CONNECT
Climate Action Plan

Local Actions & Strategies to Reduce CONNECT Members' Greenhouse Gas Emissions & Increase Our Resilience

Approved at the 12th Annual Legislative Session of The Congress of Neighboring Communities (CONNECT)

5/19/2022

Reference: Resolution 22-05

Produced by: CONNECT Infrastructure & Utilities Coordination Working Group

CONNECT
CONGRESS OF NEIGHBORING COMMUNITIES

Credits and Acknowledgments

This Plan was made possible through the consistent support of CONNECT's Infrastructure and Utilities Coordination Working Group, its Climate Action Planning Subcommittee, the Environmental & Economic Development Working Group, and all the members, partners, and other stakeholders who provided valuable expertise, perspective, and feedback through these and other forums. Special thanks to all of those listed below.

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The views and opinions expressed in this Plan are those of the voting membership and do not necessarily reflect the views or positions of any individuals, partners, or entities they represent. The ICLEI Climate Action Plan Template, a basis for this current report, was made possible through a grant agreement between ICLEI – Local Governments for Sustainability and the PA Department of Environmental Protection, which was funded by the US Department of Energy State Energy Program. The original template was published in Apr. 2018, edited by the PA Department of Environmental Protection in Dec. 2019, and further edited by CONNECT in 2020-2022.

A LETTER FROM THE EXECUTIVE DIRECTOR

We, the Congress of Neighboring Communities (CONNECT), are thrilled to present the CONNECT Climate Action Plan (CAP) and help our local governments develop strategies to address climate change. A huge thank you and the highest commendation to the profoundly committed Infrastructure & Utilities Working Group, Environmental & Economic Development Working Group, and the Climate Action Plan Subcommittee members for dedicating their time and energy to a lengthy and detailed multi-year process that is only just beginning. This continued work is being facilitated by our dedicated Community Project Manager, Eric Raabe, and our growing team of CONNECTers - if you are reading this, you are invited to join us to advance this work to our collective success.

The CONNECT CAP is a living document that hopes to engage and empower our members to reduce our emissions and adapt to the climate impacts to our shared region. Local governments and other stakeholders can search for funding, partners, strategies, tactics, and case studies throughout this Plan to achieve these goals. The Plan will also serve as a detailed playbook for the CONNECT team to use over the next few years to lead, facilitate, and support the partnerships, ideation, and effort necessary to make our bold ideas a reality for our communities. We are so grateful for all the support from the Pennsylvania Department of Environmental Protection, ICLEI – Local Governments for Sustainability, The Heinz Endowments, The Jefferson Regional Foundation, and all our partners. We look forward to our continued partnerships and more like them as we move toward implementation of the Plan.

This kind of cross-boundary, cross-sector, innovating, and activating work is exactly why the founders of CONNECT came together nearly fourteen years ago. Over the course of CONNECT's existence since then, we have tackled the persistent issues of energy, recycling, stormwater, transportation, and utilities coordination in our region. With the Intergovernmental Panel on Climate Change's 6th Assessment Report detailing just how far we have to go to address this crisis, our belief in being *stronger together* is now more important than ever. Our members recognize that the environmental, economic and social challenges we face do not respect municipal borders - so our solutions must be rooted in collaboration and cooperation to better serve our nearly 900,000 residents. We are not yet on track, but I know we can get there together.

The chills of possibility, hope, and inspiration I get from reading this incredibly useful tool is compounded with the knowledge that over 1500 people across dozens of municipal borders in our region were engaged in this process. With this Plan, I hope you are compelled to engage with us on this work, take advantage of the unprecedented funding for these long-term investments, and build the project-ready teams and plans to create a more equitable, resilient, sustainable, and successful future here in the CONNECT region and beyond.

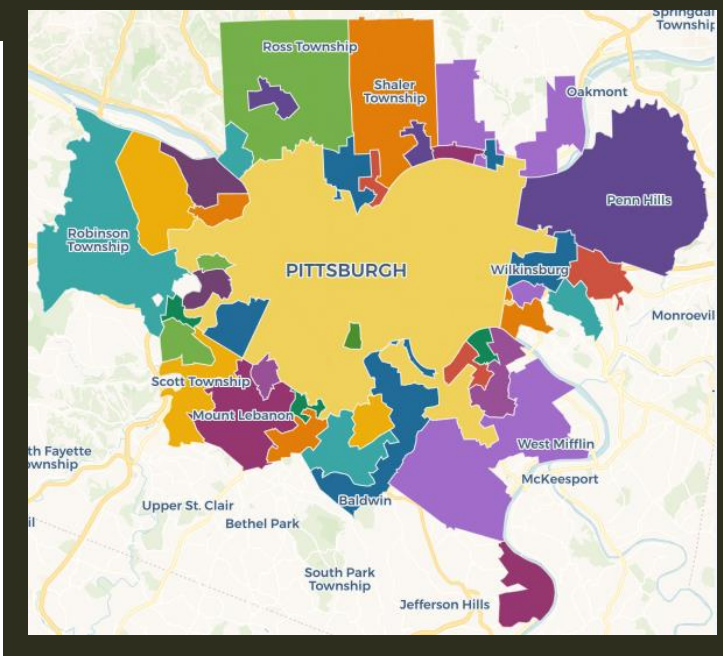
Sincerely,

Lydia Morin

Executive Director, CONNECT

Executive Summary

What is CONNECT?



The Congress of Neighboring Communities, known as CONNECT, is a nonpartisan initiative that convenes neighboring municipalities, including the city of Pittsburgh, that share borders, challenges, and opportunities in Allegheny County, PA. Serving as both a policy think tank and membership organization founded as an initiative in the University of Pittsburgh's Graduate School of Public and International Affairs, the CONNECT network provides resources, research, relationships, and opportunities to work together on the issues we care about – like climate change.

Why Act Regionally?

Climate change threatens the health, safety, and overall well-being of communities across the globe, with communities in Southwestern Pennsylvania and CONNECT being no exception. Our regional vulnerabilities, such as adverse air quality, landslides, and flooding risk are exacerbated by climate change and overlap with policy areas of concern to the Congress of Neighboring Communities.

With this CONNECT Climate Action Plan and the individual work of our membership, CONNECT resolves to address climate change by reducing our greenhouse gas emissions, increasing our resilience to natural hazards, and addressing our environmental inequities. We extend an invitation to all local governments of Allegheny County and Southwest PA to help advance this work as we implement these solutions and adapt to a changing climate.

> Although participation in CONNECT's work is always optional - climate change does not respect municipal borders - so our solutions must be rooted in collaboration and cooperation.

Executive Summary

Climate Planning in CONNECT

In 2019, five CONNECT governments participated in a state program to measure their emissions and develop climate action plans for their communities. With this experience, and the knowledge that emissions and climate risks do not stop at jurisdictional boundaries, CONNECT members began looking toward a regional solution.

Through its Resolution 20-04, CONNECT and its member local governments each committed to address their contribution to global climate change and create more sustainable and resilient communities.[1] To that end, CONNECT has developed a comprehensive Climate Action Plan, which hopes to support existing plans, coordinate meaningful action, and better prepare our communities for the future.

CONNECT recognizes a growing need to address members' contributions to climate change, as well as equitably adapt to the impacts of a changing climate. This CONNECT Climate Action Plan highlights our vulnerabilities, includes the first inventory of greenhouse gas emissions (GHGs) from each member's community-wide activities, establishes a feasible emissions reduction target, and outlines potential actions identified by stakeholders to achieve our emissions reduction, equity, and resilience goals.

Pennsylvania is getting warmer and wetter, and municipalities are on the front lines of those costs.

Per capita, CONNECT communities emit 5x our fair share of emissions recommended to limit warming.

Together, there are local opportunities for solutions

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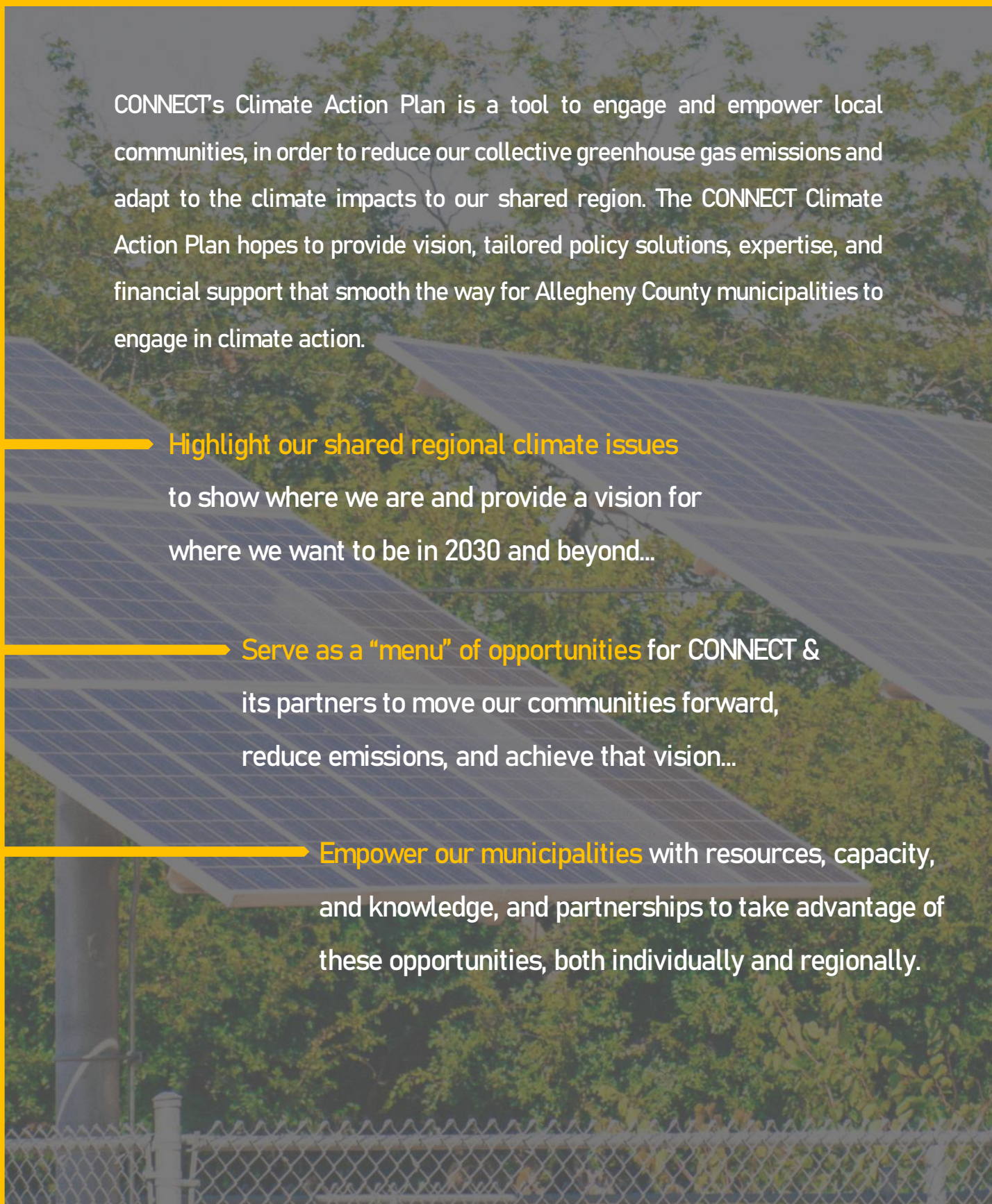


CONNECT's Climate Action Plan is a tool to engage and empower local communities, in order to reduce our collective greenhouse gas emissions and adapt to the climate impacts to our shared region. The CONNECT Climate Action Plan hopes to provide vision, tailored policy solutions, expertise, and financial support that smooth the way for Allegheny County municipalities to engage in climate action.

Highlight our shared regional climate issues to show where we are and provide a vision for where we want to be in 2030 and beyond...

Serve as a "menu" of opportunities for CONNECT & its partners to move our communities forward, reduce emissions, and achieve that vision...

Empower our municipalities with resources, capacity, and knowledge, and partnerships to take advantage of these opportunities, both individually and regionally.

How To Use This Plan

1 Use as a "Menu of Opportunities" for Local Governments to Act

Explore options

There are countless ways a local government can address climate change while improving the community. This Plan contains over 100+ options suggested by our members, for our members. Each is organized by factors like impact, cost, and difficulty, and provides links to local resources, funding, and other opportunities. Note that many of these actions earn local governments points toward a Sustainable PA Community Certification! Start exploring actions here.

2 Use To See Your Community's Contributions To, & Risks From, Climate Change

Learn more

This Plan includes a vulnerability assessment, a climate survey of our residents, and the first regional inventory of community greenhouse gas emissions in Allegheny County. Community specific Information was compiled for each local government in CONNECT (2018) and is available upon request.

3 Use as a Template to Create your Own Local Climate Action Plan

Reach out

Many sections of this Plan are explicitly designed to be used by local governments when creating their own local climate action plan, comprehensive plan, or sustainability plan. Adopting, copying, or otherwise using parts of this document will save local governments considerable time and effort. Reach out to ejr73@pitt.edu for more information.

4 Use to Guide Member Participation & Next Steps by CONNECT

Join us here

Following passage of the Plan, CONNECT will evaluate the "CONNECT Opportunity" actions found in this Plan based on emissions reduction potential, potential to increase resilience, cost/feasibility, and other criteria. Participate in our Working Groups to lend your perspective on what we should pursue together. Join us here.

CONNECT's Climate Goals

30% BY 2030

CONNECT's Top 4 Goals

Reduce energy use in our local governments & communities

Replace current energy sources with renewables

Strengthen our resilience through local land, water, & materials management

Motivate cleaner and more accessible modes of transportation by residents & in our fleets

To achieve these goals with our members, CONNECT will:

- Implement "CONNECT Support Actions" that smooth the path for local governments to engage in climate action
- Launch a novel CONNECT-wide regional emissions reduction or resilience project that members and partners identify from this Plan's "CONNECT Opportunities".
- Continue to convene & provide a framework for interaction & collaboration between neighboring municipalities on climate issues. We will work closely with our partners to create opportunities for sustainability, and offer resources and capacity to local governments in order to take advantage of these opportunities.

Regional Alignment

Sustainable Pennsylvania Community Certification

The Sustainable Pennsylvania Community Certification, a project of the Pennsylvania Municipal League and Sustainable Pittsburgh, is a voluntary performance recognition program designed to help municipalities achieve their sustainability goals and bring recognition to these efforts. Many of the actions found in the CONNECT Climate Action Plan not only reduce emissions but also closely align with certification criteria for being recognized as a Sustainable Pennsylvania Certified Community. CONNECT communities are strongly encouraged to become recognized through the program for their progress in addressing climate change. CONNECT and Sustainable Pittsburgh are working together to continually link municipalities in Allegheny County with the most up to date resources, best practices, and funding opportunities that bring communities closer to their goals.

Consistency with Statewide Climate Action Plan

CONNECT's reduction targets are consistent with the statewide targets of 80% by 2050 compared to 2005 levels, as they exceed their local percentage of the total emissions reductions needed to achieve that target. The Commonwealth of Pennsylvania's 2021 Climate Action Plan includes many actions that are meant to be implemented by local governments.[2] CONNECT's Climate Action Plan aligns with and incorporates as many statewide recommendations as are feasible and relevant to governments in Allegheny County.

Allegheny County Efforts

CONNECT's member governments hope to align CONNECT's municipal climate efforts with those of Allegheny County as well as Council's newly formed Committee on Sustainability & Green Initiatives.[3, 4] Looking to and learning from the successes at the County level as well as supporting the County's work on renewable projects, air quality, greenhouse gas emissions, and the County's Sustainability Plan, will in turn support climate action by our region's local governments.[5]

Marshall Plan for Middle America & University of Pittsburgh

The Marshall Plan for Middle America, an initiative of the University's Center for Sustainable Business, seeks to link research, governments and their communities with infrastructure needs, and capital providers ready to invest in these needs in order to transition our regional economy from a fossil fuel foundation to one built on renewable energy.[6] CONNECT's Climate Action Plan looks to align with the efforts of the Marshall Plan, by organizing our members to identify projects ready for activation, engaging the community on the actions they prioritize, and by encouraging local governments to remove local barriers to clean energy development in the region. CONNECT also hopes to maintain a close relationship with The University's Office of Sustainability in its implementation of Pitt's Climate Action Plan, a plan for the University to achieve carbon neutrality by 2037.

City of Pittsburgh & Individual Climate Plans

The City of Pittsburgh, one of the country's leaders in climate action, released its Climate Action Plan 3.0 in 2020, charting a path for the City to 2030 and beyond.[7] As a member of CONNECT, the City's dozen plus year efforts and accomplishments provides critical experience for other governments looking to address climate change. In 2019, six CONNECT members – Etna, Forest Hills, Millvale, Munhall, Sharpsburg, and West Homestead – participated in a state program to measure their emissions and pass climate action plans for their communities. In 2021, two more governments, Carnegie and Swissvale are participating to create their own climate plans. As more interest develops, CONNECT will continue to look to regional leaders for guidance and opportunities for partnerships, and will align this Climate Action Plan with the municipal and community plans completed by members.

