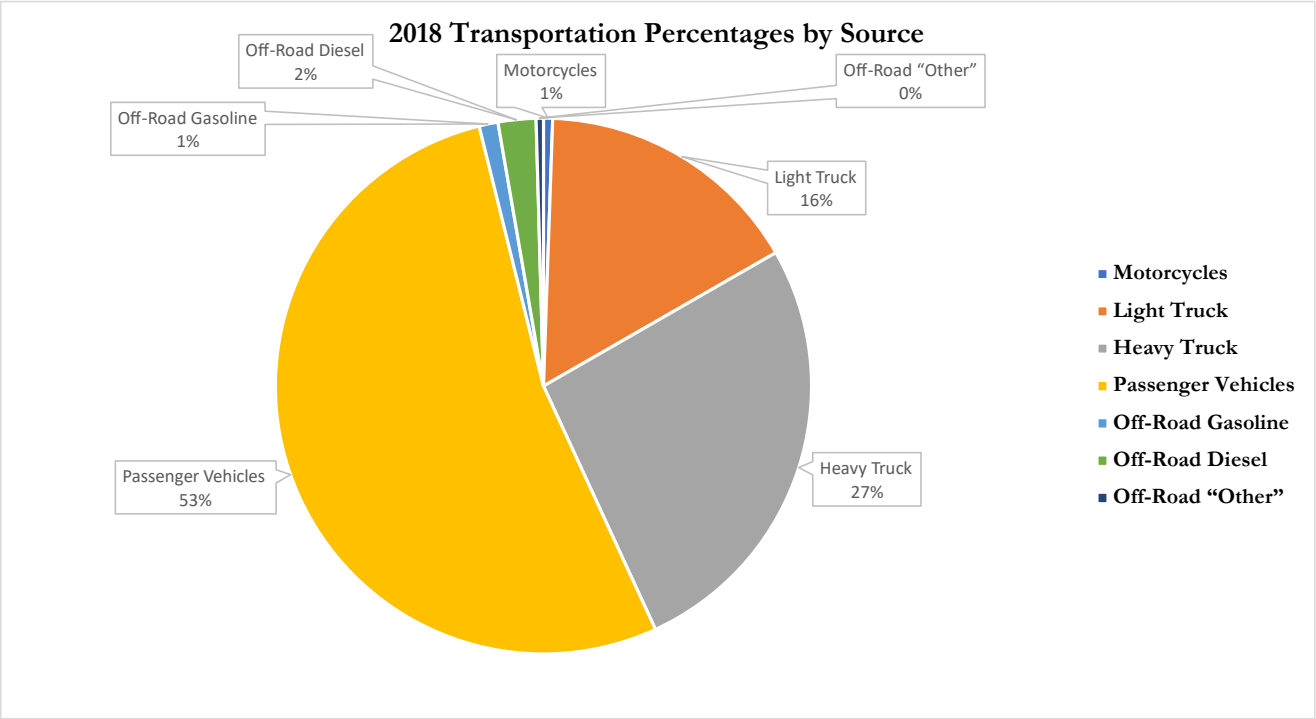


Figure 6- 2018 Transportation Percentages by Source

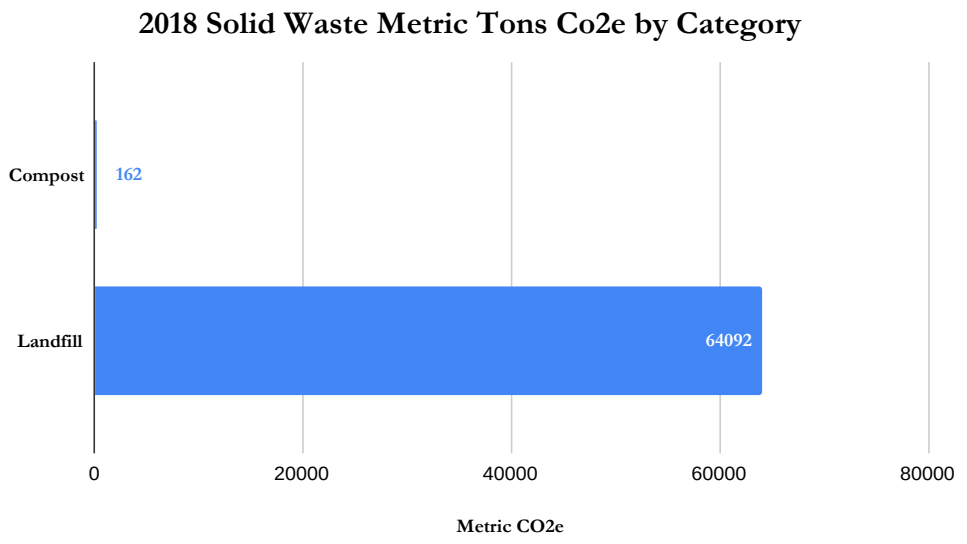


Solid Waste

In 2018, solid waste represented 2.67% of Allentown's carbon emissions. This represents 62,245 MT CO_2e. Solid waste was composed of two sources: composting and landfill emissions.[9] Composting generated 162 metric tons of CO_2e, while the landfill generated 64,092 MT CO_2e.

Figure 7- 2018 Solid Waste Metric Tons of CO_2e by Category

[9] All solid waste data was collected from The Allentown Bureau of Recycling and Solid Waste.



Water and Wastewater

In 2018, water and wastewater emissions represented .33% of Allentown's carbon emissions. This accounts for 7,877 MT CO_2e. Water and wastewater was broken down into four sources: wastewater, digester, nitrification/denitrification, and potable water.*10* Wastewater produced the greatest number of emissions, representing 54.11% of total water and wastewater emissions. This accounts for 4,262 MT CO_2e.

Water and Wastewater by Category (Table)

2018 Water & Wastewater	Usage (Gallons)	CO_2e (Metric Tons)	Percent of Total
Wastewater	13,164	4,262	54.11%
Digester	n/a	21	.27%
Nitrification/Denitrification	n/a	282	3.58%
Potable Water	4,748.3	3,312	42.05%
Totals	**--**	**7,877**	**100%**