Planning Process

CONNECT's Stakeholder and Community-Driven Planning Process

CONNECT Working Groups and GSPIA Capstone Course

CONNECT's Infrastructure & Utilities Coordination and the Economic & Environmental Development Working Groups discussed the climate implications with energy, water, and utilities partners throughout 2020-2021. University of Pittsburgh GSPIA students researched initial strategies for climate action as part of a capstone course, which included stakeholder consulting and forming a CONNECT CAP Subcommittee.

ICLEI Process

CONNECT's planning process for the development of this Plan started before official involvement in PADEP's LCAP program commenced in 2020. The process followed ICLEI's Five Milestones for Climate Mitigation in partnership with PADEP's Local Climate Action Program.

Regional Alignment & Stakeholder Meetings

CONNECT participated in monthly alignment meetings between the City of Pittsburgh, University of Pittsburgh Office of Sustainability, and CONNECT members on coordination between the region's plans.

CAP Subcommittee

CONNECT formed a Climate Action Plan Subcommittee, open to all members and the public, to convene monthly meetings between municipalities, focusing on the development of the Climate Action Plan and a forum to activate new municipal members on the Plan.

Climate Equity & Environmental Justice

Efforts to incorporate climate equity into the process, including survey distribution to underserved communities through CONNECT's partners. Included climate equity in the overall Climate Action Plan vision and objectives and eventual evaluation of proposed actions on whether they help to uplift environmental justice.

Survey & Draft Comment Period

Development and distribution of a regional Climate Action Plan Survey, with assistance from the Pitt Office of Sustainability, that gathered nearly 1500 resident/business perspectives from our communities, open to all of Allegheny County, and designed to be continually distributed by member governments.

Co-Benefits of Climate Action

What Can Climate Action Do for My Community?

Greenhouse gas reduction and climate resilience are not the only beneficial outcomes of local climate action plans. The following outcomes are referred to as "co-benefits," and they illustrate how taking action on climate change results in a more prosperous community. Each objective and action in this Plan can result in benefits to public health, jobs and prosperity, environmental conservation, and environmental justice. The symbols will indicate which co-benefits an objective or action will generate.

Improving Public Health

Climate change mitigation activities help to clean the air by reducing vehicle and industrial emissions – and can lead to improvements to public health. Mitigation activities, like limits on idling, increased adoption of electric vehicles, or preservation of the tree canopy helps to reduce exposure to air pollutants and heat. More transit options combined with transit-oriented development practices make for a more vibrant, livable community with shorter commute times and more opportunities for active transport. When all of these changes are implemented, neighborhoods are more connected and resilient, and can see reduction in asthma rates and chronic lifestyle diseases throughout the community.

Tell Your Community:

Reduction in disease and air pollutants

Active travel and urban development that encourages walking and cycling can lead to increased physical activity, reductions in diabetes, and 5% reduction in common air pollutants.

Increase in public safety

Complete Streets reduce motor vehicle-related crashes and pedestrian risk, as well as bicyclist risk.

Trees and Greenspace improve health

Access to greenspace is linked to dozens of health benefits. Tree canopy can reduce stress and improve self-assessments of health by over 30% among residents.

Co-Benefits of Climate Action

$ Saving Money and Promoting Jobs

Local and regional investment in climate actions also has the potential for significant job creation and cost savings. Climate protection measures can spur business and job growth during the design, manufacture, and installation of energy efficient technologies, which presents a particular opportunity to reinvest in the local economy and generate green jobs within CONNECT. Cost savings are often also a benefit of climate mitigation activities, especially in the energy and water sectors. An average small municipality in CONNECT can spend tens of thousands on energy to power buildings, public lighting, and fuel its vehicle fleet, though much of this is not monitored for efficiency opportunities.

Many of the measures in this plan pay for themselves quickly by reducing expenditures on energy and maintenance. For instance, a "right-sized" or electric vehicle fleet can be less expensive to purchase, operate, and maintain in the long run. Encouraging community energy efficiency, public transit use, building improvements, and other measures will also result in lower energy and water bills for residents and employers as well. When mitigation actions occur regionally and globally, local governments may avoid the longer-term costs of climate change, like infrastructure damage in extreme storms.

Tell Your Community:

$1000 for each home

The average single-family home in PA that performs cost-effective energy efficiency upgrades could save $1000 on energy bills every year. See more tips on how to save.

$9000 average savings per building

Energy savings in CONNECT's public buildings can be significant. Even Low-cost energy efficiency measures and simple operational adjustments can save average buildings up to 60 cents/sq ft, or about $9,000 for a 15,000 sq ft building.

12% more retail spending on green streets

Green space and tree canopy have been shown to increase property value and local business spending.

8x more jobs created in clean industries

Investing in sustainable industries & clean energy in our communities can bring more jobs to the region and provide alternatives to jobs lost in shrinking fossil-fuel industry.

Co-Benefits of Climate Action

Enhancing Resource Security

Many of the actions that reduce emissions also can help CONNECT's governments, businesses, and residents physically adapt to a changing climate and promote energy security. Less demand for utility-provided electricity results in less strain on the energy system as a whole. Extreme and prolonged heat waves can endanger the reliability of energy delivery in peak periods, possibly leading to service disruption during times when cooling is most needed. By increasing efficiency and renewable energy systems across CONNECT's communities, service disruptions to food systems, water sources, and critical facilities are less likely. Similarly, demand shifts that result in less intensive water use or food waste can help with improving water and food security. Climate actions like proper stormwater management and water conservation can help reduce runoff, ensuring rivers and water supplies remain clean and safe. Tree canopy management can reduce heat and demand for air conditioning in neighborhoods.

Tell Your Community:

Climate action preserves our natural spaces

Natural spaces and trees have site-localized effects on climate, thermal comfort, human health, and species habitat.

Protects our water

Green stormwater infrastructure helps reduce runoff that transmits pollutants to our water resources during rain and snowmelt events. Also discourages diseases from mosquitoes and other water-borne pathogens.

Climate actions reduce dependence

Pairing solar with storage can help make solar energy available during outages, and could help keep your buildings and emergency services up and running.

Co-Benefits of Climate Action

Fostering Social Equity

Social equity and justice are major concerns for addressing climate change, and thus were established as core values behind this plan. When planned thoughtfully, climate actions can address both emissions, resilience, and equity simultaneously - ensuring a better quality of life for CONNECT's communities of color and low-income communities. In addition to equity, climate actions provide an opportunity for environmental justice in our communities. Socially vulnerable populations and lower land value communities are often disproportionately in harm's way from climate risks due to being located in areas at risk of flooding or proximity to industries that emit high levels of air pollutants. Oftentimes, these residents are also renters with poorly insulated housing that experience cost prohibitive energy bills during extreme temperatures. All climate actions can consider equity but must explicitly target and involve specific groups to ensure positive impact.

Tell Your Community:

Climate actions can help reduce energy burden

Non-white & low-income residents use more of their income for energy. Actions such as energy efficiency & weatherization help lower energy burdens for families.

Expanding transit can target disconnected communities

Distributed food production in community gardens and increasing access to food centers through high density zoning and transit can improve health and reduce risk from potential

Changing zoning can provide opportunities

Climate action can improve housing stock through changes to exclusionary zoning, access to renewable energy, and energy efficiency upgrades.

Actions are opportunities to listen and engage

Climate actions are an opportunity to ensure representation for those who do not normally have a seat at the table.

Vulnerability Assessment

"Pennsylvania is getting warmer, and wetter - and municipalities are at the front lines of those costs."

This section provides a high-level assessment of potential climate impacts and highlights those climate actions that support adaptation for each type of hazard. CONNECT used U.S. Climate Explorer, Temperate, and PADEP's Climate Impacts Assessment 2021 to identify likely changes from today through 2050. The following sections discuss the top climate hazards according to those projections. For more information about the science behind climate change, see Appendix II: Climate Change Science.

Note that the vulnerabilities listed here are not exhaustive, and that many communities choose to hire consultants, adaptation practitioners, or Architecture and Engineering (A&E) firms to assist them in compiling their vulnerability and risk assessments.

While CONNECT and many individual municipalities do not currently have the capacity to complete a more robust climate vulnerability assessment, the following analysis was completed to educate municipalities and the public on local impacts as well as inform future efforts.

CONNECT will help its communities understand their vulnerabilities and continue to be a convener of conversations around the climate risks affecting our region. Three major risks have been identified by our stakeholders as most critical to CONNECT communities: water, landslides, and air quality. Resources and links helpful to municipalities are provided in the Vulnerability Resources section to assist communities in planning for the impacts of climate change.

Anticipated Climate Impacts to CONNECT

Rising Temperatures

As a result of the heat-trapping greenhouse gases emitted through human activities, our global and local climates are changing. Over the last 110 years, the Commonwealth of Pennsylvania has experienced a long-term increase in average temperature of more than 1.8°F, and an increase in the number of "wet months" above average precipitation.[8] U.S. Climate Explorer data specific for the CONNECT region indicates that temperatures will continue to rise through the remainder of the Century.[9] Under a high emissions scenario, the CONNECT region is projected to be on average 3°F warmer than it is today by 2050, and over 6°F warmer than it was at the end of the 20th century.[10]

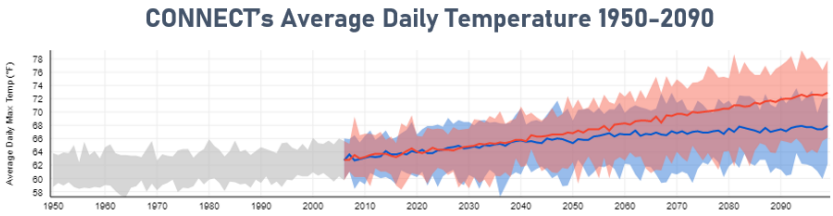


Figure: Data from U.S. Climate Resilience Toolkit Climate Explorer, downscaled from CMIP5 using the Localized Constructed Analogs (LOCA) statistical technique. High warming scenario is depicted by the red average temp. trendline, blue depicts a low warming scenario. Shading around trendline denotes variability between models.

AVG HIGH	AVG LOW	HOTTEST REC. DAY
+2.7°F	+2.9°F	+3.7°F

HOTTER BY 2050

Figure: Projected temperature data for the CONNECT region between 2018-2050 is from Temperate.io and U.S. Climate Resilience Toolkit Climate Explorer. Aggregated temperature data is generated from daily data using all available models.

Increased Precipitation

In the Northeast, higher annual temperatures are projected to be associated with increased levels of annual precipitation and a higher frequency of heavy rain events.[11] Winter and spring precipitation are especially subject to these effects. If sewer overflows, polluting runoff, and street flooding seem more common, it is because climate change has already affected our communities. Over the last 50 years, the Northeast saw more than a 70% increase in precipitation, and a 75% increase in heavy rain events.[12] At this rate, data indicates that CONNECT communities will be experiencing at least 1 additional major rain event each year through 2035 and increases to their total annual and winter precipitation in the coming decades.[13,14]

Flooding in Carnegie Borough after a 2018 heavy rain event.

CONNECT Communities can expect:

- 1 additional heavy rain event each year by 2035
- 8% increase in avg. annual precipitation by 2050.
- 14% increase in winter precipitation by 2050.

Impacts

The warming and wetting trend is expected to continue at a similar rate, especially if the world continues on its current path of greenhouse gas emission levels. By the end of the century, a CONNECT community's climate could feel more like that of Arkansas's today.[15] These changes in temperature and precipitation patterns are likely to have significant impacts on water and stormwater governance, landslide risk, and air quality in the Pittsburgh Region. For more information about the science behind climate change, see Appendix II: Climate Change Science.

Water & Stormwater

Allegheny County's water infrastructure will be especially vulnerable to the impacts of precipitation due to a complex network of public authorities, municipalities, and private companies who are already challenged with meeting regulatory requirements addressing sewer issues.[16] Aging water infrastructure, such as the combined sewer systems and drinking water treatment facilities in many CONNECT communities, were not designed to handle extreme precipitation events that are becoming more frequent with climate change.[17] As a result, heavier precipitation is likely to cause communities in the CONNECT region to experience more flash/surface flooding, groundwater flooding, river flooding, basement flooding, inundation, and soil saturation.

Images: Tribune-Review, WPXI

Flooded creek in Plum Borough after storms in 2019.

Allegheny County flooding, May 2021

Closure of the 10th Street Bypass in 2018

Water Damages

Residents are already reporting concerns about water and stormwater. Over 31% of surveyed CONNECT residents have experienced flooding in or around their property. Many noted an increasing severity of water impacts over the past few years. Damages range from loss of personal items, the need for renovations, to complete loss of structure. NOAA estimates that there have been $13 million in storm/weather damages in Allegheny County since 2018, with millions occurring within CONNECT communities.[18] However, true losses are likely much greater, as long-term health and monetary damages from floods, heavy rain, snow, and winter storms to personal property, infrastructure, and through insurance are severely underreported.[19] According to the DEP, Pennsylvania is now experiencing three times the number of billion dollar disaster events as it did in 1980.[20] Much of this spending was not covered by federal disaster aid, so the costs were absorbed by local, county and state agencies.[21]

Almost a third of surveyed CONNECT residents have already personally experienced flooding in or around their home or place of business.

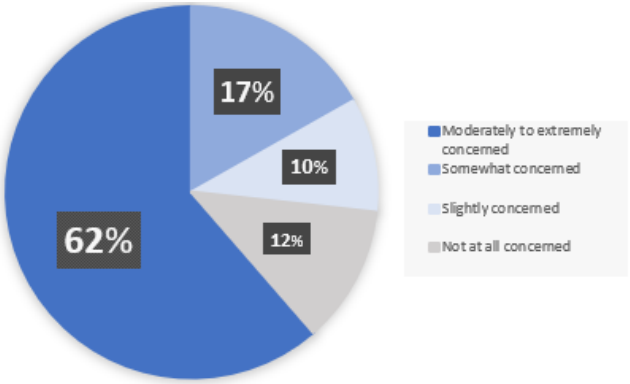
31%

$13+ million in precipitation related damages since 2018.

A consistent increase in statewide disaster spending on damage to public infrastructure since 1980. $125M extra in 2018 alone.

3x

A majority of CONNECT residents are concerned about the increasing severity and frequency of flooding and landslide events.



Flooding can also disrupt municipalities' emergency health and safety services by blocking roads and damaging critical facilities. When asked their level of concern about the increasing severity of flooding events in our region, a majority (62%) of CONNECT residents were moderately to extremely concerned.

Water Quality

CONNECT's water quality is also impacted by climate change. Increases in extreme precipitation and subsequent flooding will also "likely lead to more contaminated runoff from streets and farms and more failures of Pennsylvania's aging drinking water, stormwater, and wastewater systems".[22] Contaminated runoff, sewer overflows, and increased algal blooms can make it harder for municipal authorities to maintain regulatory requirements and pose a public health risk to communities.[23] Smaller municipal water authorities, common within CONNECT, may struggle to fund projects or repairs without rate increases, endangering other safety and improvement projects.[24] The brunt of these health hazards will fall more heavily on people who live in low-quality housing, in a floodplain, or who can't afford repairs in the aftermath of heavy rain or flooding.

Due to Allegheny County's uniquely fragmented governance, any effective response to many of the conditions resulting from surges of storm water will require collaboration with regional organizations and neighboring communities that share the watershed. Regionalization efforts by ALCOSAN, and municipal participation in their Clean Water Plan, will be key to balancing costs, efficiency, and risk.[25] For more information about water vulnerabilities and how to mitigate them, see the "Water/Wastewater" section on the resources page, and Water/Wastewater actions found in this Plan.

Landslides

PADEP identified changes in landslide frequency as a potential high risk to built community, energy, and transportation infrastructure, with statewide risk heavily concentrated in the Southwestern region.[26] Due to its geology and varied topography, Allegheny County has a long history of landslides – often exacerbated by heavy bouts of precipitation and high spring temperature conditions like those experienced in 2018.[27] The secondary effects of heavy precipitation, such as excess stormwater drainage and residential runoff, also contribute to the saturation and future weakening of slopes. Major landslides in the CONNECT region often do not just occur during these rain events, as several months or even "a 1- to 2-year lag between severe storms and the onset of large-scale slides is common in the area".[28,29]

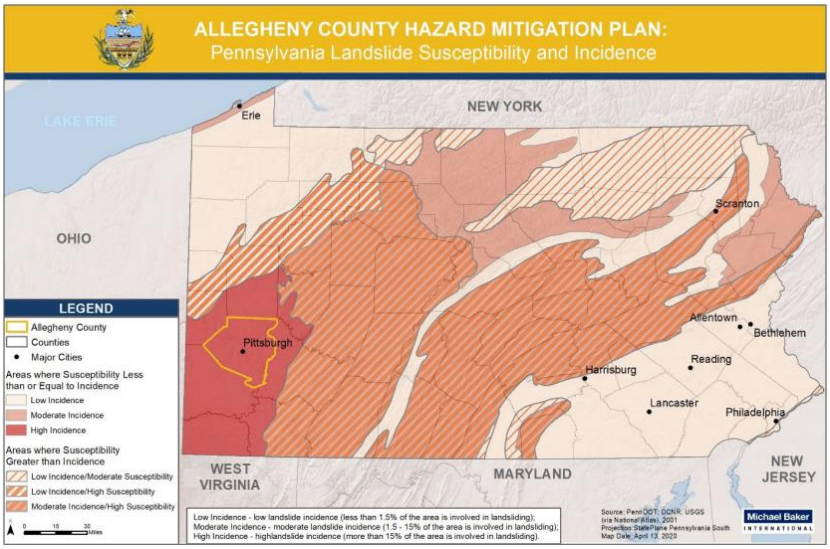
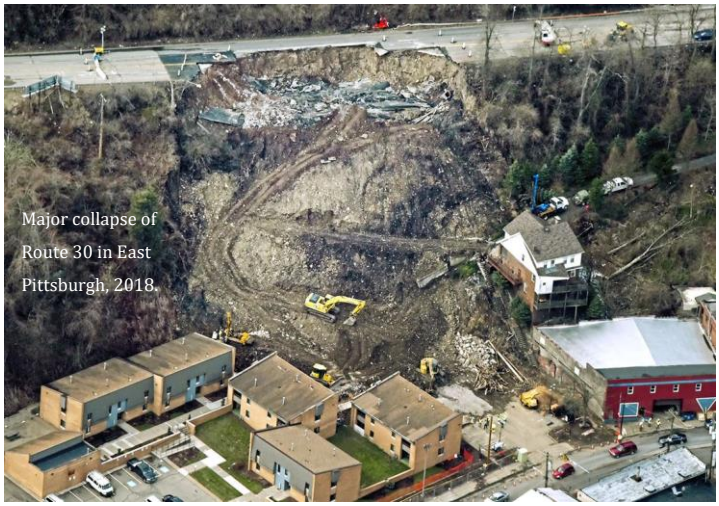


Image: Allegheny County Hazard Mitigation Plan 2020

Risk across CONNECT is highly variable, with communities' risks ranging from less than 5% to over 90% of their total land area being considered landslide prone.[30] Municipalities to the North and East of the City of Pittsburgh are especially vulnerable. 6% of total structures and 60 "critical" facilities within CONNECT communities are built on slopes higher than 15%, placing them at increased risk.[31] Refer to Resources for a listing and maps by municipality.

$45M	18%	60	62%
in transportation damages from landslides between 2016-2018.	of CONNECT residents have experienced landslides or erosion around them.	critical facilities in CONNECT at high landslide risk.	of CONNECT residents moderately to extremely concerned of increasing risk.

Figures: Transportation damage from DOT data, DEP Climate Impacts Assessment. Count and definition of "critical facilities" by municipality from Allegheny County's 2020 Hazard Mitigation Plan. Survey data obtained in a survey of CONNECT residents and business owners in 2021.



Major collapse of Route 30 in East Pittsburgh, 2018.

Image: Pittsburgh Post-Gazette

Although they are difficult to predict, when they do occur, landslides can severely impact important community systems, damaging or blocking highways, roads, and trails. According to PennDOT, $45 million was spent in the County in three years on landslide damage alone. [32] An increasing frequency of landslides, including often unreported "backyard landslides", can pose a danger to the residential and business community and place an additional strain on public works, water & sewer, public safety, and emergency services workers that respond to these events. It is important to note that home insurance does not cover landslide damage, making landslides potentially economically disastrous for homeowners. Of CONNECT residents surveyed, 18% have already experienced landslides or significant erosion around their home or business, and a majority (62%) of residents are concerned about future risk. See the resources section for risk information by municipality, the PADEP and County's assessments, and other useful planning resources.

Air Quality & Public Health

Allegheny County's poor air quality, ranked among the worst in the nation, is chiefly caused by our unique topography interacting with industrial emissions from a concentration of manufacturing plants in the region, as well as the burning of fossil fuels for energy and vehicular transportation. [33] Despite improvements over the last decades, climate change threatens to undercut the County's progress in meeting air quality standards - making it harder to protect human health. Changes in weather patterns can influence the incidence of smog, pollen, and inversion events. [34] Increased temperatures promote smog formation among mixtures of existing air pollutants and may lengthen the pollen season, exposing CONNECT communities to more health hazards. [35]

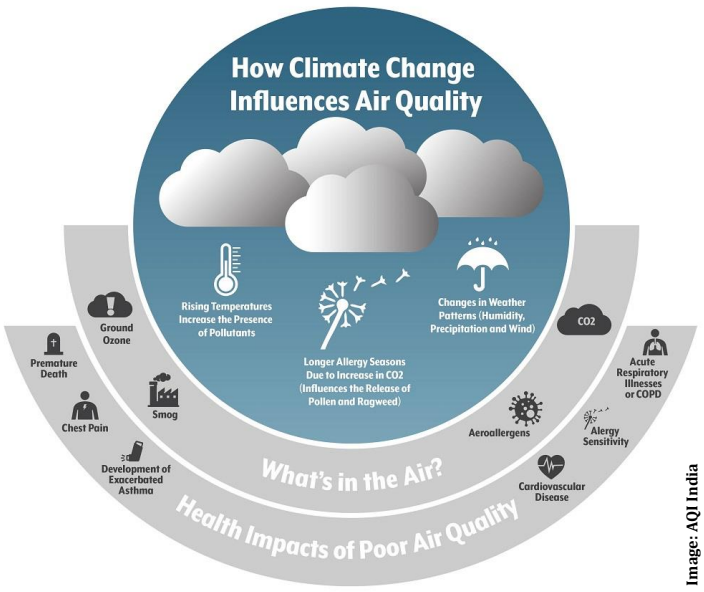
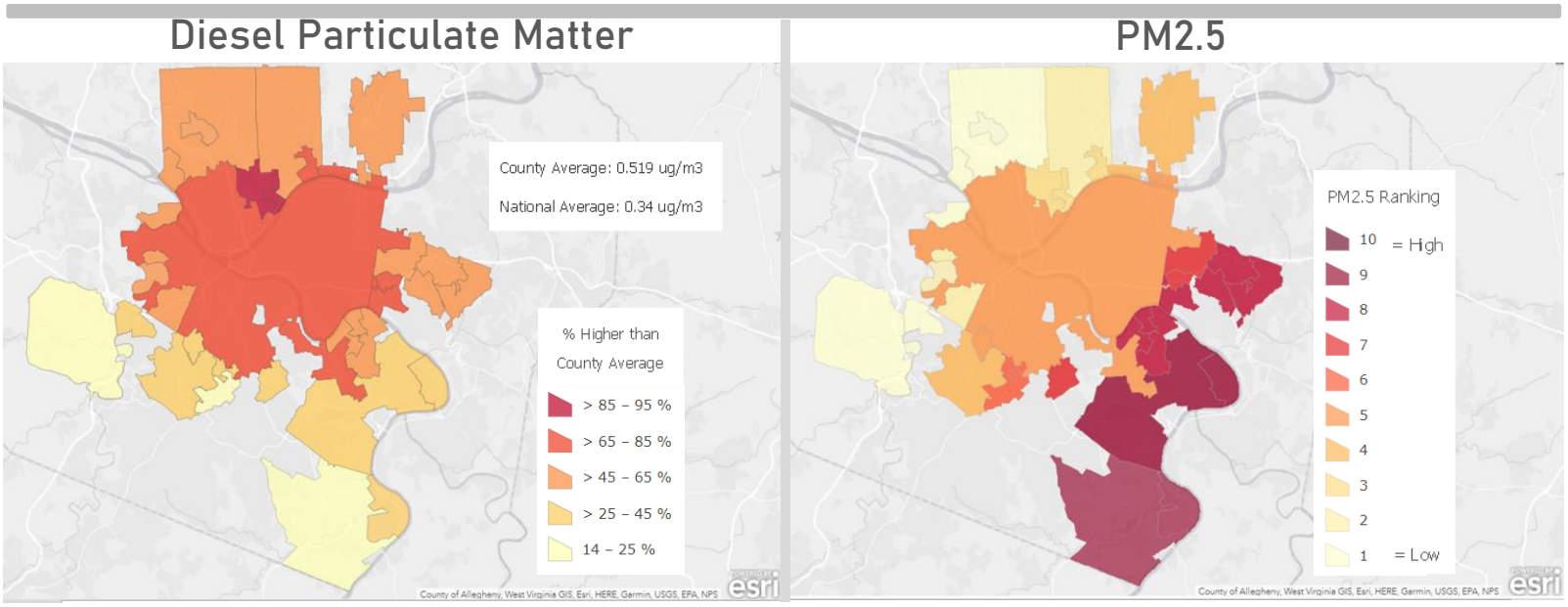


Image: AQI India

Some of Allegheny County's highest temperatures on record in 2017-2019 led to direct spikes in particle pollution and a number of high ozone days.[36] Through 2035, CONNECT communities can expect three more heat waves each year, and by 2050, extreme heat days may be up to 3.7°F hotter, significantly affecting air quality.[37]

Within CONNECT, proximity to large industrial emitters and major transportation routes causes certain municipalities to be especially vulnerable to the adverse health effects from climate change. However, many air pollutants can maintain significant concentration in the air even miles from a source, impacting other communities.[38] The maps below show relative risk, measured by concentration of two major air pollutants.



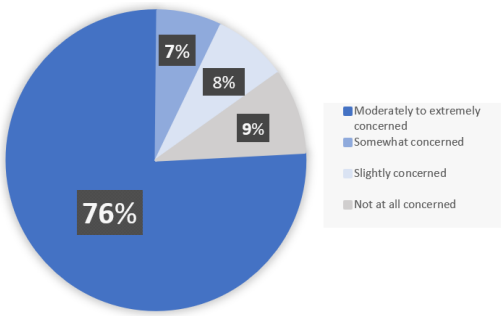
Figures: Air quality data, DPM and PM2.5, came from 2014 National Air Toxics Assessment estimates. DPM values(ug/m3) were compiled at the census tract level and aggregated to municipality, values were determined as an average of the census tracts that made up a given area. PM2.5 ranking was assigned by Allegheny County Environmental Justice Index 2019.

Although risk varies within the CONNECT region, every CONNECT government's annual concentrations of diesel particulate matter (DPM) and many communities' concentrations of particulate matter (PM2.5) exceed the county and national averages.[39] Much of our region's aging building stock lacks proper air conditioning and insulation, exposing residents to heat and outdoor air pollution. As the climate changes and temperatures rise, residents of these communities may see a higher frequency of health effects among sensitive groups, causing cardiovascular and respiratory hospitalizations, and premature death.[40]

Certain populations such as those near factories or in areas with low greenspace, children, pregnant women, the elderly, those with chronic diseases, and people experiencing poverty will be particularly vulnerable to the effects of air pollution and heat.[41] Alarmingly, 32% of CONNECT residents reported that they or someone in their household have asthma or another respiratory condition. Additionally, the proportion of the County's population age 65 and over is expected to increase until 2030, especially in municipalities surrounding Pittsburgh.[42] CONNECT's residents are overwhelmingly concerned about our region's poor air quality, the highest level of concern (76%) out of all three identified climate risks. For more air quality information useful to municipalities, see the Resources section.

27% of surveyed CONNECT residents have reported they or someone in their household or business has asthma or another respiratory condition.

More than 3/4 of CONNECT residents are moderately or extremely concerned about our region's poor air quality.



Vulnerability Resources for Municipalities

In addition to the CONNECT Vulnerability Assessment, the following resources can help CONNECT communities self-identify, detail, and illustrate any hazards and vulnerabilities related to climate change individual to their communities. Also included are links to organizations and tools that are useful in addressing these vulnerabilities and adapting to the expected impacts of climate change. Refer to the Climate Adaptation/Land Use Section of this Plan for potential adaptation related CONNECT actions.

Update your Local Hazard Mitigation/Emergency Management Plan

Section 322 of the Disaster Mitigation Act of 2000 (DMA 2000) requires state and local governments to develop and submit a Plan for identifying their respective natural hazards, risks, and vulnerabilities. An approved Hazard Mitigation Plan is also a prerequisite to receiving post-disaster and pre-disaster Hazard Mitigation Grant Program funds.[43,44] There is significant overlap between hazard mitigation and climate adaptation. It is critical that communities begin to explicitly integrate the current and future risks of climate change into their Local Hazard Mitigation/Emergency Management Plans. Assessing how current water, landslide, or air quality vulnerabilities may be exacerbated by climate change is an important step in protecting the community from the financial and human strain of hazards.

For General Climate Impacts:

- Allegheny County Hazard Mitigation Plan 2020 includes assessments of a number of vulnerabilities, including climate vulnerabilities, with some data broken down by municipality. A great resource for integrating climate risks into your Municipal Hazard Mitigation Plan/Emergency Management Plan.[45]
- Pennsylvania Climate Impacts Assessment 2021 Update includes projections for the whole commonwealth, and breaks down some information by region. Water, Landslide, and Air Quality information is detailed within.[46]
- U.S. Climate Explorer provides locationally specific projections for temperature and precipitation in the form of exportable charts like those seen in CONNECT's assessment.[47]
- Temperate is a license-based software that identifies top hazards for your community based on the National Climate Assessment, and allows you to view, customize, and download projection charts like those seen in CONNECT's assessment. A Temperate license also includes features to help your community do a comprehensive vulnerability assessment and build an adaptation strategy.[48]

For Water & Stormwater:

- See how your municipality can leverage its Coronavirus State and Local Fiscal Recovery Funds established by the American Rescue Plan Act (ARPA) for climate related projects. View article by National League of Cities.[49]
- Three Rivers Wet Weather – provides technical guidance and resources to assist municipalities with regulatory compliance, convenes forums to encourage a consensus-based approach for feasible and affordable wet weather planning, educates the public and advocates inter-municipal partnerships, which will lead to consolidation of the fragmented municipal sewer collection system.[50] Provides tools, including a guide to incorporating green infrastructure into stormwater ordinances.[51]
- Southwestern Pennsylvania Commission's Water Resource Center provides assistance and resources for local governments in the SPC region, including an Interactive map of existing water related plans and reports that can be integrated into municipal plans or regional planning efforts.[52,53]

- Pittsburgh Water Collaboratory connects local governments to universities, non-profits, community groups, and students in order to align efforts across the region - providing data and expertise to those who need it.[54]
- PADEP's Statewide Stream Impairment Assessment Tool allows local governments and the public to see attaining and impaired streams and lakes, as well as the impairment causes in and around their communities. Funding is available for water bodies that are designated as impaired.
- PennFuture's guidance for municipalities on funding stormwater management improvements and green infrastructure.[55]
- ALCOSAN - See how you fit into their long-term Plan, or apply for GROW Grants to fund green infrastructure in your community.[56,57]
- MS4 Education Component – climate change education can be integrated into MS4 education requirements – provides a greater understanding for the public of the reasons MS4 is necessary and important.[58]
- National Stormwater Calculator to calculate runoff: (used by anyone interested in reducing runoff from a property, including site developers, landscape architects, urban planners, and homeowners.[59]
- Pennsylvania Silver Jackets – an state interagency risk management team that provides abundant resources for municipalities to use for mitigating and coordinating risk mitigation strategies for flooding, inundation, etc.[60]
- To address flooding vulnerabilities, NFIP Program and CRS – brings floodplain insurance and discounted flood insurance rates to at risk areas in municipalities.[61]
- For flood risk resources, see DCED's local government flood resources & Penn State's Flood Risk Tool.[62]

For Landslides:

- Allegheny County Landslide Portal – provides practical and educational guidance to municipal leaders to facilitate preventative actions and to implement corrective actions for slopes at risk from landslides and slope failures.[63] Interactive Map Tools allow municipalities to assess their landslide risk, explore, and download your landslide prone areas.[64]
- Steep Slope Ordinances – Allegheny County DCED recommends using this site's templates to craft various ordinances to prevent hazards associated with steep slopes.[65]
- Pitt IRISE Landslide Capacity Building Seminars provides general information on landslides in the region.
- Pittsburgh Landslide Connect Facebook page – pilot project seeking to engage communities around landslide issues.[66]
- See Allegheny County's Hazard Mitigation Plan 2020 - landslide prone buildings/etc. by each municipality starting on pg. 161.[67]

For Air Quality & Health:

- Allegheny County Health Department's Air Quality Program provides information about how your air is being maintained, as well as methods of contact for any concerns.[68] Air Quality Dashboard provides real-time monitoring of air pollutants at select monitors near large polluters.[69] Comment on Allegheny County's current 5 year 2022 Air Quality Network Plan here.[70] Read this article for more information.[71]
- Plume Pittsburgh – daily monitoring of regional air quality shows whose health may be impacted by plumes of industrial pollution even miles away, even if your community doesn't have a monitor.[72]

- GASP – for community education, policy support, projects in wood burning, cleaner diesel emissions, etc.[73]
- Breathe Project – ways for local citizens, municipalities, and community groups to take action on air quality issues.[74]
- Green Building Alliance's Pittsburgh 2030 District is the first district to analyze indoor air quality in participating buildings. The District may be able to expand to your area.[75]
- For an example of a community air quality dashboard created in partnership with New Sun Rising see Millvale's Air Quality Dashboard and ways the Triboro EcoDistrict engages with their communities on air quality issues.[76,77]

CONNECT's Emissions

Since the early 1990s, U.S. cities have developed community-wide and local government operations greenhouse gas (GHG) inventories based on accounting protocols created by ICLEI. Known as the U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions and the Local Government Operations Protocol, these standards created a credible methodology that accelerated the number of inventories created and provides consistency within and across U.S. communities, including those within CONNECT. CONNECT used the Community Protocol for both the regional inventory, and for each CONNECT local government in 2018.