Figure 8- 2018 Waste and Wastewater Metric Tons of CO_2e by Category

10 All water and wastewater data were collected from the Lehigh County Authority.

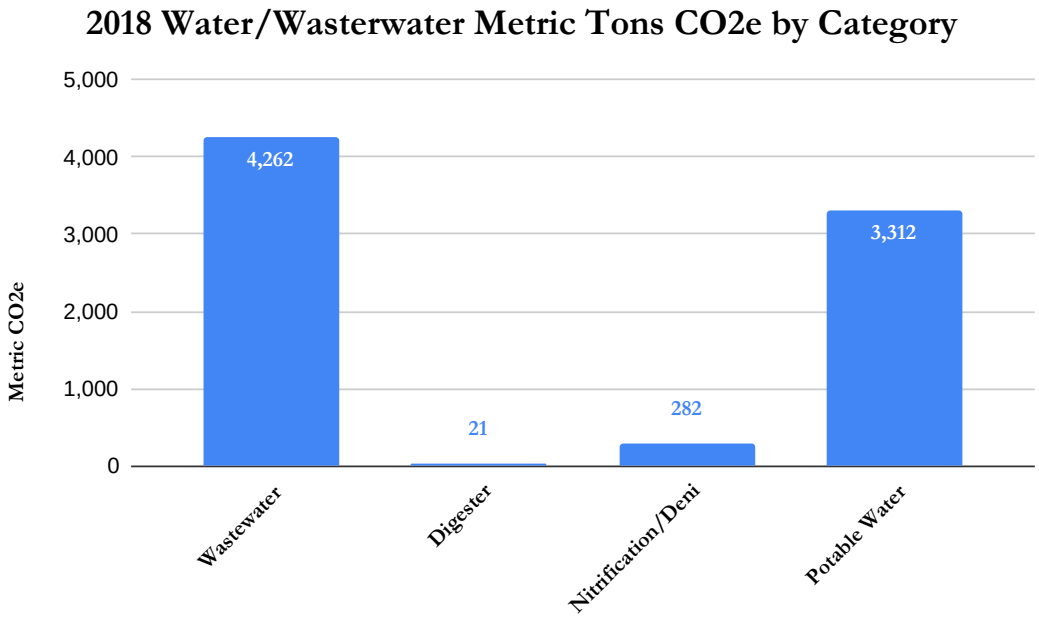
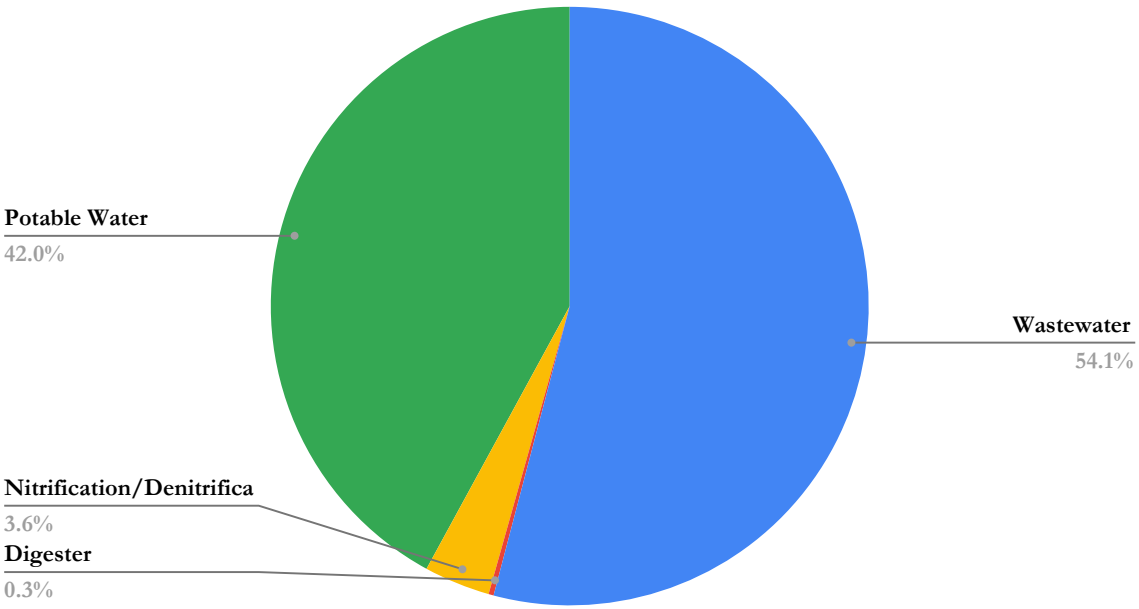


Figure 9- 2018 Water and Wastewater Percentages by Source

2018 Water/Wastewater Percentages by Source



Attachment B

Welcome to the CDP-ICLEI Unified Reporting System 2021

0. Introduction

(0.1) Please give a general description and introduction to your city including your city's reporting boundary in the table below.

	Administrative boundary	Description of city
Please complete	City / Municipality	The city of Allentown is located in Lehigh County, Pennsylvania. Founded in 1762, it is the third largest city in Pennsylvania, and the fastest growing major city in the state. It was one of only six communities in the country to be named a "national success story" in April 2016 by the Urban Land Institute for its downtown redevelopment and transformation that has generated over $1 billion in new projects.

City Details

(0.3) Please provide information about your city's Mayor or equivalent legal representative authority in the table below.

	Leader title	Leader name	Current term end year
Please complete	Mayor	Raymond O'Connell	2022

(0.4) Please select the currency used for all financial information disclosed throughout your response.

USD US Dollar

(0.5) Please provide details of your city's current population. Report the population in the year of your reported inventory, if possible.

	Current population	Current population year	Projected population	Projected population year
Please complete	121,433	2018	128,071	2030

(0.6) Please provide further details about the geography of your city.

	Land area of the city boundary as defined in question 0.1 (in square km)
Please complete	17.55

1. Governance and Data Management

Governance

(1.0) Please detail sustainability goals and targets (e.g. GHG reductions) that are incorporated into your city's master plan and describe how these are addressed in the table below.

Sustainability goals and targets	Description
Intending to incorporate sustainability goals and targets into the city's master plan in in the next 2 years	Allentown's most recent comprehensive plan titled "Allentown Vision 2030" contains a variety of sustainability goals including: 1. Enhance transportation accessibility and connectivity; 2. Develop a green infrastructure master plan; 3. Create a climate action plan that integrates with regional plans; 4. Link Allentown's parks and green spaces through a network of safe, walkable and bikeable greenways and urban trails; 5. Create inventory of urban lots suitable for community gardening; 6. Connect residents to opportunities to reduce their energy usage, cultivate their own food and enhance the natural environment.

(1.6) Please provide information on the overall impact of COVID-19 on climate action in your city.

	Impact of COVID-19 on climate action in your city	Comment
Response	Other, please specify Pandemic-related difficulties and staffing shortages delayed progress on implementing actions under the Vision 2030 plan	Progress on some elements of Allentown's climate action planning will be contingent on regional planning progress by the Lehigh Valley Planning Commission as the City seeks to integrate its plan with the regional plan. The LVPC's planning process was also delayed by the pandemic.

(1.7) Please provide information specifically on the impact of the COVID-19 economic response on climate action in your city and synergies between COVID-19 recovery interventions and climate action.

	Impact of COVID-19 economic response on city's budget for financing climate action in your city	COVID-19 recovery interventions and climate action synergies	Explanation
Response	Other, please specify		

The City did have increased costs due to an increase in trash and recycling pickup during 2020 which the City was able to recover through COVID funds

2. Climate Hazards and Vulnerability

Climate Risk and Vulnerability Assessment

(2.0) Has a climate change risk and vulnerability assessment been undertaken for your city?

In progress

(2.0a) Please select the primary process or methodology used to undertake the risk and vulnerability assessment of your city.

	Primary methodology	Description
Risk assessment methodology		The City's understanding of climate risks and vulnerabilities is largely based on work done by the Lehigh Valley Planning Commission for this region rather than being City-specific.