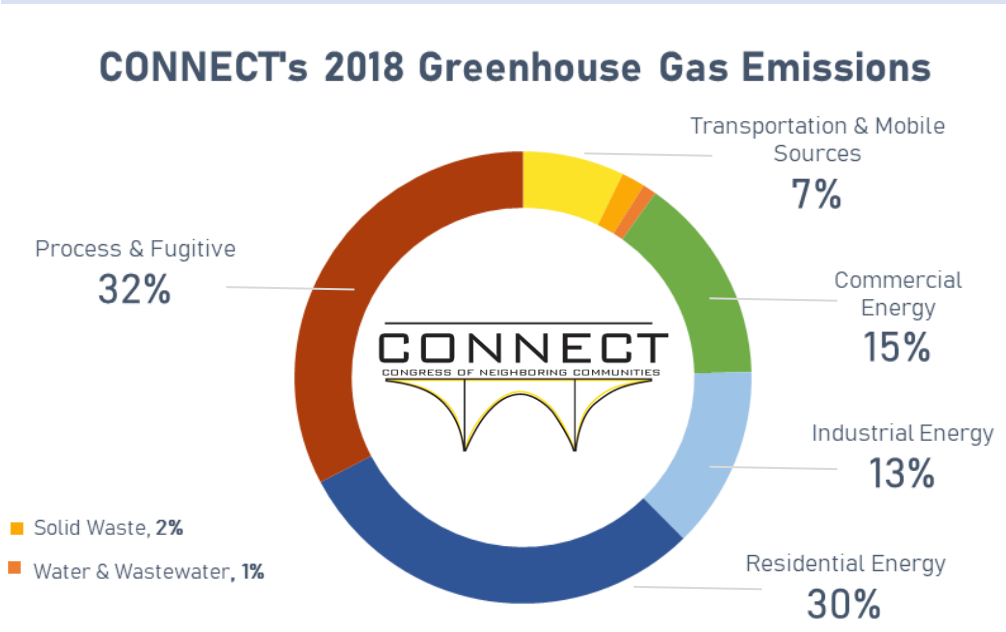
View of the smokestacks of Cheswick Generating Station in Springdale, PA – the last coal-fired power plant in Allegheny County, set to close in September 2021.

Through the completion of a local emissions study, or "greenhouse gas inventory", CONNECT has determined emissions levels for the region as a whole, the first "regional" community inventory in Allegheny County outside of Pittsburgh. Community-wide emissions represent the sum total of emissions produced within the limits of each of CONNECT's local governments as well as emissions resulting from electricity use within those jurisdictions, even if said electricity is generated elsewhere. In this way, the community-wide figures represent all emissions for which the community is "responsible". See Methodology for inventory scopes included. CONNECT's official inventory, visualized on the subsequent page, includes emissions from large industrial process emitters in CONNECT communities – as it is a major source in the region. However, for planning purposes the document otherwise herein excludes emissions from large industrial process emitters, as CONNECT's local governments have little direct control over these large sources located in just a few communities.

This section will show CONNECT's collective greenhouse gas emissions, as well as by individual municipality, and will forecast CONNECT's projected emissions to 2050.

Official CONNECT Region GHG Emissions Inventory

The following figure summarizes the first region-wide emissions inventory for CONNECT communities. Note that emissions from each municipality are embedded within the region-wide totals. Emissions from strictly local government operations are embedded within each sector. For example, emissions from government buildings are included in the "Commercial" sector and emissions from municipal fleet vehicles are included in the "Transportation" sector. Individual community emissions, both absolute and per capita, can be seen in the chart to the right.[78]



Sector	Total Emissions (tons CO2e)
Process & Fugitive	1,428,000
Residential Energy	1,299,728
Commercial Energy	645,847
Industrial Energy	568,244
Transportation & Mobile Sources	314,443
Solid Waste	72,996
Water & Wastewater	42,768

In 2018, CONNECT Members outside Pittsburgh emitted:

4,372,026

tons CO2e

Mainly from large industrial sources and energy use in the Residential, Commercial, and Industrial Sectors

This amount is equal to **over 90%** of what Pittsburgh emits in a year*.

Municipality	Emissions Total	Emissions Per Cap.
Clairton	996,660	151.6
West Mifflin	985,809	50.1
Ross	284,348	9.3
Mt. Lebanon	265,607	8.2
Collier	233,390	29.0
Shaler	199,376	7.1
Wilkinsburg	116,108	7.6
Jefferson Hills	115,126	10.3
Munhall	98,904	9.0
Green Tree	85,361	17.6
Brentwood	63,575	6.8
Bellevue	61,605	7.6
Castle Shannon	59,961	7.3
Carnegie	59,040	7.5
Dormont	58,717	7.1
Wilkins	58,511	9.4
Swissvale	58,486	6.7
Fox Chapel	56,428	11.1
Forest Hills	51,202	8.1
McKees Rocks	50,770	8.6
Homestead	46,939	14.8
West View	44,093	6.7
Crafton	43,417	7.5
Duquesne	41,398	7.5
West Homestead	35,432	18.9
Etna	31,433	9.5
Churchill	28,861	9.8
Millvale	28,588	7.8
Edgewood	28,216	9.3
Sharpsburg	25,037	7.5
Ingram	20,070	6.2
Aspinwall	19,386	7.2
Reserve	18,336	5.6
Baldwin	12,883	6.7
Heidelberg	9,042	7.5

Figures: Total GHG inventory compiled using 2018 data requested from utilities, haulers, and other service providers that serve each CONNECT community. CO2e emissions output associated with the raw usage data for each community and sector was calculated using ICLEI's ClearPath Tool. *Note that a comparison to the City of Pittsburgh is using their most recent available inventory year, 2013. Additionally, some accounting methodologies may differ, influencing any comparison.

Measuring CONNECT's GHG Emissions

Each community's emissions profile is different. Your individual community breakdowns by sector, like CONNECT's above, are available to view at any time. See Appendix III for an example. To get this data and learn more about your local inventory, reach out to CONNECT's Regional Climate Plan Coordinator at ejr73@pitt.edu

For CONNECT's emissions profile, utility data was requested, detailing energy use (both electricity and natural gas), as well as other emissions, attributed to each municipality in CONNECT as of 2020. Utility data was collected for the year 2018 for the following 6 sectors, with Process and Fugitive Emissions data being supplemented by ICLEI and the EPA's Flight Tool. Emissions are reported in standard tons of CO2 equivalent. See Methodology for details.

- Residential Energy - emissions associated with electricity and natural gas use by residents of CONNECT communities.
- Commercial Energy – emissions associated with electricity and natural gas use by commercial entities (including municipal operations) located in CONNECT communities.
- Industrial Energy – emissions associated with electricity and natural gas use by industries located in CONNECT communities.
- Transportation & Mobile Sources – emissions from passenger and freight travel through and within the boundaries of CONNECT communities.
- Process and Fugitive Emissions – emissions from large industrial processes not associated with billed utility consumption. Also included are leaks from natural gas distribution systems serving CONNECT communities (estimated using average national leak data).
- Solid Waste – emissions associated with waste generated and sent to landfills by CONNECT communities.
- Water and Wastewater – emissions associated with CONNECT communities' potable water use and wastewater treatment.

For municipal reference, government emissions include all sources for which the local government exercises direct operational control. These may include:

- Energy use in government-owned buildings (embedded within commercial sector)
- Fuel used for travel in local government vehicles (embedded in transportation & mobile sources)
- Water/wastewater services
- Solid waste hauling

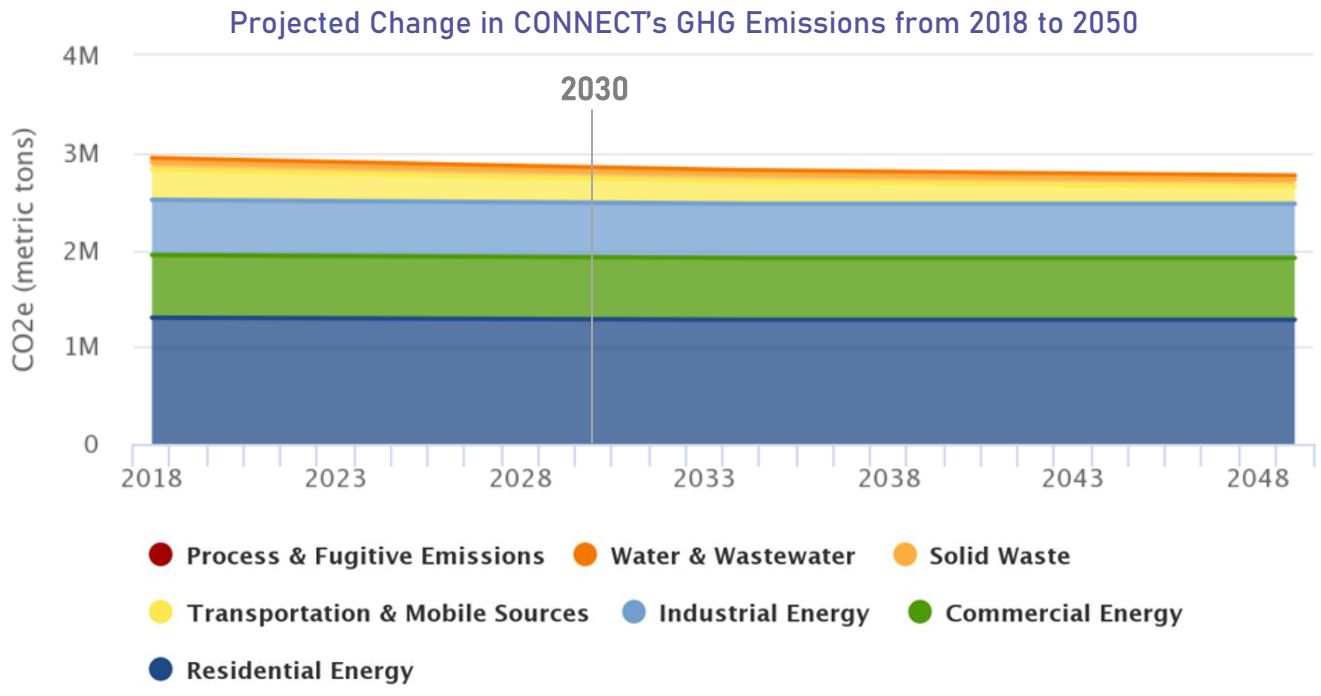
Forecasting CONNECT's Future GHG Emissions

CONNECT has also completed an emissions forecast based on projections of current data and expected future trends, shown in the figure below. This emissions forecast is a "Business as Usual" (BAU) forecast, a scenario estimating future emissions levels absent no further local action (i.e. projects and opportunities within this Plan). The BAU forecast indicates that overall GHG emissions will show little change during the period due to population decline and stabilization, but GHG emissions per capita will still remain around 5x higher than the international recommendation to slow warming[79]. Many of CONNECT's municipalities will have similar projections for their emissions, provided their populations are stable. Some CONNECT communities may expect a population increase, leading to increased emissions from their 2018 baseline. Most other changes in emissions will be the result of expected national changes in the transportation sector, lowering emissions a small degree[80]. Despite this, inaction means CONNECT will not reach its sustainability goals.

*If no action is taken, CONNECT's Emissions per Capita will still remain around **5x** higher than the international recommendation to slow warming…*

Projected Change in GHG Emissions – Business as Usual

The figure below shows the projected growth in GHG emissions in the CONNECT Region from 2018 to 2050. For complete information regarding the emissions inventory and forecast, including methodology and supporting data, please reference Appendix. Note that several possible future scenarios for global CO2 concentration are considered by the IPCC.[81] Should one of these worst-case scenarios become more likely, such as RCP8.5, CONNECT's forecasted emissions would likely be much higher than that found in this population-based analysis.[82]

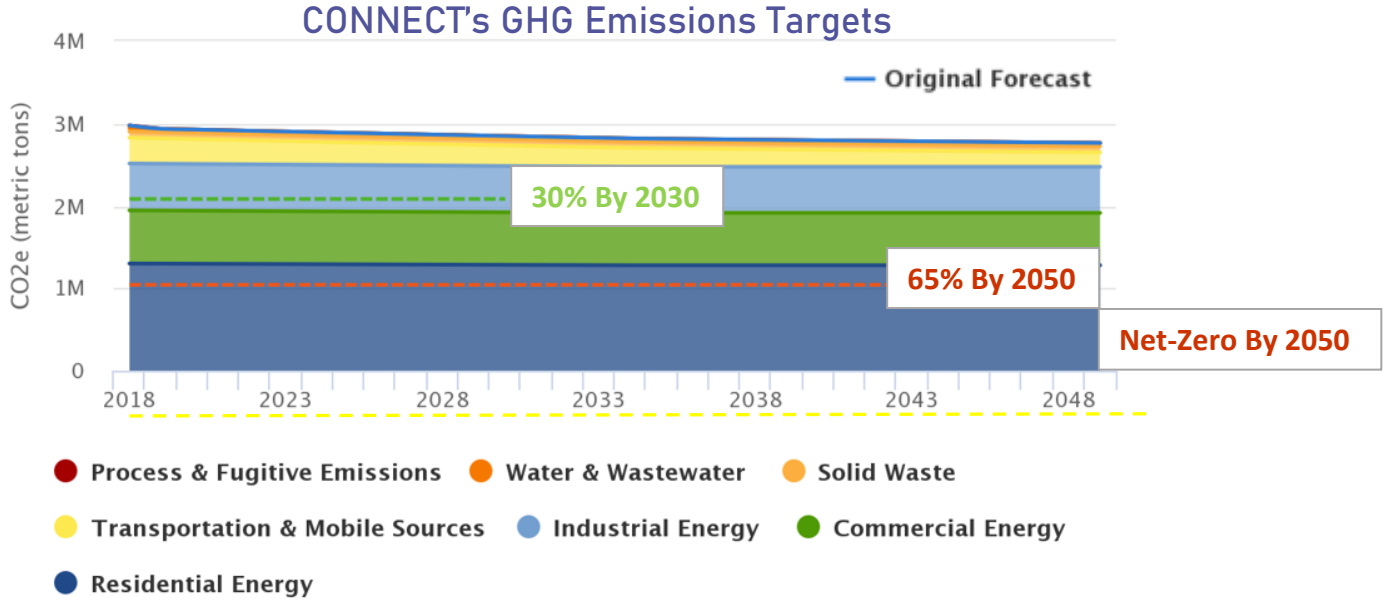


CONNECT's GHG Reduction Target

CONNECT will collectively set preliminary targets to reduce its emissions 30% by the year 2030, and net-zero by 2050, compared to 2018 levels. To achieve net-zero by 2050, this equates to a little over 3% per year reduction starting in 2018. These targets are based on:

- PADEP/ICLEI's recommendation of at least 30% by 2030.
- Meeting and exceeding CONNECT's calculated Science-Based Target (SBT) (Part of the One Planet City Challenge) of 65% reduction by 2050 from 2018 levels.[83]
- Inclusive of individual CONNECT members, those with targets and those not yet engaged
    - City of Pittsburgh – 50% by 2030, 80% by 2050 from 2003 levels
    - Borough of Etna – 25% by 2030, from 2016 levels
    - Borough of Sharpsburg – 20% by 2030, from 2017 levels
    - Borough of Forest Hills – 30% by 2030, net zero by 2050 from 2016 levels
- Ambitious, but feasible, 3% per year reduction until 2050 for local governments in the region, reliant on expected contributions from federal policies and assistance.

When this Plan is further implemented, and specific reduction actions are chosen by members – CONNECT's reduction target may be modified to reflect expected emissions reductions among members from those actions.



The figure above compares the reduction targets with the business-as-usual "original" forecast. The combination of measures that CONNECT members have already implemented since 2018, are currently planned, and are presented through this Climate Action Plan are designed to achieve these high-level goals.

Taking Action to 2030

- Allegheny County
- Aspinwall
- Baldwin Township
- Bellevue
- Brentwood
- Carnegie
- Castle Shannon
- Churchill
- Clairton
- Collier
- Crafton
- Dormont
- Duquesne
- Edgewood
- Etna
- Forest Hills
- Fox Chapel
- Green Tree
- Homestead
- Ingram
- Jefferson Hills
- McKees Rocks
- Millvale
- Mount Lebanon
- Munhall
- Oakmont
- Pittsburgh
- Reserve
- Ross
- Shaler
- Sharpsburg
- Swissvale
- Turtle Creek
- West Homestead
- West Mifflin
- West View
- Wilkins
- Wilkinsburg

Municipalities in CONNECT can click each yellow objective box in order to take you to the corresponding sector where you can explore potential local climate actions you might implement in your community.

4 GOALS	14 OBJECTIVES		
Reduce energy use in our local governments & communities	**RB 1 –** Reduce energy consumption in existing residential buildings and homes through education, electrification of home heating, and increased access to energy efficiency opportunities.	**CB 2 –** Increase the energy efficiency of commercial and industrial buildings through education and increased access to energy efficiency measures.	*50+ ACTIONS*
	CB 1 – Increase the energy efficiency of municipal buildings through benchmarking, electrification, and energy efficiency measures.	**WW 3 –** Upgrade the energy efficiency of water delivery and treatment systems.	
Replace current energy sources with renewables	**RB 2 –** Encourage renewable power among residents through education on and increased access to residential energy choice and opportunities to install solar.	**WW 2 –** Source electricity used for water delivery and treatment systems from renewable sources.	*30+ ACTIONS*
	CB 3 – Source electricity for municipal, commercial, and industrial buildings from renewable or less carbon-intensive power options		
Strengthen resilience through land, water, & materials management	**MM 1 –** Reduce solid waste generation by the municipality and broader community through recycling/reuse of materials.	**LU 1 –** Implement sustainable and resilient land use practices in our communities to reduce risk.	*60+ ACTIONS*
	WW 1 – Implement sustainable water & stormwater initiatives.	**LU 2 –** Implement other cross-sector adaptation actions found throughout this Plan to reduce water, landslide, and air quality risks.	
Motivate clean and accessible modes of transport by residents & in our cities	**TR 1 –** Encourage and increase accessibility to alternate modes of transportation such as walking, biking, or transit in our communities.	**EQ 1 –** Advance environmental justice in CONNECT communities by ensuring equity in climate actions	*60+ ACTIONS*
	TR 2 – Increase electric vehicle use in municipal fleets and the broader community.		

Legend

CB = Commercial/Municipal/Industrial Buildings
RB = Residential Buildings
MM = Waste & Materials Management
WW = Water & Wastewater Management
TR = Transportation
LU = Land Use & Climate Adaptation
EQ = Equity

Communities are encouraged to incorporate or modify goals, objectives, and actions from this resource into their own plans so that our region may better coordinate on the climate issues that cross our borders.

Taking Action to 2030

In the following chapters, CONNECT's goals and a series of objectives with actions are explored for each emissions sector. This represents a "menu of opportunities" for climate action by a local government – all proposed and workshopped by member governments and partners of CONNECT. An "Objective" is an end result, or target, and an "Action" is a potential means of realizing the objective. Noted on each objective is its relative emission reduction potential and co-benefits, and within each action is pertinent information such as relative cost, difficulty, and lead actors. Links to funding and resources are also provided within each action to help. All actions will help CONNECT, its partners, local government, residents, and businesses to achieve a 30% emissions reduction by 2030, and to be net-zero by 2050. Local governments should use and modify potential actions from these lists to implement in their own communities or climate planning efforts.

Actions labeled "CONNECT" are considered climate actions that CONNECT may be able to implement as a CONNECT-wide project or are actions from which members may find extra benefits when implementing together as a region. Actions highlighted are those in progress or already completed. Sectors covered include:

Legend

Symbol	Co-Benefit
	Improves public health
$	Saves money and promotes jobs
	Enhances resource security
	Fosters social equity

Symbol	GHG Reduction
	Small Reduction Potential
	↓
	Large Reduction Potential

Symbol	Meaning
	No Cost → High Cost
	Low → High Difficulty
CONNECT	CONNECT Opportunity

- CONNECT Support Actions
- Water & Wastewater Management
- Municipal, Commercial, & Industrial Energy
- Transportation & Mobile Sources
- Residential Energy
- Land Use & Climate Adaptation
- Waste & Materials Management
- Equity

CONNECT Support Actions

To achieve the goals and objectives set forth in this Plan, CONNECT must also pursue supporting actions outside the seven major sectors that better enable its member municipalities to overcome capacity, expertise, and funding gaps. In addition to launching a CONNECT-wide project that helps members reduce emissions or increase resilience and equity, CONNECT must simultaneously collaborate with its membership and partners, especially the County, Universities, and the City of Pittsburgh, to implement the following supporting actions. Each were identified by stakeholders throughout the planning process as foundational actions that, if implemented, would assist municipalities to engage in climate action.

Academic Collaboration

CONNECT recognizes the need for continual partnerships between local governments and the rich academic community of the greater Pittsburgh region . Local governments, faculty, staff, and students alike benefit from these partnerships - often necessary to overcome capacity barriers and make progress on a community's sustainability issues. CONNECT looks to facilitate community-engaged collaboration between its member governments and any of the region's 20+ learning institutions through the actions below.

"CONNECT can help bring people, organizations, and funding together to seed those initiatives that are of strategic value but are often seen as too risky for an individual municipality to undertake"

Advocacy

Advocacy section that highlights policy barriers, federal actions, state actions needed that prevent progress, and would be critical for reaching net zero goals. CONNECT's goal of reducing emissions 30% by 2030, and to be net-zero by 2050 must be taken in the context of supportive state and national policies. Policy actions at the local level will be driven by state and federal legislation that enables greater local implementation of climate plans, especially in areas such as residential electrification, regional transportation and EV infrastructure, and utility grid decarbonization. In order to best take advantage of our local government's strengths in the region, the advocacy actions below, and found throughout this Plan, focus most closely on those policy barriers in which municipalities have particular interest or are in a unique position to influence together.

"As an individual municipality, we don't have that much say, but if you get together many small municipalities, now we're big – and people have to pay attention to that…

See Legend

Objective CS (All Sectors) – CONNECT Support/Supportive Actions by Municipalities	Consider Coactions in:	Emission Reduction Potential
Assist member municipalities to engage in climate action through the implementation and encouragement of supportive actions identified by stakeholders.	All Sectors	N/A

	#	Action	CONNECT Opportunity?	Cost	Actors	Difficulty	Resources/Funding
Academic Collaboration							
GOOD	CS-1A	Recruit local student interns for PADEP's LCAP Program to assist participating CONNECT municipalities	CONNECT		Universities, CONNECT, Govt.		-
BETTER	CS-1B	Receive a Governor's Office Capstone Team, or other capstone class, to help implement a CAP action or create a CBA for popular climate actions	CONNECT		CONNECT, Govt.		-
BETTER	CS-1C	Collaborate with academic research community through grants or research on our community's clean energy, green infrastructure, and sustainability issues.	CONNECT		Universities, CONNECT, Govt.		-
BEST	CS-1D	Work with the academic community to create a continuous Internship/Fellowship/Volunteer based pipeline of student assistance on local government sustainability issues	CONNECT		Universities, CONNECT, Govt.		-
Climate Data Infrastructure							
GOOD	CS-1E	Maintain access to ICLEI's ClearPath software past Spring 2022, free for all member municipalities to track GHG's	CONNECT		CONNECT, External		-
BETTER	CS-1F	Convene conversations with utilities and service providers on behalf of members to collect data/secure easier data sharing agreements.	CONNECT		CONNECT, External		-
BEST	CS-1G	Work with a partner, such as WPRDC, to regularly or automatically collect, host, and manage community climate data for members	CONNECT		CONNECT, External, Govt.		SP GHG Inventories

BEST	CS-1H	Collaborate with the University research community to improve GHG accounting, measurement, and verification of mitigation projects	CONNECT		University, CONNECT		-
Member Capacity & Resources							
GOOD	CS-1I	Hire a community project manager to support I&U's work in climate action planning, including managing a CONNECT-wide project to reduce emissions	CONNECT		CONNECT		-
GOOD	CS-1J	Hold/convene activator meetings between stakeholders and members to take advantage of funding opportunities and determine next steps	CONNECT		CONNECT, Govt., External		IWG Funding Database
BETTER	CS-1K	Create website/excel based tool for members to quickly select & download climate actions from CONNECT's Climate Plan, for use in their planning efforts	CONNECT		CONNECT		Florida Regional Compact Site
BETTER	CS-1L	Develop an accountability or progress matrix for members, partners, and staff to track responsibility and success across the region on climate actions	CONNECT		CONNECT, Govt.		-
BEST	CS-1M	Assist in the development of a "Pittsburgh Policy Repository", highlighting practical local examples and successes for easy reference by other CONNECT governments	CONNECT		CONNECT, Govt.		Pgh Sustainability & Resilience
BEST	CS-1N	Encourage municipalities to start an EcoDistrict, a consistent advisory board, task force, or "Sustainability Team" to move climate related work forward	CONNECT		Govt., External		SP EcoDistrict Resources
Building Climate Leadership							
GOOD	CS-1O	Join Climate Mayors, or pass a voluntary resolution or proclamation committing your local government leadership to addressing climate change	CONNECT		Govt.		Sample Resolution

BETTER	CS-1P	Create a Local Climate Communication "Toolkit" for use by municipal members	CONNECT		CONNECT, External		CONNECT CAP Slides
BEST	CS-1Q	Advocate and support staff involvement and training in PA's Climate Leadership Academy	CONNECT		CONNECT, Govt.		-
BEST	CS-1R	Encourage municipalities to earn a Sustainable PA Certification for many of their climate actions	CONNECT		Govt, External		SP Cert. FAQs
Budget and Sustainability Support							
GOOD	CS-1S	Partner with the University of Pittsburgh IOP Fiscal Policy & Governance Committee to develop policy guidance to County municipalities on how best to integrate sustainability into the existing budget structure.	CONNECT		CONNECT, University, Finance		-
BEST	CS-1T	Utilize a Priority Based Budgeting Tool individually or in the CONNECT network to better organize your budget or ARPA funds towards long-term sustainability and infrastructure investments	CONNECT		CONNECT, External, Finance		-
BEST	CS-1U	Support the integration of carbon pricing into the municipal budget to institutionalize climate action considerations	CONNECT				-
Advocacy							
GOOD	CS-1V	Regularly provide information to members on important legislation and opportunities to comment on regional projects/programs	CONNECT		CONNECT		-
BETTER	CS-1W	Represent member's sustainability goals at influential regional convenings, such as NETL, Allegheny Conf., PUC, etc. and in considerations for fed/state funding	CONNECT		CONNECT		-
BEST	CS-1X	Increase participation in regional transportation decisionmaking to ensure considerations for local transportation	CONNECT		CONNECT, External, Utilities		-

		and coordination around EV charging infrastructure					
BEST	CS-1Y	Advocate for higher building standards, and protecting municipal ability to restrict appliance type (gas vs electric) in new development	CONNECT		CONNECT, External		-

Commercial/Industrial Buildings

Actions for:

Municipal Buildings

Community Businesses

Community Industries

Strategies:

Energy Efficiency, Planning, Purchasing

Benchmarking, Audits

Renewable Energy

Access to Incentives

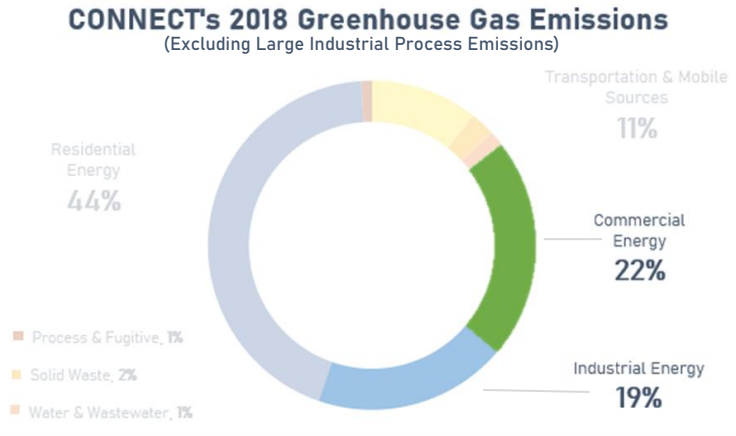
Commercial/Industrial Buildings

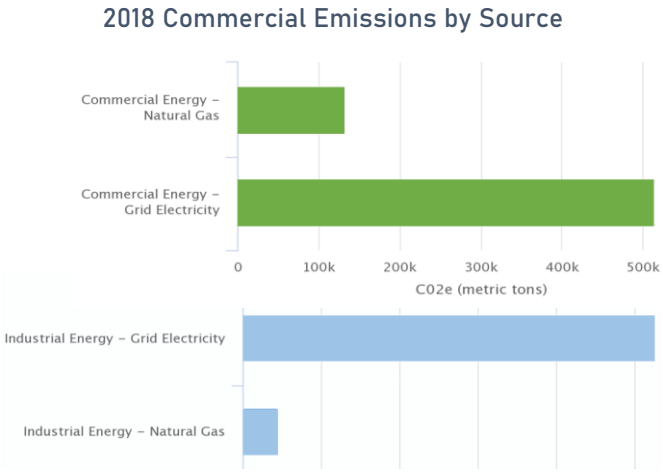
Energy consumed in commercial buildings (including municipal) and for industrial processes comprise 22% and 19% of total emissions, together accounting for over 40% of CONNECT's total GHG emissions in 2018. Improving the efficiency of our commercial building stock and reducing the energy intensity of the local industrial sector will be critical to achieving CONNECT's greenhouse gas reduction target. Unlike residential energy, CONNECT community's commercial and industrial emissions are primarily from electricity consumption, rather than natural gas use.

Although a smaller fraction of this sector, municipal energy is especially important to acting on community emissions as it is under full control of the local government and has significant untapped cost savings potential. Typical municipalities can spend tens of thousands every year on fossil fuel-based energy for building and municipal operations, with the highest energy use among public lighting, police, public works, and recreation center buildings,[84] yet most municipal energy use in CONNECT is neither "tracked" nor benchmarked to identify savings opportunities.[85]

Most CONNECT communities currently do not track their energy use to identify cost savings, but they are interested…

Of CONNECT members interviewed, all reported that they only receive energy consumption data (electricity usage/natural gas usage) for their municipal operations through semi-annual utility bills but would "be interested in receiving tracked electricity/natural gas usage data from their local government operations." 92% of member representatives indicated that they would like assistance in receiving this data.[86] Most commercial and industrial businesses in CONNECT communities also likely have not overcome the barriers to tracking energy use, making necessary efficiency retrofits, or switching to renewable energy. See emissions per capita by municipality to the right.





Figures: The majority of CONNECT's commercial and industrial emissions are from electricity use. CONNECT communities are highly variable in percentage of commercial emissions to total emissions(6-56%). Industrial energy use emissions mostly belong to only a handful of CONNECT communities. Municipal energy use data is embedded within the commercial sector. See Appendix for Methodology.

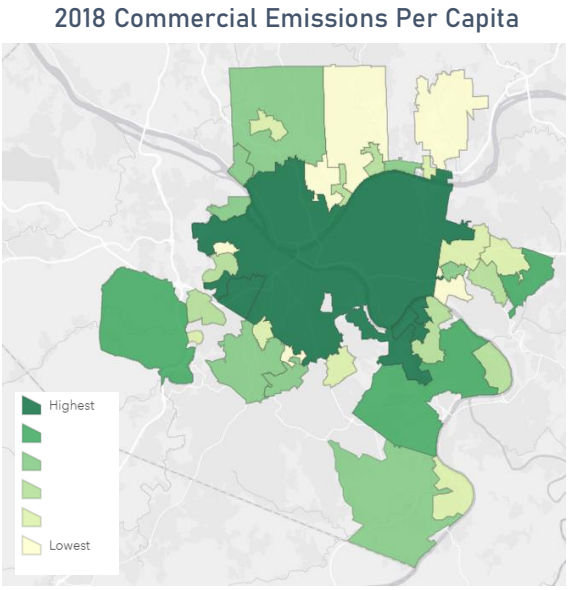


Figure: Note that this figure only shows emissions per capita and is NOT reflective of either total emissions or share of total emissions attributable to the commercial sector in a community. See appendix for detailed total and share of emissions by municipality. City of Pittsburgh value is 2013 per capita emissions due to data availability.

SUCCESS STORY

FOREST HILLS NET-ZERO MUNICIPAL BUILDING

Action: When the Borough building was in need of replacement - rather than continuing with inefficient repairs and adjustments to an existing building first built in 1922, Forest Hills Borough used this as an opportunity to save the borough energy, money, and promote sustainability throughout the community

The Borough partnered with Volpatt Construction and EIS Solar to construct a new solar powered, net-zero energy municipal building to serve the community's needs. The passive design is fitted with HVAC geothermal heating and additional energy conserving measures – all powered by a 125-kW photovoltaic solar array on the roof for a total net zero energy operation. Green infrastructure and permeable pedestrian walkways were also employed at the site to manage stormwater. In a community wide planning process - cost efficiency and sustainability were highlighted as top priorities in the design

Funding: The sale of the existing properties and expected energy and maintenance savings contributed to financing. The solar array was funded through a loan by Sustainable Energy Fund (SEF), covering 70% of the initial installation cost. SEF is a PA non-profit who provides individuals and small businesses assistance in overcoming financial and educational barriers to a more sustainable energy future.

Benefits: The solar array generates an estimated 213,000kWh of energy annually, and through a power purchase agreement, generates power revenues for the Borough up to $25,000 annually. Compared to the previous building, the new 13,000 sq. ft building saves the Borough $1.24 per square foot in operational costs, greatly reduces the water discharge rate into the watershed even during storm events, and sees increased patronage by residents. The project continues to be a positive for Borough staff, the community, and the environment - proving a green, emissions reducing design can also be cost effective.