Climate Hazards

(2.1) Please list the most significant climate hazards faced by your city and indicate the probability and consequence of these hazards, as well as the expected future change in frequency and intensity. Please also select the most relevant assets or services that are affected by the climate hazard and provide a description of the impact.

Climate Hazards
Extreme Precipitation > Rain storm
Did this hazard significantly impact your city before 2021?
Yes
Current probability of hazard
High
Current magnitude of hazard
Medium
Social impact of hazard overall
Increased demand for public services
Increased risk to already vulnerable populations
Increased resource demand

Most relevant assets / services affected overall
Water supply & sanitation
Please identify which vulnerable populations are affected
Women & girls
Children & youth
Elderly
Marginalized groups
Persons with disabilities
Persons with chronic diseases
Low-income households
Other, please specify

Potential sewage system overflows due to high water volumes overwhelming the wastewater treatment facilities

Future change in frequency
Increasing
Future change in intensity
Increasing
Future expected magnitude of hazard
Medium High
When do you first expect to experience those changes in frequency and intensity?
Immediately
Please describe the impacts experienced so far, and how you expect the hazard to impact in
the future

Increasingly severe rainstorms are causing more water runoff problems and floods that damage property, roads and other infrastructure. The City's sewer and stormwater systems are also increasingly stressed from high rainfall events.

Climate Hazards
Extreme hot temperature > Heat wave
Did this hazard significantly impact your city before 2021?
No
Current probability of hazard
Medium
Current magnitude of hazard
Medium
Social impact of hazard overall
Increased incidence and prevalence of disease and illness
Increased demand for public services
Increased demand for healthcare services
Increased risk to already vulnerable populations
Most relevant assets / services affected overall
Energy
Food & agriculture
Environment, biodiversity, forestry

Public health
Emergency services
Land use planning

Please identify which vulnerable populations are affected

Women & girls
Children & youth
Elderly
Marginalized groups
Persons with disabilities
Persons with chronic diseases
Low-income households
Unemployed persons
Persons living in sub-standard housing

Future change in frequency

Increasing

Future change in intensity

Increasing

Future expected magnitude of hazard

Medium High

When do you first expect to experience those changes in frequency and intensity?

Immediately

Please describe the impacts experienced so far, and how you expect the hazard to impact in
the future

Increasing temperatures are expected to cause increases in vector-borne illness, increased risk of respiratory disease, heart disease, airborne allergies and death

Climate Hazards

Extreme Precipitation > Heavy snow

Did this hazard significantly impact your city before 2021?

Yes

Current probability of hazard

Medium

Current magnitude of hazard

Medium

Social impact of hazard overall

Increased demand for public services
Increased risk to already vulnerable populations

Most relevant assets / services affected overall

Transport
Industrial
Commercial
Residential
Public health

Emergency services

Please identify which vulnerable populations are affected

Women & girls

Children & youth

Elderly

Marginalized groups

Persons with disabilities

Persons with chronic diseases

Low-income households

Persons living in sub-standard housing

Future change in frequency

Increasing

Future change in intensity

Increasing

Future expected magnitude of hazard

Medium High

When do you first expect to experience those changes in frequency and intensity?

Immediately

Please describe the impacts experienced so far, and how you expect the hazard to impact in
the future

Very heavy snowfalls are disrupting transportation systems, adversely impacting public transportation, the City's delivery of services, as well as businesses and residents in the City that rely on functioning roadways.

Climate Hazards

Storm and wind > Lightning / thunderstorm

Did this hazard significantly impact your city before 2021?

No

Current probability of hazard

Medium

Current magnitude of hazard

Medium Low

Social impact of hazard overall

Increased risk to already vulnerable populations

Most relevant assets / services affected overall

Energy

Water supply & sanitation

Transport

Information & communications technology

Public health

Society / community & culture

Law & order

Emergency services

Please identify which vulnerable populations are affected

Women & girls
Children & youth
Elderly
Marginalized groups
Persons with disabilities
Persons with chronic diseases
Low-income households
Unemployed persons
Persons living in sub-standard housing

Future change in frequency

Increasing

Future change in intensity

Increasing

Future expected magnitude of hazard

Medium

When do you first expect to experience those changes in frequency and intensity?

Short-term (by 2025)

Please describe the impacts experienced so far, and how you expect the hazard to impact in
the future

Increasingly severe storms can cause power outages which can disrupt City services such as traffic signals, street lighting, water and sewer services.

Climate Hazards

Flood and sea level rise > Groundwater flood

Did this hazard significantly impact your city before 2021?

Yes

Current probability of hazard

High

Current magnitude of hazard

High

Social impact of hazard overall

Increased risk to already vulnerable populations
Increased resource demand

Most relevant assets / services affected overall

Water supply & sanitation

Please identify which vulnerable populations are affected

Women & girls
Children & youth
Elderly
Marginalized groups
Low-income households

Future change in frequency

Increasing

Future change in intensity

Increasing

Future expected magnitude of hazard

Medium

When do you first expect to experience those changes in frequency and intensity?

Immediately

Please describe the impacts experienced so far, and how you expect the hazard to impact in
the future

Inflow and infiltration into the City's sewer system due to significant precipitation, snowmelt and elevated groundwater levels contribute to potential sewage system overflows particularly where there are blockages from roots and coagulated fats and grease in smaller diameter pipes.

(2.2) Please identify and describe the factors that most greatly affect your city's ability to adapt to climate change and indicate how those factors either support or challenge this ability.

Factors that affect ability to adapt	Indicate if this factor either supports or challenges the ability to adapt	Level of degree to which factor challenges/supports the adaptive capacity of your city	Please describe how the factor supports or challenges the adaptive capacity of your city

(2.3) Is your city facing risks to public health or health systems associated with climate change?

Do not know

3. Adaptation

Adaptation Actions

(3.0) Please describe the main actions you are taking to reduce the risk to, and vulnerability of, your city's infrastructure, services, citizens, and businesses from climate change as identified in the Climate Hazards section.

Climate hazards

Extreme Precipitation > Rain storm

Action

Stormwater management policy

Action title

Stormwater Management

Status of action

Implementation

Means of implementation

Education

Awareness raising program or campaign

Stakeholder engagement

Assessment and evaluation activities

Development and implementation of action plan

Policy and regulation

Co-benefit area

Enhanced climate change adaptation

Improved resource quality (e.g. air, water)

Sectors/areas adaptation action applies to

Water

Action description and implementation progress

The City's Stormwater Management Program is comprised of many elements to reduce runoff volume, pollution and localized flooding, while promoting public safety and improving the water quality of the streams and the Lehigh River which flow through Allentown. Long-range goals of the program include upgrading or replacing aged infrastructure, understanding and addressing stream impairments, and educating and partnering with the community. A stormwater utility fee has been implemented following extensive public outreach conducted at neighborhood meetings throughout the City with the assistance of local group leaders. A voluntary group of community members and local business leaders formed a Green Stormwater Infrastructure (GSI) committee. The Committee developed the City's Credit and Incentive Program which uses a tiered system to promote the voluntary installation of bmps that provide more efficient treatment of stormwater and go above and beyond land development/ Chapter 102 requirements.