Contact: Patty DeMarco - demarcop6@gmail.com

According to CONNECT residents, the most effective public actions to assist local businesses and industry implement these types of projects will involve partnering with other local governments to offer energy services and providing information to the community about funding/financing programs. When asking only business owners/employees, the most requested action was to improve the energy efficiency of municipal-owned buildings – indicating that when it comes to sustainability, local government should lead by example.

This chapter focuses on opportunities to benchmark and retrofit municipal, commercial, and industrial buildings to be more energy efficient, and to replace those power sources with renewable energy for deeper emissions reductions.

CONNECT resident's highest-rated commercial energy actions

1. *Incentivize business energy efficiency improvements*
2. *Highlight/provide cheaper green power choices*
3. *Improve the energy efficiency of municipal-owned buildings*

See Results

The following tables contain CONNECT's objectives and potential actions for the municipal, commercial, or industrial sectors.

See Legend

	Objective	Co-Benefits	Emissions Reduction Potential
Goal 1: Reduce energy use in our local governments and communities	CB 1 – Increase the energy efficiency of municipal buildings through benchmarking, electrification, and energy efficiency measures	$	
	CB 2 - Increase the energy efficiency of commercial and industrial buildings through education and increased access to energy efficiency measures	$	
Goal 2: Replace current energy sources with renewables	CB 3 – Source electricity for municipal, commercial, and industrial buildings from renewable or less carbon-intensive power options	$	

See Legend

Objective CB 1 – Municipal Energy Efficiency	Co-Benefits:	Consider Coactions in:	Emission Reduction Potential
Increase the energy efficiency of municipal, commercial, and industrial buildings through access to electrification and energy efficiency measures.		Infrastructure Projects, Codes/Zoning, Air Quality, EV Charging, Outdoor Lighting	

	#	Action	CONNECT Opportunity?	Cost	Actors	Difficulty	Resources/Funding
Benchmarking Municipal Buildings							
GOOD	CB-1A	Use the free municipal/school PennTAP toolkit to estimate potential energy savings in local government buildings	-		Govt., Facilities		-
BETTER	CB-1B	Enter public buildings for free into EnergyStar Portfolio Manager or a similar energy management system to benchmark energy and cost savings opportunities	CONNECT		Govt., Facilities		SP Energy Tracking
BETTER	CB-1C	Join PADEP's Shared Energy Manager's Program to receive a free shared energy manager with CONNECT that assists in energy benchmarking, auditing, and renewable evaluation	CONNECT		Govt., Facilities, External		-
BEST	CB-1D	Commit public buildings into Green Building Alliance's Pittsburgh 2030 District to support reductions in energy and water consumption	CONNECT		Govt., Facilities. External		-

BEST	CB-1E	Contract an Energy Audit, inventory, or benchmark for public buildings and energy use patterns to identify savings opportunities	CONNECT		Govt., Facilities, Finance		SP Energy Audit Resources,, ESPC Savings Toolkit
Municipal Building Retrofits/Construction							
GOOD	CB-1F	Participate in a People's Gas Energy Efficiency Program for local government buildings that are unable/unlikely to electrify	-		Govt., Facilities, External		-
BETTER	CB-1G	Consider ENERGYSTAR certification, Leadership in Energy and Environmental Design (LEED), Net Zero Buildings, Zero Energy Codes, or Passive House standards, as higher performance basis of design for new construction and or a 20-30% energy use reduction mandate for major renovation projects	-		Govt., Facilities		GBA Financing Support
BEST	CB-1H	Require electric heating and appliances during new construction, or minimum increases in efficiency for retrofits in existing buildings	-		Govt.		Existing Buildings Efficiency
BEST	CB-1I	Improve the energy efficiency of heating, cooling, and lighting systems in local govt buildings by switching from gas to electric and/or more energy efficient models and installing timers/motion sensors	-		Govt., Facilities, Finance		EPA Energy Efficiency Guide, ESPC Savings Toolkit

Energy Management Planning							
GOOD	CB-1J	Enroll in a discounted Building Operator Certification for your local govt facility managers or building staff to train in energy efficiency for your municipality	CONNECT		Govt., Facilities		-
BEST	CB-1K	Establish a strategic energy management plan for public facilities that includes benchmarking and specific energy, water, and transportation emissions reductions targets and goals	CONNECT		Govt., Facilities, Planning		-
Collaborative Purchasing							
GOOD	CB-1L	Use a cooperative purchasing program, such as COSTARS 28, 30, or 33, to purchase energy management, consulting, or upgrades at lower prices	-		Govt., Finance, External		-
BETTER	CB-1M	Engage in collaborative energy efficient public lighting, traffic, and streetlight replacement programs with partners like DLC	CONNECT		Govt., Finance, Planning, External		-
BEST	CB-1N	CONNECT communities implement a Regional Pooled Municipal Energy Implementation Model to better enable energy and solar projects for municipalities	CONNECT		Govt., Finance, External		-
Energy Ordinances							
GOOD	CB-1O	Pass a dark sky ordinance and/or install dark-sky compliant lighting on municipal-owned property,	-		Govt., Facilities		-

		such as buildings, streetlights, and parks					
BETTER	CB-1P	Implement a Building Energy Disclosure Ordinance for all public buildings in the community	CONNECT		Govt.		-
BEST	CB-1Q	Require electric heating and appliances in new construction and retrofits of public buildings	-		Govt., Planning, Zoning		-

See Legend

Objective CB 2 – Commercial/Industrial Energy Efficiency & Education	Co-Benefits:	Consider Coactions in:	Emission Reduction Potential
Increase the energy efficiency of commercial and industrial buildings through education and increased access to energy efficiency measures		Codes & Zoning, Land Use	

	#	Action	CONNECT Opportunity?	Cost	Actors	Difficulty	Resources/Funding
Encouraging Community Benchmarking							
GOOD	CB-2A	Educate the local business community about the financial benefits of building energy tracking	CONNECT		Govt., Economic Development, Community		KEAA PA Benchmarking Guide
BETTER	CB-2B	Publicize PennTAP commercial and manufacturing energy toolkits and assistance to businesses in the community	-		Govt., Economic Development, Community		-
BETTER	CB-2C	Encourage businesses in the community to commit their buildings into Green Building Alliance's Pittsburgh 2030 District to support reductions in energy and water consumption	-		Govt., External, Community		Small Business Advantage Grants

BEST	CB-2D	Encourage an industry in your community to participate in a PennTAP P2/E2 or E3 Assessment, saving energy and reducing emissions during operations	-		Govt., Economic Development, Community		Small Business Advantage Grants
Promoting Community Recognition							
GOOD	CB-2E	Promote a Green Business Challenge or CEO's for Sustainability in your community	-		Govt., External, Community		-
BETTER	CB-2F	Encourage Sustainable Pittsburgh's Workplace/Shop Performance Certification for businesses in your community	CONNECT		Govt., External, Community		-
BEST	CB-2G	Work with community organizations to hold monthly or annual energy use challenges to engage the community	CONNECT		Govt., Economic Development, Community		-
BEST	CB-2H	Publicize local examples of companies using C-PACE or Energy Service contracts to achieve savings	-		Govt., Economic Development, External		
Increasing Access to Energy Efficiency							
GOOD	CB-2I	Partner with local utilities to ensure properties maximize use of energy efficiency rebates and retrofit programs	CONNECT		Govt., External, Economic Development		-
BETTER	CB-2J	Provide actionable information about local, state, and federal energy efficiency funding/financing options like	CONNECT		Govt., External, Economic Development		-

		CPACE or Energy Service Companies on municipal websites					
BETTER	CB-2K	Assess or survey large building owners that could request bulk purchase discounts to cover several buildings	-		Economic Development, External		-
BEST	CB-2L	Launch a C-PACE Awareness Program in your community, with the help of the County's Program Administrator and SEF, that identifies and educates local capital providers, property owners, and contractors for easier development of clean energy projects located in the municipality	-		Govt., External, Economic Development		-
BEST	CB-2M	CONNECT and partners help to create municipal sites to link businesses with trusted regional contractors for energy audits/retrofits/etc.	CONNECT		Govt., External, Economic Development		-
Efficiency Codes and Ordinances							
BETTER	CB-2N	Require electric heating and appliances during new construction, or minimum increases in efficiency for retrofits in existing buildings	-		Govt., Economic Development		-
BEST	CB-2O	Assess current enforcement of building energy codes, train municipal code officials, and publicly post required materials for the community	-		Code Officials, Govt., Community		-

BEST	CB-1P	Implement a Building Energy Disclosure Ordinance for some or all commercial buildings in the community	CONNECT		Govt., Economic Development, Planning		Energy Management Ordinance Design Guide

See Legend

Objective CB 3 – Renewable Power	Co-Benefits: $	Consider Coactions in:	Emissions Reduction Potential
Source electricity for municipal, commercial, and industrial buildings from renewable or less carbon-intensive power options, such as solar.		Infrastructure Projects, Codes & Zoning, Land Use	

	#	Action	CONNECT Opportunity?	Cost	Actors	Difficulty	Resources/Funding
Municipal Renewable Power							
GOOD	CB-3A	Buy local renewable energy credits, offsets, etc. to offset use of non-renewable power by the local government	-		Govt., Finance		FFOLD Tool
BETTER	CB-3B	Join Western Pennsylvania Energy Consortium to procure renewable power for the municipality at a cheaper rate	CONNECT		Govt., Finance		-
BETTER	CB-3C	Install solar on public libraries, fire stations, etc.	-		-		Grants for Libraries, PEDA Funding, SEP Funding
BEST	CB-3D	Enter into a power agreement with local renewable producers	-		Govt., External, Finance		SP Renewable Energy
BEST	CB-3E	Install renewable energy systems, like solar or geothermal to power municipal buildings like Forest Hills Borough	CONNECT		Govt., External, Facilities, Finance		SP Renewable Energy, SEP Funding, REP Funding
Supporting Community Solar							

GOOD	CB-3F	Provide solar resources on a municipal website for local businesses	CONNECT		Govt., Economic Development		-
GOOD	CB-3G	Complete and publicize a solar feasibility study of roofs in the community using student assistance and/or Triboro's model	CONNECT		Govt., External		-
BETTER	CB-3H	Create a solar advisory committee/task force or hire a local solar coordinator for your community	-		Govt., External		-
BEST	CB-3I	Partner with an organization to form a local business solar co-op individually or with your neighboring municipalities	-		External, Economic Development		-
Enabling Solar Development							
GOOD	CB-3J	Ensure your municipality has already adopted a model zoning ordinance to facilitate solar installation in your community	CONNECT		Govt., Planning, Zoning		-
BETTER	CB-3K	Amend development codes to encourage solar friendly site orientation and construction	-		Planning, Zoning, Economic Development		-
BETTER	CB-3L	Encourage local municipalities to earn Solsmart Designation, and be eligible for no-cost technical assistance	CONNECT		Govt., Planning, Zoning		Etna Solsmart Statement
BEST	CB-3M	Create a local incentive, such as tax deductions or rebates to encourage solar panel installation on commercial property	-		Govt., Finance, Economic Development		EPA Financing Tools

Residential Buildings

Actions for:	Strategies:
Residential Buildings	Energy Efficiency, Renewables Education
Individuals	Increasing Residents' Access to Incentives
Zoning	Energy Efficiency, Solar Codes/Ordinances

Residential Buildings

For CONNECT communities, the residential sector is the most important sector for greenhouse gas emissions reductions opportunities. Energy consumed in residential buildings accounts for 44% of CONNECT's total GHG emissions, the single largest source in our communities when excluding large industrial process emissions. Individual CONNECT members vary in shares attributable to residential energy out of their community totals, however, the majority of CONNECT members (22 municipalities) have 50%-80% of their entire emissions totals caused by energy use in the residential sector. An additional 7 municipalities are above 40%. This is expected, as CONNECT members outside the city are primarily residential communities housing much of the region's aging building stock.

The majority of CONNECT's residential emissions are the result of the burning of natural gas to heat homes, with over 70% of this fuel being served through Peoples Gas.[87] Relative "efficiency" of our various residential communities, measured by emissions per capita, can be seen in the figure below with darker areas consuming more energy per person.

2018 Residential Emissions Per Capita

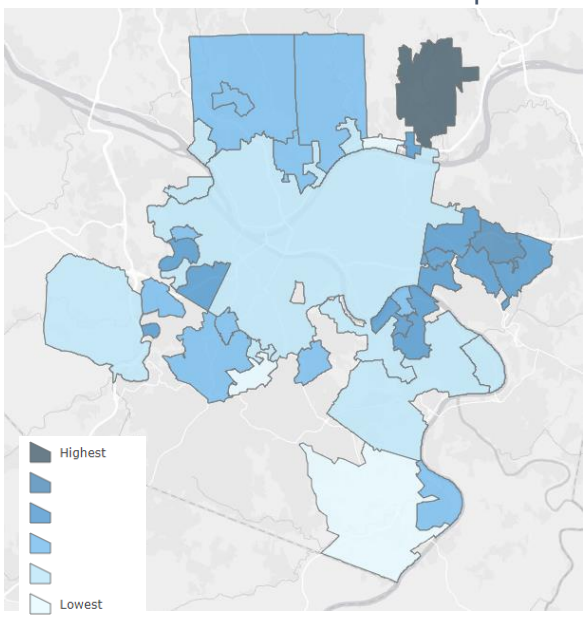
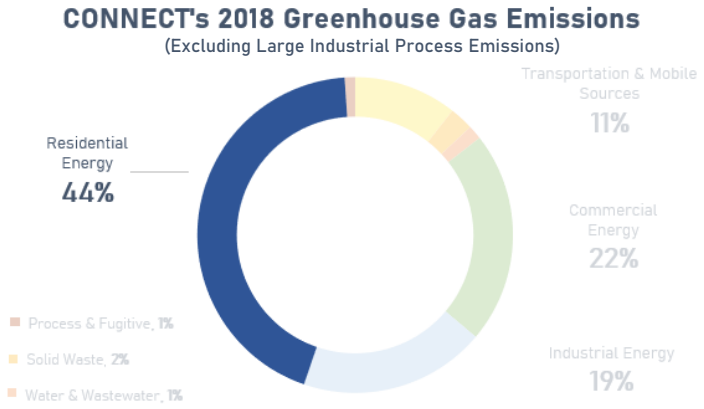
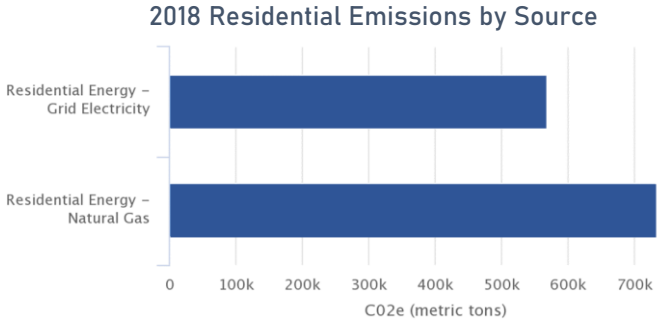


Figure: Note that this figure only shows emissions per capita and is NOT reflective of either total emissions or share of total emissions attributable to the residential sector in a community. See appendix for detailed total and share of emissions by municipality. City of Pittsburgh value is 2013 per capita emissions due to data availability.

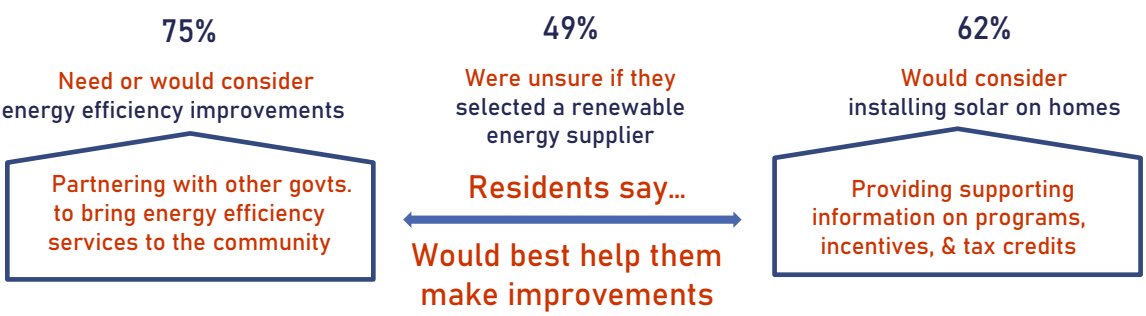




Figures: The majority of CONNECT's residential emissions are from natural gas use. In most individual cases, residential emissions account for over half of all community emissions. See Appendix for Methodology.

Survey results in CONNECT communities suggest that although a large share of residents want to make energy efficiency improvements and use renewable energy sources, they are unsure of how to take advantage of these opportunities. Energy education by local government, nonprofits, and CONNECT partners should play an important foundational role in regional and individual climate efforts.

CONNECT residents want to make energy efficiency improvements and use renewable energy, but they are unsure how…



Figures: Survey data obtained in a survey of CONNECT residents and business owners in 2021. See Results.