The City is in the process of developing a Community Engagement Program. Allentown residents and businesses will be able to apply for City funding to implement projects that will reduce the pollution of stormwater and ultimately improve the water quality of our streams and rivers. The goal of the program is to provide an incentive for the community to voluntarily implement stormwater stewardship practices that will help the City meet long-term water quality targets. Under the program, the City will pay a portion (and sometimes all) of the cost for a property owner to install approved practices that reduce pollution and flooding. Metrics are tracked as data is calculated for all voluntarily installed BMPs which reduce pollutants as measured in pounds per year. Additionally, this program allows for funding to allow for the development of educational outreach opportunities for the community to include residents and school children. One type of outreach activity, for example, includes rain barrel giveaways. As part of its protocol under the Public Outreach Program, the Stormwater Bureau identifies groups and tracks all outreach activities and the metrics
involved with each to include surveys and distributed materials.

The cost noted below is the annual cost of the entire program in 2020 which is paid for through the City's stormwater fee.

Finance status

Finance secured

Majority funding source

Local

Total cost of the project (currency)

5,800,000

Total cost provided by the local government (currency)

5,800,000

Total cost provided by the majority funding source (currency)

5,800,000

Web link

https://www.allentownpa.gov/Public-Works/Stormwater

Climate hazards

Extreme Precipitation > Rain storm

Action

Incorporating climate change into long-term planning documents

Action title

Climate components of Allentown Vision 2030

Status of action

Pre-feasibility study/impact assessment

Means of implementation

Development and implementation of action plan

Co-benefit area

Enhanced resilience

Disaster preparedness

Enhanced climate change adaptation

Reduced GHG emissions

Improved resource efficiency (e.g. food, water, energy)

Social inclusion, social justice

Improved resource quality (e.g. air, water)

Improved public health

Resource conservation (e.g. soil, water)

Ecosystem preservation and biodiversity improvement

Improved access to and quality of mobility services and infrastructure

Shift to more sustainable behaviours

Sectors/areas adaptation action applies to

Energy

Transport (Mobility)

Building and Infrastructure

Industry

ICT (Information and Communication Technology)

Spatial Planning

Water

Waste

Public Health and Safety

Social Services

Action description and implementation progress

In 2019 Allentown finalized its next 10-year comprehensive plan, titled "Allentown Vision 2030" which provides a strategic framework for the next decade of growth. The plan was developed with significant stakeholder engagement and input. It describes five Urban Systems as a comprehensive way to understand the City of Allentown, and to encompass many different forces and factors that make up the systems of the city. Under each system is a set of principles and policies, projects, and programs that will enhance these systems.

The five Urban Systems are:
Economic Development Housing
Accessibility and Connectivity Services and Amenities
Living Systems
Under each Urban System, there is a list of Principles and corresponding actions under the principles. The Principles can be defined as the goals for each System. The actions that accompany each Principle detail how the goals will be accomplished. Climate components are woven into many portions of the plan, especially in the Living Systems section of the plan. These include a wide array of goals and principles to mitigate the City's climate impacts, increase climate resilience and adapt to the currently changing climate. The Plan provides a coordinated and collaborative approach for City Departments and Bureaus, our public, private, nonprofit, and institutional partners to work together on Plan implementation. Implementation of some elements (such as a comprehensive zoning review) has begun, but other elements will take more time.
The project cost noted below is the cost of developing the comprehensive plan.

Finance status
Finance secured
Majority funding source
Local
Total cost of the project (currency)
200,000
Total cost provided by the local government (currency)
200,000
Total cost provided by the majority funding source (currency)
200,000
Web link
https://allentownvision2030.org/

Climate hazards
Extreme hot temperature > Heat wave
Action
Other, please specify
Reducing Urban Heat Islands
Action title
Reducing Urban Heat Islands
Status of action
Implementation
Means of implementation
Education
Infrastructure development
Verification activities
Development and implementation of action plan
Policy and regulation
Financial mechanism
Co-benefit area
Enhanced climate change adaptation
Reduced GHG emissions
Improved resource quality (e.g. air, water)

Resource conservation (e.g. soil, water)

Shift to more sustainable behaviours

Sectors/areas adaptation action applies to

Energy

Building and Infrastructure

Water

Action description and implementation progress

The City's Act 167 Stormwater Management Ordinance, Article 1387, was updated in 2007 to include Low Impact Development
(LID) practices to include avoiding the introduction of impervious surfaces. In 2021, a policy decision was made to promote green roof installation through automatic removal of impervious surface associated with their footprint, despite storage capacity. Green roof installation is further promoted through the award of credits
provided to reduce the utility fee. Additionally, the City promotes the reduction of impervious surface through its appeals process which allows for residents to reduce their stormwater fees by actively managing the impervious surface of their properties.

The cost of this program is primarily incurred by the property owners.

Finance status

Finance secured

Majority funding source

Total cost of the project (currency)

Total cost provided by the local government (currency)

Total cost provided by the majority funding source (currency)

Web link

https://www.allentownpa.gov/Government/Codified-Ordinances

Climate hazards

Flood and sea level rise > Groundwater flood

Action

Maintenance/repair – leaking infrastructure

Action title

Sewer Collection System Inspection and Maintenance Plan

Status of action

Implementation

Means of implementation

Infrastructure development

Development and implementation of action plan

Co-benefit area

Sectors/areas adaptation action applies to

Water

Action description and implementation progress

Lehigh County Authority, the operator of the City's Water and Sewer Systems, performs maintenance on the Sewer Collection system, including inspecting, televising, cleaning, and flushing the system, as well as performing necessary repairs and rehabilitation. The program includes daily, weekly, and monthly preventative maintenance to flush and jet areas where blockages are known or anticipated to occur. Additional collection system areas are added to the preventative maintenance program based on inspections and televising the lines. The cost noted below is the approximate cost incurred in 2020 and includes required capital expenditures for sewer line rehabilitation plus normal maintenance in accordance with the City's agreement with the operator.

Finance status

Finance secured

Majority funding source

Local

Total cost of the project (currency)

700,000

Total cost provided by the local government (currency)

700,000

Total cost provided by the majority funding source (currency)

700,000

Web link

Adaptation Planning

(3.2) Does your city council, or similar authority, have a published plan that addresses climate change adaptation and/or resilience?

Yes

(3.2a) Please provide more information on your plan that addresses climate change adaptation and/or resilience and attach the document. Please provide details on the boundary of your plan, and where this differs from your city's boundary, please provide an explanation.

Publication title and attach the document

Allentown Vision 2030

20191218_Final-Report_00-Combined_compressed (3).pdf

Web link

https://allentownvision2030.org/

Sectors/areas covered by plan that addresses climate change adaptation

Energy

Transport (Mobility)

Building and Infrastructure

Industry

ICT (Information and Communication Technology)
Spatial Planning
Water
Waste
Public Health and Safety
Social Services

Climate hazards factored into plan that addresses climate change adaptation

Extreme Precipitation > Rain storm
Extreme Precipitation > Heavy snow
Storm and wind > Severe wind
Extreme hot temperature > Extreme hot days
Flood and sea level rise > Flash / surface flood
Biological hazards > Vector-borne disease
Biological hazards > Insect infestation

Year of adoption of adaptation plan by local government

2030

Boundary of plan relative to city boundary (reported in 0.1)

Larger – covers the whole city and adjoining areas

If the city boundary is different from the plan boundary, please explain why

The plan is integrated with the wider regional planning conducted by the Lehigh Valley Planning Commission

Stage of implementation

Plan in implementation

Type of plan

Integrated mitigation / adaptation

Has your local government assessed the synergies, trade-offs, and co-benefits, if any, of the main mitigation and adaptation actions you identified?

In Progress

Describe the synergies, trade-offs, and co-benefits of this interaction

Actions underway and to be taken under the City's comprehensive plan contain multiple synergies including improvements in health, air quality, water quality, quality of life, and economic benefits. These multiple synergies are particularly well-integrated as the comprehensive planning process was combined with an economic development planning process, resulting in a set of policies, processes and programs deployed to improve the City's quality of life, promote job creation, build community and resident wealth; and strengthen the tax base.

Primary author of plan

Consultant

Description of the stakeholder engagement processes

The Allentown Vision 2030 community planning process provided a variety of ways to receive insights, feedback, and ideas for the future of Allentown. The process was designed to capture voices across all of Allentown. Engagement included the Community Collaboration Meetings, surveys, interviews, and focus groups, as well as input from the Allentown Vision 2030 Community Ambassador Program and the Allentown Vision 2030 Steering Committee.

In some phases, the conversation was literal - through interviews and focus groups, Allentonians conveyed their hopes and concerns for the city. In other stages, the planning team created ways to listen, such as a citywide survey that was taken by over a thousand people.
In person, citywide conversations happened through Community Collaboration Meetings where community members shared their voices and ideas. This was done through facilitated group activities and prioritization

exercises, such as voting on key actions that would help achieve the collective goals of Allentown Vision 2030. There were four total Community Collaboration Meetings. All meeting materials, as well as presentations and facilitated activities, were available in English and Spanish. Each Community Collaboration Meeting built on one another to guide the recommendations outlined in the plan.

In March 2019, the City of Allentown Department of Community and Economic Development opened the Allentown Vision 2030 Community Engagement Hub in a donated storefront in downtown Allentown. The Community Engagement Hub invited community members to drop in, learn about the Allentown Vision 2030 planning process, and participate in activities to capture their priorities and feedback on plan development. The Community Engagement Hub is a model to make city government, programs, and projects more accessible and transparent for citizens. The Hub was open from 12-5pm every Monday, Wednesday, and Friday in March through October 2019, and was used as a meeting space for local neighborhood groups and nonprofits. During its open hours, the Hub engaged hundreds of Allentown residents, workers, and visitors in the Vision 2030 planning process.

Adaptation Goals

(3.3) Please describe the main goals of your city's adaptation efforts and the metrics / KPIs for each goal.

Adaptation goal

Eliminate Sewer System Overflows

Climate hazards that adaptation goal addresses

Flood and sea level rise > Groundwater flood

Target year of goal

2025

Description of metric / indicator used to track goal

Inspect at least 55,000 linear feet of the sewage collection system annually and implement maintenance and repair accordingly, and treat 40,000 - 50,000 linear feet for root intrusion

Does this goal align with a requirement from a higher level of government?

Yes

Select the initiatives related to this adaptation goal that your city has committed to

Other, please specify

Requirements of both the USEPA and Pennsylvania DEP

Comment

Inflow and infiltration (I&I) from significant precipitation, snowmelt, and elevated groundwater levels contribute to extraneous flows. City sewage is conveyed by gravity to its treatment plant. Velocities within most of the gravity collection system are slow for a significant amount of the time and result in the settling of materials. This settling causes blockages. The problem is compounded by customers improperly disposing of materials, principally fats, oils, and grease (FOG), which congeal and promote blockages. Tree roots are also responsible for blockages. SSOs, which are caused by blockages typically, occur within smaller diameter pipes. In order to address the concerns above, LCA developed a Collection System Inspection and Maintenance Plan (CSIMP) in compliance with the Lease to provide a systematic approach for inspecting, televising, cleaning, and flushing the collection system. The CSIMP includes daily, weekly, and monthly preventative maintenance to flush and jet areas where blockages are known or anticipated to occur. Additional collection system areas are added to the preventative maintenance program based on inspections and televising the lines.

Adaptation goal

Increase the resilience of the City's stormwater infrastructure to prevent or mitigate the impacts of flooding

Climate hazards that adaptation goal addresses

Extreme Precipitation > Rain storm

Flood and sea level rise > Flash / surface flood

Flood and sea level rise > River flood

Flood and sea level rise > Groundwater flood

Target year of goal

2025

Description of metric / indicator used to track goal

Inspect and repair approximately 200 stormwater inlets per year; clean 1000 inlets per year; inspect 80,000 linear feet and line 5000 linear feet of stormwater pipes per year; inspect and repair 190 public and private stormwater detention and treatment facilities per year.

Does this goal align with a requirement from a higher level of government?

Yes

Select the initiatives related to this adaptation goal that your city has committed to

Other, please specify

Compliance with EPA's MEP standards for stormwater discharges and and Pa DEP's MS4 NPDES permit requirements

Comment

Initiatives include implementing a voluntary stream monitoring program, establishing new, and upgrading existing, Best Management Practices (BMPs), prioritizing areas for future stormwater treatment retrofit projects, and involving volunteers and students in our monitoring efforts.

4. City-wide Emissions

City-wide GHG Emissions Data

(4.0) Does your city have a city-wide emissions inventory to report?

Yes

(4.1) Please state the dates of the accounting year or 12-month period for which you are reporting your latest city-wide GHG emissions inventory.

	From	To
Accounting year dates	January 1, 2018	December 31, 2018

(4.2) Please indicate the category that best describes the boundary of your city-wide GHG emissions inventory.

	Boundary of inventory relative to city boundary (reported in 0.1)	Excluded sources / areas	Explanation of boundary choice where the inventory boundary differs from the city boundary (include inventory boundary, GDP and population)
Please explain	Same – covers entire city and nothing else		

(4.3) Please give the name of the primary protocol, standard, or methodology you have used to calculate your city's city-wide GHG emissions.

	Primary protocol	Comment
Emissions methodology	U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions (ICLEI)	The inventory was conducted with assistance from PA DEP and ICLEI

(4.4) Which gases are included in your city-wide emissions inventory?

CO2
CH4
N20

(4.5) Please attach your city-wide inventory in Excel or other spreadsheet format and provide additional details on the inventory calculation methods in the table below.