Improving the efficiency and impact of our residential building stock, through building envelope improvements, appliance controls and efficiency, and renewable development, as well as targeting these improvements to specific areas, will be integral to achieving both CONNECT's and individual municipal climate plans long term goals. Tree canopy maintenance also generates energy savings in neighborhoods by reducing cooling demand. All of these actions by local government can save residents money on utility bills and reduce the need for new infrastructure development. Renters in CONNECT communities have little control over building improvements, necessitating either greater engagement of tenants and landlords on energy efficiency opportunities in our communities, or other targeted guidance by local governments to these residents until federal funding arrives to assist.

This chapter focuses on opportunities to educate the community, retrofit existing residential buildings, and ensure that future activities in the residential sector are a large part of the region's climate protection goals.

SUCCESS STORY
Multi-municipal Solar Co-op

Action: In an effort to increase renewable power and address the largest source of emissions in their communities, Etna, Millvale, and Sharpsburg Boroughs, along with Millvale Community Development Corporation, and New Sun Rising joined with Solar United Neighbors to form a Triboro Solar Co-op that helps to bring solar panels to residents' homes. Following educational sessions and recruitment of residents, SUN and their chosen installer leverages the co-op's power as a group to make buying residential rooftop solar panels easier and less expensive for members. Interested residents throughout Allegheny County were also invited to join.

Funding: Solar United Neighbors did not charge a fee for their services, with no cost to start or participate in the solar co-op. Promotion, education, and outreach material, including info sessions, yard signs, and door hangers were provided at no cost. Purchasing is voluntary with individuals who pursue solar installation funding their own system and using a federal tax credit to further lower the cost.

Benefits: Since launch, the co-op has gathered 102 members total from a handful of boroughs. By going solar as a group and choosing a single installer, members will save off the average cost of going solar and have the continued support of fellow group members and solar experts at Solar United Neighbors. Since 2018, SUN has hosted a dozen solar co-ops in Pennsylvania, resulting in 79 homes and businesses with solar panels, resulting in 19 million pounds of lifetime carbon offsets.

Contact: Talia O'Brien – tobrien@etnaborough.org

The following tables contain CONNECT's objectives and potential actions for the residential sector. See Legend

	Objective	Benefits	Emissions Reduction Potential
Goal 1: Reduce energy use in our local governments and communities	RB 1 – Reduce energy consumption in existing residential buildings and homes through education, efficiency of home heating, and increased access to energy efficiency opportunities	⚖ ❤ 🌲 $	🍃 🍃 🍃 🍃
Goal 2: Replace current energy sources with renewables	RB 2 – Encourage renewable power among residents through education on and increased access to residential energy choice and opportunities to install solar	⚖ ❤ 🌲 $	🍃 🍃 🍃

See Legend

Objective RB 1 – Residential Electrification, Energy Efficiency, and Education	Co-Benefits:	Consider Coactions in:	Emissions Reduction Potential
Reduce energy consumption in existing residential buildings and homes through education, electrification of home heating, and increased access to energy efficiency opportunities		Codes & Zoning, Equity	

	#	Action	CONNECT Opportunity?	Cost	Actors	Difficulty	Resources/Funding
Education							
GOOD	RB-1A	Apply for a state Environmental Education Grant or receive interns through the Governor's Office to implement residential energy education in your community	CONNECT		Govt., Finance		-
BETTER	RB-1B	Work with partners and other munis to publish an individual or CONNECT-wide Green Guide to educate residents on energy/sustainability actions they can take at home	CONNECT		Govt., External		EPA Homeowner Solar Guide
BEST	RB-1C	Host a community event that educates and identifies community members to participate in future efficiency programs	-		Govt.		-
Enabling Financing							
GOOD	RB-1D	Procure the free residential PennTAP toolkit on behalf of residents, and encourage use to estimate potential energy savings in residential buildings	CONNECT		Govt., External, Community		-
BETTER	RB-1E	CONNECT communities partner with the City or other municipalities on bundled energy services	CONNECT		Govt., Finance, External		-

BEST	RB-1F	Pending state limits; set up revolving loans, residential PACE, or green bank access for local energy efficiency improvements	-		Finance		EPA Financing Tool
BEST	RB-1G	CONNECT and partners help to create a one-stop-shop webpage of financing mechanisms and resources that link residents with trusted regional contractors for energy audits/retrofits/etc.	CONNECT		Govt., External		-
Code, Ordinances, and Practices							
GOOD	RB-1H	Assess and improve current enforcement of building energy codes, train municipal code officials, and publicly post required materials for the community	-		Govt., Code Officials		-
BETTER	RB-1I	Encourage use of "most efficient" appliance/building products through perks and other incentives	-		Finance		-
BETTER	RB-1J	Require electric heating and appliances in new construction of residential buildings	-		Govt., Economic Development, Planning		-
BEST	RB-1K	Start a home energy labelling program, or require energy audits, to assign value at time of sale and better inform buyers/sellers	CONNECT		Govt., Economic Development, Planning		-
BEST	RB-1L	Upon lifting of state limitations, adopt stricter building energy codes and standards than the state minimums	-		Govt., Economic Development, Planning		-

Increase Accessibility to Efficiency Programs							
GOOD	RB-1M	Publicize existing free utility and regional weatherization programs to increase efficiency of lower income homes	-		Govt.		Res. Energy Efficiciency for Local govts.
BETTER	RB-1N	Target energy affordability services and energy bill assistance to EJ areas and high energy burden areas within CONNECT, especially those above 5% and during winter	CONNECT		Govt, External		-
BEST	RB-1O	Increase general residential uptake of new and existing utility incentives for energy efficiency, gas efficiency, and especially home heating	-		External, Govt.		-
BEST	RB-1P	Partner with organizations to establish an energy efficiency program that provides assistance to residents to receive free home repair and reduced cost energy audits and retrofits	-		External, Govt., Finance		-
Other Strategies to Reduce Energy Use							
GOOD	RB-1Q	Establish an energy baseline or survey and energy management plan for the community	-		Govt, Planning		-
BETTER	RB-1R	Work with community organizations to hold monthly or annual energy use challenges to engage the community	-		Community, Govt.		-
BEST	RB-1S	Advocate for "Neighborhood 2030" Districts with GBA to target residential CONNECT communities	CONNECT		External		-
BEST	RB-1T	Prioritize street tree planting & maintenance in residential areas and encourage private tree planting to reduce energy demand for cooling	-		Public Works, Shade Tree Commission, Planning		-

See Legend

Objective RB 2 – Renewable Power for Residents	Co-Benefits:	Consider Coactions in:	Emissions Reduction Potential
Encourage renewable power among residents through education on and increased access to residential energy choice and opportunities to install solar		Codes & Zoning, Equity	

	#	Action	CONNECT Opportunity?	Cost	Actors	Difficulty	Resources/Funding
Power Choice Education							
GOOD	RB-2A	Educate residents on individual carbon credits and other offsets to reduce their footprint	-		Govt.		-
BETTER	RB-2B	Work with a local gas utility to discuss demand & offer renewable natural gas or RNG credits	CONNECT		External, Govt.		-
BEST	RB-2C	Educate residents on electric and gas choice and choosing cheaper renewable power purchasing options through DLC and PA PowerSwitch/PA GasSwitch	CONNECT		Govt.		-
Supporting Local Solar							
GOOD	RB-2D	Conduct an installation baseline survey to determine how much solar is currently permitted in the community	-		Govt., Planning		-
GOOD	RB-2E	Create a community site where local successes of solar can be showcased to increase community confidence	CONNECT		Govt., Community		-
BETTER	RB-2F	Complete and publicize a solar feasibility study of roofs in the community using student	CONNECT		External, Planning, Govt.		-

		assistance and/or Triboro's model					
BEST	RB-2G	Create a solar advisory committee/task force or hire a local solar coordinator to help your community install solar	-		Govt., Finance		-
BEST	RB-2H	Join Allegheny County Solar Co-op or work with a partner to form a solar co-op with your surrounding communities	CONNECT		External, Community		SUN Outreach Toolkit 2022
Solar Enabling Codes & Ordinances							
GOOD	RB-2I	Ensure your municipality has already adopted a model zoning ordinance to facilitate solar installation in your community	CONNECT		Planning		-
BETTER	RB-2J	Ensure that local municipal code limits any restrictions to solar development, and instead streamlines access to residents who want to install solar	-		Planning		-
BETTER	RB-2K	Promote SolarAPP+ in your community for streamlined residential solar permitting	CONNECT		Code Officials, Planning		Etna Solsmart Statement
BEST	RB- 2L	Amend development codes to encourage solar friendly site orientation and construction	-		Planning		-
Incentives for Solar							
GOOD	RB-2M	Educate residents on existing federal, state, utility, and local incentives they can use when installing solar on their homes	-		Govt.		-
BEST	RB-2N	Create a local incentive, such as density bonuses, tax deductions, or rebates to encourage solar panel installation on residential property	-		Finance, Planning		EPA Financing Tool

Waste & Materials Management

Actions for:

Local Government

Nonprofits

Strategies:

Waste/Recycling Programming

Food Waste & Composting

Sustainable Materials Procurement

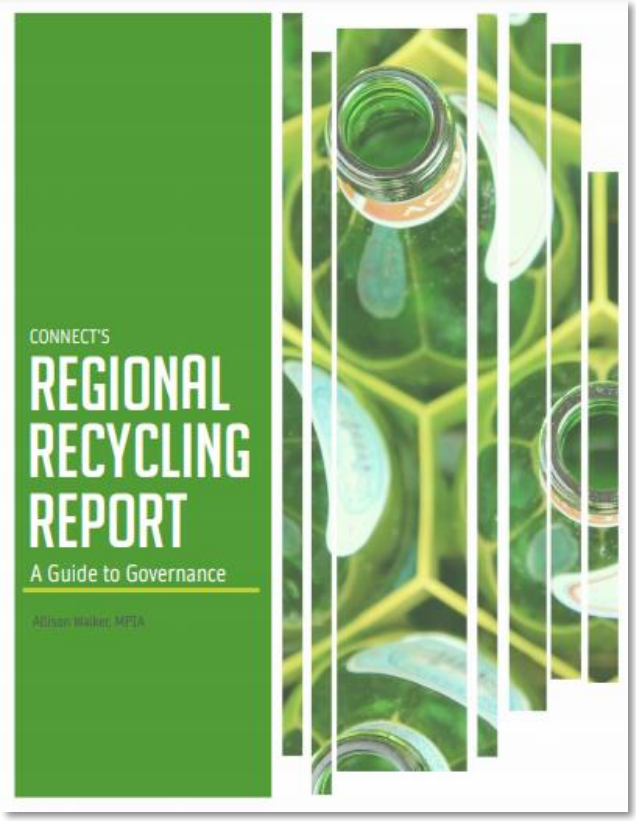
Waste & Materials Management

All waste materials that are disposed of to a landfill directly contribute to climate change through greenhouse gases emitted during decomposition, with incineration and the hauling of waste to or from facilities also contributing to total impacts. The most significant emissions, though, are associated with the extraction and production of virgin materials for the manufacturing of new glass, paper, and plastics that could otherwise have been recycled and reused.

As a result of global changes to the recycling market, many CONNECT municipalities saw the removal of glass, paper, or various types of plastic from their bins, despite the materials being listed in contracts. Outdated ordinances, lack of public education, and lack of cohesion surrounding municipal recycling language were found have subsequently led to a decrease in recycling[88], and undoubtedly an increase in solid waste sector emissions in CONNECT communities since 2013.

Despite municipal solid waste tonnage contributing only about 2% of CONNECT's total GHG emissions in 2018, building up local recycling infrastructure was rated the single-most popular climate action in a survey of CONNECT community residents, and should be considered integral to the long-term sustainability of our region. CONNECT members' solid waste is disposed of at several local and regional landfill locations, however, stakeholders have identified the urgent need for a regional solution to materials management. [89] Additionally, embodied energy within the items that we throw away might be harnessed through reuse and recycling of materials.[90]

It is in CONNECT's long-term interest to pursue a more circular economy; reduce waste at its source, expand recycling facilities, reduce food waste, and enable re-use of materials to lower emissions. This chapter focuses on opportunities to reduce waste, reuse materials, and recycle what cannot be reused.



Building up local recycling infrastructure was rated as the second-most popular climate action in a survey of CONNECT residents...

See results

SUCCESS STORY
LOCAL GOVT. AND PRC GLASS RECYLCING PARTNERSHIP

Action: As harder to recycle materials, such as glass, are removed from curbside recycling programs as a result of market shifts and increased processing costs, municipalities have turned to public-nonprofit partnerships to keep recyclable materials out of landfill. Since 2019, a series of glass-only drop-off collections, travelling glass bins, and permanent drop-off locations offered by Pennsylvania Resources Council (PRC) and hosted by municipalities has served as the much needed temporary "recycling infrastructure" for our region. PRC's glass goes directly to a sorting facility and is then prepared for glass mills and manufacturers in the Western PA and Ohio.

Funding: These locations, along with maintenance and hauling services, are "rented" for a fee by municipalities and advertised to allow residents to ensure their glass is being recycled. Collaboration is encouraged between neighboring communities, COGs and counties to engage in cost-share arrangements.

Benefits: A 5-hour, Saturday pop-up event in 2019 saw anywhere from 350 – 800 households participate in one day and a municipality can expect to collect approximately 4 - 6 tons of glass in a week, depending on demand in the given location. Collection events in 2020 collected around 540,000 pounds of glass bottles, jars, and jugs from over 15,000 households. Recycling has emissions benefits too. For every 6 tons of recycled container glass used in manufacturing, 1 ton of carbon dioxide emissions is avoided. The success of pop-up and travelling glass collection events, now with sponsors and partnerships in 30 communities in Western PA and CONNECT, has moved several communities to request permanent container placement in their area. To keep up with demand, PRC is continuing to pursue a region-wide network of glass recycling drop-off sites in partnership with southwestern PA municipalities, councils of government (COGs), and county partners.

Contact: Pennsylvania Resources Council - glass@prc.org

The following tables contain CONNECT's objectives and potential actions for materials management.

See Legend

	Objective	Benefits	Emissions Reduction Potential
Goal 3: Strengthen CONNECT's resilience through land, water, & materials management by its members	MM 1 – Reduce solid waste generation by the municipality and broader community through recycling/reuse of materials	$	

See Legend

Objective MM 1 – Reduce Solid Waste	Co-Benefits:	Consider Coactions in:	Emissions Reduction Potential
Reduce solid waste generation by the municipality and broader community through recycling/reuse of materials		Waste Reuse, Building Demolition/Construction, Energy Capture	

	#	Action	CONNECT Opportunity?	Cost	Actors	Difficulty	Resources/Funding
Regional Recycling Coordination							
GOOD	MM-1A	Update and ensure standardization in municipal recycling contracts and language across CONNECT communities	CONNECT		Govt., External		PADEP General Info, EPA Recycling Tools for Local govt.
BETTER	MM-1B	Support the creation of a regional recycling data collective with CONNECT to better understand community waste and improve municipal waste programs	CONNECT		External, Govt.		-
BEST	MM-1C	Form and join an exploratory committee to begin the creation and engagement of a central regional materials management entity	CONNECT		External, Govt.		-
Recycling Education							
GOOD	MM-1D	Educate the public on recycling through a community event or creating consistent signage and instructions on websites	-		Govt, Community		EPA Recycling Outreach
BETTER	MM-1E	Partner with schools or a marketing agency to run a regional public education	CONNECT		External		-

		campaign around recycling in CONNECT communities					
BEST	MM-1F	Consider recycling ordinances that promote recycling in Multi-family and Commercial Buildings, the least targeted sector	-		Planning, Economic Development		-
Improving Recycling Programs							
GOOD	MM-1G	Pursue a PA DEP Section 902 Recycling Program Development and Implementation Grant to create a new recycling program in your municipality	-		Finance		Recycling Financial Assistance
BETTER	MM-1H	Use recycling and composting technical assistance programs to upgrade curbside recycling programs, maximize material recovery, and ensure program sustainability	-		Govt.		-
BETTER	MM-1I	Assess and improve current enforcement of codes and recycling ordinances	-		Code Officials, Govt.		Recycling Technical Assistance
BEST	MM-1J	Partner with PRC to provide pop-up or permanent glass/hard to recycle collection services in the municipality	CONNECT		External, Govt.		-
BEST	MM-1K	Implement a "Pay as you throw" program in your municipality	-		Finance, Planning		-
Tracking Municipal and Community Waste							
GOOD	MM-1L	Keep track of solid waste tonnage from the municipality, including	-		Govt.		-

		contracts, material type, and landfill location					
BETTER	MM-1M	Enter the local government's waste management activities for free into EnergyStar Portfolio Manager or another waste management system to benchmark progress and track cost savings	CONNECT		Govt.		-
BEST	MM-1N	Provide businesses, especially those not using municipal waste services, with resources to perform a waste assessment and track their waste for cost savings	-		Govt., Economic Development		-
Reducing Food Waste & Composting							
GOOD	MM-1O	Encourage and highlight Sustainable Restaurant Designation in your communities' local eateries	-		Community, Govt.		-
BETTER	MM-1P	Build and support community gardens, urban farms, and alternative growing platforms like green rooftops in community to reduce food waste	-		Community, Govt., Planning		Community Garden Sustainability Fund
BEST	MM-1Q	Remove any code barriers to, and explore options for, a community composting program reducing yard litter and food waste sent to landfill	-		Govt., Community, Planning		-
Use and Procurement of Sustainable Materials							
GOOD	MM-1R	Use a cooperative purchasing program, such as COSTARS, to procure	CONNECT		Finance, Govt. Facilities		-

		sustainable local government materials/products at a lower price					
BETTER	MM-1S	Convert municipal operations to paperless, wherever possible	-		Administration, Finance		-
BETTER	MM-1T	Join Allegheny County municipalities to pass a local ban the use of harmful materials in our communities, such as coal tar and fracking waste	-		Govt., Planning, Public Works		-
BEST	MM-1U	Encourage the reuse and recycling of building construction and demolition materials by passing an ordinance, or by coordinating drop-off locations or exchanges in the community	-		Planning, Public Works		-

Water & Wastewater Management

Actions for:

Local Government

Municipal Water/Sewer Authorities

Nonprofits/Planners

Strategies:

Green Infrastructure

Water Quality/Watershed Planning

Water/Sewer Authority Energy

Water & Wastewater Management

Although the water and wastewater management sectors are a relatively small contributor to CONNECT and its government's total greenhouse gas emissions profile, additional improvements can be made in their operations that help achieve local and regional goals of sustainability, including emissions reduction. Despite producing relatively little greenhouse gas emissions to mitigate, actions taken in the water and wastewater management sectors are arguably the most critically important for climate adaptation – ensuring CONNECT's communities are not vulnerable to the risks associated with climate change and increased precipitation. See Vulnerability Assessment for detailed information on CONNECT's water, wastewater, and landslide vulnerabilities, and how water actions can help address concerns in this sector.