Document title and attachment

Emissions inventory format

I have attached my inventory in the GPC format: ClearPath (ICLEI)

Web link

Emissions factors used

Other, please specify

EPA emission factors for electricity use in PJM, and for diesel and propane

Global Warming Potential

(select relevant IPCC Assessment Report)

Do not know

Please select which additional sectors are included in the inventory

Industrial process and/or product use

Population in inventory year

121,433

Overall level of confidence

High

Comment on level of confidence

Overall level of confidence is high for all categories except transportation data which was calculated based on a variety of assumptions. Data for motorcycles, light trucks, heavy trucks and passenger vehicles were collected from PennDOT travel data. All Off-road emissions were calculated from the EPA's 2017 National Emissions Inventory (NEI) Data and an allocation process was conducted based on county and city population. For vehicle miles traveled, we used Penndot travel data for rural, small urban, and urbanized areas. This data had a subsection

that included Allentown, Easton and Bethlehem combined. To perform the allocation for Allentown we used an allocation process based on city and county populations. Additionally, we needed to determine what percentage of each vehicle type made up the allocation amount. For this we used the Penndot highway vehicle type classification. We used the data from the "urban" section and calculated percentages of each type of vehicle. There are many categories that were combined to make up heavy trucks-- each category to the right of “bus” on the chart were combined to create the heavy truck percentage. We combined these due to the fact that a heavy truck has at least two axles and six or more tires. We then applied these percentages to the allocation to determine the VMT associated with each vehicle type. Additionally, we assumed that passenger vehicle, motorcycle and light trucks were operating on gasoline, with only heavy trucks operating on diesel. Lastly, each VMT was multiplied by 365 to create the annual VMT data for each vehicle type.

(4.6c) Please provide a breakdown of your GHG emissions by scope. Where values are not available, please use the comment field to indicate the reason why.

City-wide emissions

Scope 1 emissions excluding emissions from grid-supplied energy generation

Level of confidence

Scope 1 emissions from grid-supplied energy generation within the city boundary

Level of confidence

Calculated Total Scope 1 emissions

Total Scope 1 emissions - please ensure this matches the calculated total above

Level of confidence

Total Scope 2 emissions

Level of confidence

Calculated total Scope 1 + Scope 2 emissions

Total (Scope 1 + Scope 2) emissions - please ensure this matches the total calculated field above

2,402,569

Level of confidence

High

Total Scope 3 emissions

Level of confidence

Comment

Scope 2 emissions were not broken out from Scope 1. Scope 3 emissions were not calculated

(4.6e) Where it will facilitate a greater understanding of your city-wide emissions, please provide a breakdown of these emissions by the US Community Protocol sources.

US Community Protocol Sources	Sector	Scope	Emissions (metric tonnes CO2e)
Transportation and other mobile sources	Transportation	Total figure	1,350,888
Solid waste	Waste	Total figure	62,245
Wastewater and water	Wastewater	Total figure	7,877

(4.8) Please indicate if your city-wide emissions have increased, decreased, or stayed the same since your last emissions inventory, and describe why.

	Change in emissions	Please explain and quantify changes in emissions
Please explain		This is the first GHG inventory the city has conducted

(4.9) Does your city have a consumption-based inventory to measure emissions from consumption of goods and services by your residents?

	Response	Provide an overview and attach your consumption-based inventory if relevant
Please complete	Not intending to undertake	

City-wide external verification

(4.12) Has the city-wide GHG emissions data you are currently reporting been externally verified or audited in part or in whole?

Not intending to undertake, please specify why

The inventory was conducted by the Allentown Environmental Advisory Council (an impartial community-based board of the City) with assistance from the Pennsylvania DEP and ICLEI, thereby providing us a sufficiently high level of confidence

Historical emissions inventories

(4.13) Please provide details on any historical, base year or recalculated city-wide emissions inventories your city has, in order to allow assessment of targets in the table below.

5. Emissions Reduction

Mitigation Target setting

(5.0) Do you have a GHG emissions reduction target(s) in place at the city-wide level?

No target

(5.0e) Please explain why you do not have a city-wide emissions reduction target and any plans to set one in the future.

	Reason	Comment
Please explain	Policies/projects prioritized over target setting	Goals and targets are contemplated in the City's Vision 2030 comprehensive plan but other priorities have delayed proceeding with developing targets or a timetable for setting them

Mitigation Actions

(5.4) Describe the anticipated outcomes of the most impactful mitigation actions your city is currently undertaking; the total cost of the action and how much is being funded by the local government.

Mitigation action

Outdoor Lighting > LED / CFL / other luminaire technologies

Action title

Street Light LED Conversion

Means of implementation

Development and implementation of action plan

Implementation status

Implementation

Start year of action

2018

End year of action

2021

Estimated emissions reduction (metric tonnes CO2e)

Energy savings (MWh)

Renewable energy production (MWh)

Timescale of reduction / savings / energy production

Co-benefit area

Disaster Risk Reduction

Reduced GHG emissions

Improved resource efficiency (e.g. food, water, energy)

Action description and implementation progress

The city upgraded approximately 25% of cobra-head street lights to LED. City plans to complete 50% of cobra-headed lights to LED by summer of 2021 and 100% by 2022. All pedestrian style street lights are planned to be converted to LED by 2024.

Finance status

Finance secured

Total cost of the project

Total cost provided by the local government

Majority funding source

Total cost provided by the majority funding source (currency)

Web link to action website

https://www.allentownpa.gov/Portals/0/files/PublicWorks/Projects/2015/LEDStreetLightConversion_Fall2015.pdf

Mitigation action

Water > Water use efficiency projects

Action title

Installation of High lift VFD Pumps

Means of implementation

Infrastructure development

Implementation status

Implementation

Start year of action

2020

End year of action

2023

Estimated emissions reduction (metric tonnes CO2e)

Energy savings (MWh)

Renewable energy production (MWh)

Timescale of reduction / savings / energy production

Co-benefit area

Enhanced resilience

Enhanced climate change adaptation

Reduced GHG emissions

Action description and implementation progress

The high lift pumping system conveys treated water into the water distribution system. The new variable drives will be more efficient and capable of handling greater volumes of water.

Finance status

Finance secured

Total cost of the project

2,000,000

Total cost provided by the local government

2,000,000

Majority funding source

Local

Total cost provided by the majority funding source (currency)

2,000,000

Web link to action website

Mitigation action

Water > Water use efficiency projects

Action title

Allentown Water Use Efficiency Project

Means of implementation

Infrastructure development

Development and implementation of action plan

Implementation status

Implementation

Start year of action

2020

End year of action

2025

Estimated emissions reduction (metric tonnes CO2e)

Energy savings (MWh)

Renewable energy production (MWh)

Timescale of reduction / savings / energy production

Per year

Co-benefit area

Reduced GHG emissions

Improved resource efficiency (e.g. food, water, energy)

Resource conservation (e.g. soil, water)

Action description and implementation progress

The City has negotiated a program with the operator of its water system (Lehigh County Authority) to perform leak detection and repairs on 110 miles of the City's distribution pipes each year, resulting in checking the entire system every three years. This program resulted in savings of 57,485,057 gallons of water in 2020.

Starting in 2021 the required number of miles to be inspected increased.

Based on the results from the leak detection above and other data, LCA's creates the water main replacement program. The cost noted below is the replacement of one mile of water main.

Finance status

Total cost of the project

2,137,364

Total cost provided by the local government

2,137,364

Majority funding source

Local

Total cost provided by the majority funding source (currency)

2.137364

Web link to action website

https://www.allentownpa.gov/Public-Works/Office-of-Compliance/Reports

Mitigation Planning

(5.5) Does your city have a climate change mitigation or energy access plan for reducing city-wide GHG emissions?

Not intending to undertake

(5.5b) Please explain why you do not have a city climate change mitigation plan and any future plans to create one.

	Reason	Comment
Please explain	Action plan in early stages of project planning	

6. Opportunities

Opportunities

(6.0) Please indicate the opportunities your city has identified as a result of addressing climate change and describe how the city is positioning itself to take advantage of these opportunities.

Opportunity	Describe how the city is maximizing this opportunity
Development of energy efficiency measures and technologies	The City continues to find ways to reduce costs by enhancing its energy efficiency. Measures include replacement of lighting in buildings and street lights with LED and installation of VFD pumps.

Increase opportunities for partnerships	Lehigh County Authority is required to replace one mile of water mains each year and has entered into a cost-sharing agreement (2021) under which the City paves the entire street where LCA replaces water mains. This collaborative effort allows the City to achieve complete street upgrades, which include stormwater system repairs to enhance sustainability at a lower cost.

Collaboration

(6.2) Does your city collaborate in partnership with businesses and/or industries in your city on sustainability projects?

Yes

(6.2a) Please provide some key examples of how your city collaborates with business and/or industries in the table below.

Collaboration area	Type of collaboration	Description of collaboration
Building and Infrastructure	Project delivery - Public Private Partnership	The City provided the workers and UGI provided financing of sidewalk upgrades conducted in conjunction with UGI's gas pipeline replacements.
Water	Financing (investment)	The City is in the process of developing a Community Engagement Program. Allentown residents and businesses will be able to apply for City funding to implement projects that will reduce the pollution of stormwater and ultimately improve the water quality of our streams and rivers. The goal of the program is to provide an incentive for the community to voluntarily implement stormwater stewardship practices that will help the City meet long-term water quality targets. Under the program, the City will pay a portion (and sometimes all) of the cost for a property owner to install approved practices that reduce pollution and flooding. Metrics are tracked as data is calculated for all voluntarily installed BMPs which reduce pollutants as measured in pounds per year. Additionally, this program provides funding to allow for the development of educational outreach opportunities. One type of outreach activity, for example, includes rain barrel giveaways. As part of its protocol under the Public Outreach Program, the Stormwater Bureau identifies groups and tracks all outreach activities and the metrics involved with each to include surveys and distributed materials.
Building and Infrastructure	Project implementation and management	In 2021, the City made a policy decision to promote green roof installation through automatic removal of impervious surface associated with their footprint, despite storage capacity. Green roof installation is further promoted through the award of credits provided to reduce the City's Stormwater Utility fee. Additionally, the City promotes the reduction of impervious surfaces through its appeals process which allows for residents to reduce their stormwater fees by actively managing

		the impervious surface of their properties. In 2021, credit was awarded for one green roof, one voluntarily installed rain garden, one water quality basin that managed off site stormwater above development standards, and five water quality bmps installed as part of land development.
Building and Infrastructure	Collaborative initiative	The City has entered into an agreement with the Lehigh County Authority to coordinate its City Streets program with LCA's water pipeline replacement projects, allowing the City to achieve complete street upgrades (e.g. complete repaving from curb to curb, repaired stormwater infrastructure attributes, ADA access to sidewalks, etc.) to enhance sustainability at a lower cost

(6.3) Describe how your local/regional government collaborates and coordinates horizontally on climate action.

	Entity with which your local/regional government collaborates and coordinates horizontally on climate action	Description
Horizontal collaboration and coordination	Neighboring jurisdictions	Allentown collaborates with surrounding municipalities in addressing wet-weather inflow and infiltration

(6.4) Describe how your local/regional government collaborates and coordinates vertically (higher levels of government) on climate action.

The City worked with the Pennsylvania Department of Environmental Protection in conducting its Greenhouse Gas inventory in 2019

Finance and Economic Opportunities

(6.5) List any mitigation, adaptation, water related or resilience projects you have planned within your city for which you hope to attract financing and provide details on the estimated costs and status of the project. If your city does not have any relevant projects, please select 'No relevant projects' under 'Project Area'.

Micromobility

Project area

Transport

Project title

Stage of project development

Scoping

Status of financing

Project not funded and seeking partial funding

Financing model identified

Yes

Identified financing model description

Financing through the Allentown Neighborhood Improvement Zone Development Authority which finances capital improvements within the NIZ. The NIZ is a special taxing district created by sate law in 2011

Project description and attach project proposal

The Allentown Neighborhood Improvement Zone Development Authority finances capital improvements within the NIZ. The Allentown EAC is studying the scope, cost and feasibility of implementing a bikeshare program within the NIZ with financing from ANIZDA. The project proposal is being developed.

Total cost of project

Total investment cost needed

(6.6) Has your city tested their climate actions through pilot/demonstration projects?

	Pilot/demonstration projects	Description of project and weblink
Tested by city government	Yes	In 2018 the City piloted a bike-share program in partnership with Muhlenberg College . The program vendor folded during the pandemic. The City's EAC is now investigating alternative micromobility options.

Climate Action Planning

(6.12) Describe how your city plans to enhance ambition and scale up Climate Action Plan (integrated/adaptation/mitigation) and actions to achieve climate neutrality, net zero emissions, carbon neutrality or 100% renewables.

The City's Vision 2030 Comprehensive plan states the following steps with respect to climate action:

1) Prepare a Climate Action Plan that integrates with regional plans.

2) Collaborate with local universities and schools on research and projects that can engage citizens in the solutions.

3) Pursue grants from state agencies like the PA Department of Environmental Protection, PA Department of Conservation and Natural Resources, as well as local and national foundations to fund early stages of education and planning.

4) Consider integrating climate action and resilience planning into Neighborhood Planning Framework to help structure climate and resilience goals into concrete and actionable plans.

5) Partner with the City of Allentown Environmental Advisory Council to further define the Climate Action Planning approach.

8. Energy

(8.0) Does your city have a renewable energy target?

Not intending to undertake, please specify

The City's 2030 master plan includes recommendations on increasing renewable energy in the City but there has been insufficient time to develop targets in light of competing priorities

(8.1) Please indicate the source mix of electricity consumed in your city.

Electricity source

Coal

Gas

Oil

Nuclear

Hydro

Bioenergy (Biomass and Biofuels)

Wind

Geothermal

Solar (Photovoltaic and Thermal)

Waste to energy (excluding biomass component)

Other sources

Total - please ensure this equals 100%

Total electricity consumption (MWh)

Year data applies to

What scale is the electricity mix data

Comment

(8.2) For each type of renewable energy within the city boundary, please report the installed capacity (MW) and annual generation (MWh).

	Installed capacity (MW)	Annual generation (MWh)	Year data applies to	Comment
Solar PV				
Solar thermal				
Hydro power				
Wind				
Bioenergy (Biomass and Biofuels)	1.5		2020	Allentown in partnership with PPL installed a combined heat and power plant at its sewage treatment plant in 2001
Geothermal				
Other, please specify				

(8.3) Does your city have a target to increase energy efficiency?

Not intending to undertake, please specify

There has been insufficient time to develop targets in light of competing priorities

10. Transport

(10.0) Do you have mode share information available to report for the following transport types?

Freight transport
Passenger transport

(10.1) What is the mode share of each transport mode in your city for passenger transport?

Please complete

Private motorized transport
74.5

Rail/Metro/Tram

Buses (including BRT)
10.33

Ferries/ River boats

Walking

Cycling

Taxis or shared vehicles (i.e. for hire vehicles)

Micro-Mobility

Other

Comment

The annual VMT for private motorized transport includes all passenger vehicles, including taxis that we allocated to the City of Allentown based on PennDOT data and the City's population in 2018. The annual VMT for buses includes other heavy trucks. The total VMT on which the percentages are based also includes light-duty trucks and motorcycles. Only emission-producing modes of transport were evaluated, so the percentages do not include walking, biking, etc.

(10.2) What is the mode share of each transport mode in your city for freight transport?

	Mode share	Comment
Motorcycle/Two-wheeler		
Light Goods vehicles (LGV)		
Medium Goods vehicles (MGV)		
Heavy Goods vehicles (HGV)		
Rail		
In-land waterways		

(10.3) Please provide the total fleet size and number of vehicle types for the following modes of transport.

	Number of private cars	Number of buses	Number of municipal fleet (excluding buses)	Number of freight vehicles	Number of taxis	Transport Network Companies (e.g. Uber, Lyft) fleet size	Customer-drive carshares (e.g. Car2Go, Drivenow) fleet size	Comment
Total fleet size								
Electric								
Hybrid								
Plug in hybrid								
Hydrogen								

(10.5) Does your city have a low or zero-emission zone or restrictions on high polluting vehicles that cover a significant part of the city? (i.e. that disincentivises fossil fuel vehicles through a charge, a ban or access restriction)

No

12. Food

Food Consumption

(12.0) Report the total number of meals that are annually served and/or sold through programs managed by your city (this includes schools, hospitals, shelters, public canteens, etc.).

Total meals served or sold through programs managed by your city

Number of meals

113,690

Cities facilities

Hospitals

Shelters

Other, please specify

Allentown Public Library, Greater Valley YMCA , Community Centers

Comment

Summer lunch program for youth

(12.1) What is the per capita meat and dairy consumption (kg/yr) in your city?

Meat consumption per capita (kg/year)

Kg/Year/Capita

Year data applies to

Is your city calculating emissions associated with this consumption?

No

Comment

Dairy consumption per capita (kg/year)

Kg/Year/Capita

Year data applies to

Is your city calculating emissions associated with this consumption?

No

Comment

Sustainable Food Policies and Actions

(12.3) Does your city have any policies relating to food consumption within your city? If so, please describe the expected outcome of the policy.

	Response	Please describe the expected outcome of the policy
Please complete	No	

(12.4) How does your city increase access to sustainable foods?

Do you subsidise fresh fruits and vegetables?

Action implemented

Yes

Please provide details and/or links to more information about the actions your city is taking to increase access to sustainable foods

The Health Bureau's fruit and veggie truck program brings fresh produce to playgrounds and city pools free of charge

Do you tax/ban higher carbon foods (meat, dairy, ultra-processed)?

Action implemented

No

Please provide details and/or links to more information about the actions your city is taking to increase access to sustainable foods

Do you use regulatory mechanisms that limit advertising of higher carbon foods (meat, dairy, ultra-processed)?

Action implemented

No

Please provide details and/or links to more information about the actions your city is taking to increase access to sustainable foods

Do you use regulatory mechanisms that limit the sale of higher carbon foods (meat, dairy, ultra-processed)?

Action implemented

No

Please provide details and/or links to more information about the actions your city is taking to increase access to sustainable foods

Do you incentivise fresh fruit/vegetables vendor locations?

Action implemented

No

Please provide details and/or links to more information about the actions your city is taking to increase access to sustainable foods

Do you have programs/policies/regulations on food surplus - either food surplus recovery and redistribution, or food waste avoidance programs (i.e. Love Food/Hate Waste)?

Action implemented

Yes

Please provide details and/or links to more information about the actions your city is taking to increase access to sustainable foods

Various food pantries and soup kitchens in the City are involved in programs with local grocery stores and others to receive surplus food. The Allentown Environmental Advisory Council is studying ways to further expand on these programs.

13. Waste

(13.0) What is the annual solid waste generation in your city?

	Amount of solid waste generated (tonnes/year)	Year data applies to	Please describe the methodology used to calculate the annual solid waste generation in your city
Please complete	52,101.4	2018	By state law, all municipal solid waste (MSW) disposed of in Pennsylvania transfer stations and landfills must be weighed and reported. To determine the weight, the truck enters the site and goes onto the scale to obtain the Gross Inbound Weight. The truck then proceeds to "tip off" and unload the MSW. The truck then again is weighed on the scale to determine the weight of the truck empty and the difference is the Tare Weight, which is the weight of the MSW that was unloaded and reported to the City. This methodology also applies to determining the recyclable material weights. The weight reported herein is from the City's curbside residential MSW (39,461.4), residential recycling curbside program (8,263), recycling drop off center (1,939), residential curbside yard waste collection (2,323) and electronics recycling program (115) for 2018. It does not include MSW and recycling weights from commercial and institutional entities that are privately collected by contracted haulers. It also does not include waste from the City's facilities and waste receptacles which is tracked from June through May of the following year. The 2018 - 2019 quantity for this excluded component was 2,637.6 tons.

14. Water Security

Water Supply

(14.0) What are the sources of your city's water supply?

Surface water, from sources located fully or partially within city boundary
Ground water

(14.1) What percentage of your city's population has access to potable water supply service?

100

(14.2) Are you aware of any substantive current or future risks to your city's water security?

No, please specify why

Based on requirements of the City's Uninterrupted System Service Plan (required by American Water Infrastructure Act), the City and LCA have assessed risk and resilience and developed effective mitigation plans.

Water Supply Management

(14.4) Does your city have a publicly available Water Resource Management strategy?

Yes

(14.4a) Please provide more information on your city's public Water Resource Management strategy.

Publication title and attach document

Lehigh County Authority Final Five-Year Capital Plan

2021-2025-Capital-Plan-Allentown-Division.pdf

Year of adoption from local government

2020

Web link

lehighcountyauthority.org

Does this strategy include sanitation services?

Yes

Stage of implementation

Strategy in implementation

Submit your response

What language are you submitting your response in?

English

Please read and accept our Terms and Conditions

I have read and accept the Terms and Conditions

Please confirm how your response should be handled by CDP.

	Public or non-public submission
I am submitting my response	Publicly (recommended)