Actions taken in the water and wastewater management sectors are arguably the most critically important for climate adaptation…

Fortunately, water & wastewater management is popular with CONNECT residents. In CONNECT's regional survey which asked residents their top climate priorities for municipalities, building green stormwater infrastructure was among the highest rated climate actions, with many other water management actions such as tree planting and regional stormwater projects within the top ten.

This section also pertains to those local governments who own their own water delivery or wastewater services or are partners in a multi-jurisdictional water delivery and treatment arrangement (like ALCOSAN). It is also possible for local governments to partner with water utilities to accomplish these goals, if privately or otherwise owned or operated.

Building green stormwater infrastructure was among the highest rated climate actions for residents…

See results

SUCCESS STORY

Green Stormwater Infrastructure in Etna

Action: In response to major flooding and sewer overflows, the Borough of Etna is turning its main street into a green street and constructing other green infrastructure projects to control the costly water and stormwater issues that come with being the most downstream community in a large watershed.

Etna partnered with EPA, PADEP, and Buchart Horn to plan and construct Green Streetscape Infrastructure Projects in its business district. These include continuous trench drains, tree grates, and street trees as well as roof drain collection and green inlet bump-outs on its main streets. A rain park, vacant lot turned rain garden, and parking lot green stormwater management system were also constructed for the community through the project and with other partnerships.

Funding: Design and construction of Green Streetscape Projects were funded through the EPA's and PADEP's 319 Nonpoint Source Grants program for the first two phases of the planned six-phase project. Other community green infrastructure projects were funded by RK Mellon Foundation, and 3RWW. The Borough's Green Master Plan, which identifies locations for potential green infrastructure projects in the community was funded by a Pennsylvania Environmental Council grant (PEC).

Benefits: Each of these projects reduces runoff, removes stormwater from the combined sewer system and reduces the energy used to manage wastewater. Green Streetscape Projects completed thus far remove over 2 million gallons of runoff annually and have improved the aesthetic appeal and health of the business district with 5000 sq ft of pervious pavers, 4500 cubic feet of underground storage, and over 20 street trees. Upon completion, the green system will be able to fully contain the runoff generated from five-year storm events, or close to 5 million gallons of water – at a significant cost savings to alternative "grey" infrastructure.

Contact: Mary Ellen Ramage – meramage@etnaborough.org

The following tables contain CONNECT's objectives and potential actions for water & wastewater.

See Legend

	Objective	Benefits	Emissions Reduction Potential
Goal 3: Strengthen CONNECT's resilience through land, water, & materials management by its members	WW1 – Implement sustainable water & stormwater initiatives	⚖ ❤ 🌲 $	🍃
Goal 2: Replace current energy sources with renewables	WW2 – Source electricity used for water delivery and treatment systems from renewable sources	🌲	🍃 🍃
Goal 1: Reduce energy use in our local governments and communities	WW3 – Upgrade the energy efficiency of water delivery and treatment systems	🌲 $	🍃

See Legend

Objective WW1 – Water/Stormwater Initiatives	Co-Benefits: ⚖ ❤ 🌲 $	Consider Coactions in:	Emissions Reduction Potential
Implement sustainable water & stormwater initiatives		Infrastructure Planning, Land Use, Public Health, Equity, Trees	🍃

	#	Action	CONNECT Opportunity?	Cost	Actors	Difficulty	Resources/Funding
Green Infrastructure 🍃🍃🍃🍃							
GOOD	MM-1A	Encourage rain barrel use by the community and local government to conserve water and reduce runoff	-	■	External, Community	■	PA Environmental Finance Center Funding Sources
BETTER	MM-1B	Use federal, state, or ALCOSAN GROW Grants to install green stormwater infrastructure, and/or integrate into existing public works projects	-	■	Public Works, Finance	■	SP Water Infrastructure, SPC Funding Guide, ARPA
BEST	MM-1C	Target green infrastructure such as green roofs, swales, rain gardens, and permeable pavers and pavement to high-risk areas	-	■	Public Works	■	SPC Funding Guide, ARPA

BEST	MM-1D	Partner with an organization to target green projects on vacant/blighted land	-		Planning, External		-
Management Practices							
GOOD	MM-1E	Incorporate PA DEP's Stormwater Best Management Practices into municipality's standard operating procedure	-		Public Works, Planning, Govt.		SP Water Infrastructure, SPC Funding Guide
BETTER	MM-1F	Incorporate Green Infrastructure language into Stormwater Management Ordinances and parking lot design standards	CONNECT		Planning, Govt		SP Water Infrastructure
BEST	MM-1G	Pass an ordinance requiring developers to manage all onsite stormwater	-		Govt., Planning		-
Impervious Surfaces							
GOOD	MM-1L	Install/require permeable paving on public and low-use pathways and lots; share cleaning services between municipalities	-		Planning, Public Works		ARPA
BETTER	MM-1M	Implement a pavement removal day where residents can apply to have their pavement torn up to create more pervious surfaces and save on stormwater fees	-		Govt., Community		-
BEST	MM-1N	Equitably introduce standards, incentives, and/or policies like stormwater fees that reduce impervious surfaces and encourage development of vacant infill sites	-		Govt., Planning, Economic Development		-
Water Quality							
GOOD	MM-1H	Incorporate PA DEP's Stormwater Best Management Practices into municipality's standard operating procedure	-		Public Works, Planning, Govt.		SP Water Infrastructure

BETTER	MM-1I	Require source setbacks, natural buffers, or sediment fences between developed areas and water sources in the community	-		Public Works, Planning, Govt.		Urban Runoff Model Ordinances
BETTER	MM-1J	Assess and improve current enforcement of nonpoint source (NPDES) permits in your community	-		Code Enforcement		-
BEST	MM-1K	Use a map tool and funding to improve impaired water sources in your community	-		Public Works, Govt.		DCED Funding, Growing Greener Grants
Flood Education							
GOOD	MM-1O	Engage in PA SilverJackets flood education for residents and businesses, notify residents of flooding resources and any activities impacts on stormwater	CONNECT		Govt., Community, External		SP Flooding
BETTER	MM-1P	Work with Pittsburgh Water Collaboratory to develop briefings or community consensus reports that aid in adaptation & residents' understanding of climate related water issues that affect the CONNECT Region	CONNECT		Govt., External, Community		Environmental Education Grant
BEST	MM-1Q	Ensure municipal eligibility for funded floodplain insurance for residents by creating floodplain maps and enrolling in CRS	-		Planning		SP Flooding
Strategic Planning							
GOOD	MM-1R	Create a municipal strategic plan that identifies areas of focus for tree planting, installation of tree pits with curb cuts, tree canopy recovery and urban forest preservation to manage stormwater	-		Public Works, Planning, Govt.		-

BETTER	MM-1S	Expand the scope of local hazard mitigation and comprehensive plans to factor in expected vulnerabilities explicitly related to climate change (i.e., precipitation)	CONNECT		Public Works, Planning, Govt.		-
BEST	MM-1T	Work with your surrounding communities to create a "One Water Plan" in watersheds	CONNECT		Govt., Planning, External, Community		SP Water Planning
Other Water Strategies							
GOOD	MM-1U	Get multi-municipal MS4 and other watershed plans for critical areas to help with stormwater planning across municipal boundaries	-		Govt., External		MAP Grant
BETTER	MM-1V	Work with Universities to map floodplains and small streams not included in FEMA programs to help with managed retreat	CONNECT		External, Govt., Planning		-
BETTER	MM-1W	Work with CoordinatePA to track adaptation projects and facilitate adaptation planning by members	CONNECT		Public Works		-
BEST	MM-1X	Partner with Pennsylvania Silver Jackets FPMS Program for a local or regional comprehensive vulnerability/cost assessment of climate impacts	CONNECT		Govt., External		-

See Legend

Objective WW 2 – Renewable Energy	Co-Benefits:	Consider Coactions in:	Emissions Reduction Potential
Source electricity used for water delivery and treatment systems from renewable sources		Waste Reuse, Solar Energy	

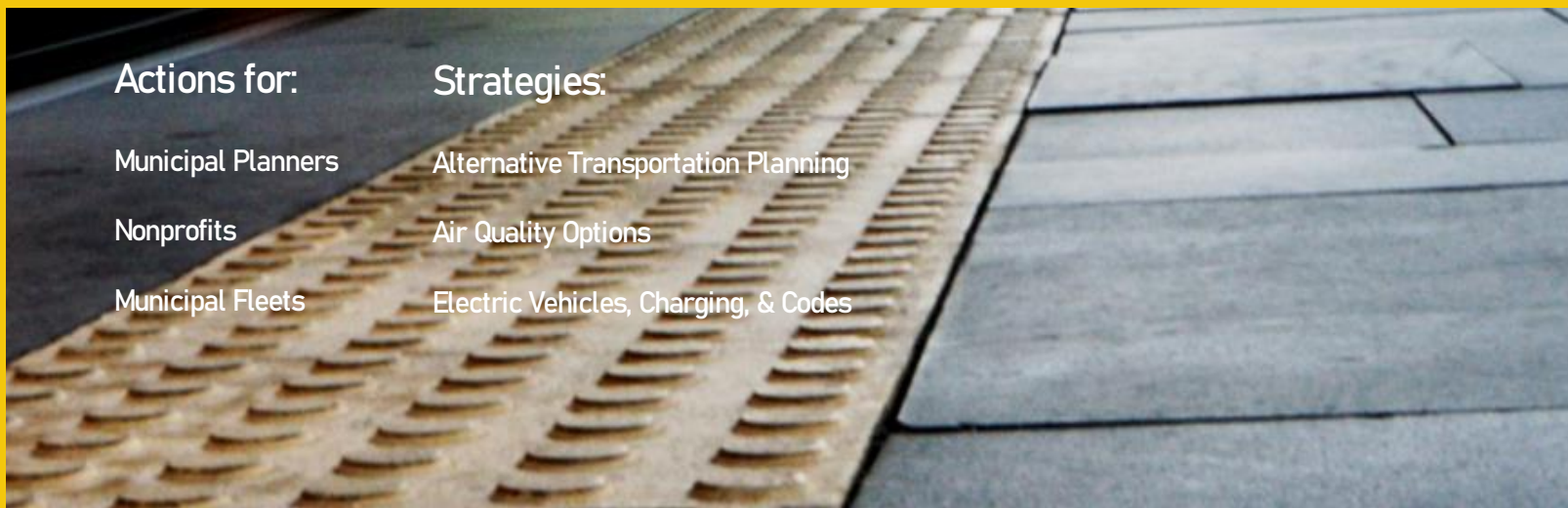
	#	Action	CONNECT Opportunity?	Cost	Actors	Difficulty	Resources/Funding
Renewable Energy for Water/Wastewater Utilities							
GOOD	WW-2A	Water/wastewater utility utilizes energy recovery technologies in its operations to reduce total energy usage from non-renewable sources used for heating and powering onsite buildings	CONNECT		Facilities, External		EPA Energy Efficiency for Water Utilities, ARPA
BETTER	WW-2B	Municipal water utilities in CONNECT join the Western Pennsylvania Energy Consortium to source some or all of their electricity from a renewable supplier	CONNECT		Facilities, Finance		-
BEST	WW-2C	Install solar or purchase green power to offset electricity used to treat water and wastewater in municipal treatment plants	-		Facilities, Finance, External		EPA Energy Efficiency for Water Utilities

See Legend

Objective WW 3 – Energy Efficiency	Co-Benefits:	Consider Coactions in:	Emissions Reduction Potential
Upgrade the energy efficiency of water delivery and treatment systems and reduce water consumption.		Public Health, Equity, Infrastructure Projects, Water Conservation	

	#	Action	CONNECT Opportunity?	Cost	Actors	Difficulty	Resources/Funding
Conservation in Municipal Buildings & Community							
GOOD	MM-1A	Encourage rain barrel and holding tank use by the community and local government to conserve water and reduce runoff – reducing energy need	-		External, Community		-
BETTER	MM-1B	Encourage/Replace water fixtures with low-flow models, or WaterSense products	-		Govt., Facilities, Community		-
BEST	MM-1C	Improve efficiency of irrigation on public property or landscape to reduce water needs	-		Facilities, Planning		-
Efficiency for Water/Wastewater Utilities							
GOOD	WW-1D	Use an energy use assessment tool to assess the public water utility for ways to save	-		Facilities		-
BETTER	WW-1E	Use the state's Capacity Development Program to increase capacity, safety, and efficiency of your small water utility	CONNECT		Facilities, External		EPA Energy Efficiency for Water Utilties, ARPA
BEST	WW-1F	Upgrade the mechanical and electrical systems at municipal water facilities, potentially by issuing a municipal green bond	-		Facilities, Finance, External		EPA Energy Efficiency for Water Utilties, ARPA
BEST	WW-1G	Participate in energy efficiency incentive programs to upgrade pump efficiency	-		Facilities, Finance, External		-

Transportation



Actions for:

Municipal Planners

Nonprofits

Municipal Fleets

Strategies:

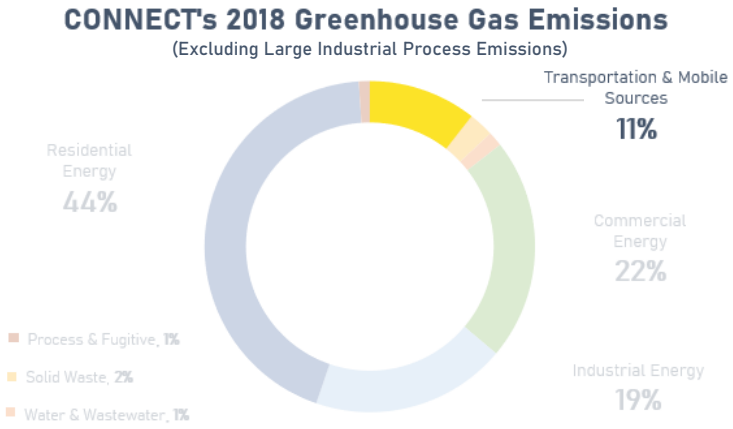
Alternative Transportation Planning

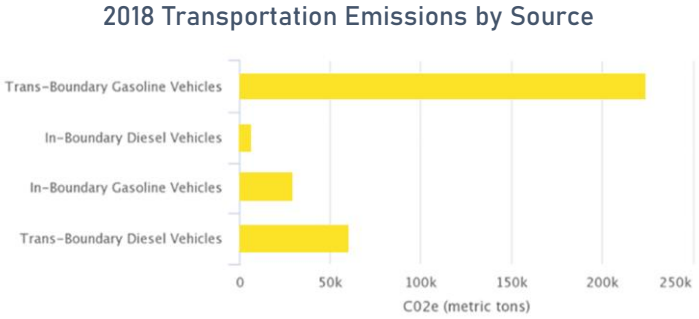
Air Quality Options

Electric Vehicles, Charging, & Codes

Transportation

Gasoline and diesel exhaust are one of the most visible greenhouse gas emissions sources experienced in municipalities. Transportation and mobile sources account for 11% of CONNECT's total GHG emissions when excluding large industrial process emitters. However, if a community counts pass through traffic under their jurisdiction, transportation can become one of the largest sources of emissions.[91] In many CONNECT communities, the vast majority of residents travel by single occupancy gasoline vehicle, with most communities having pedestrian, biking, and public transit mode shares under 10%.[92] Emissions from municipal fleets that have not been replaced with electric or low-carbon fuel alternatives are also significant contributors to the community's emissions.





Figures: 80% of CONNECT's transportation emissions are from gasoline, and the majority of emissions are attributable to vehicular travel beginning or ending in CONNECT communities, rather than travel solely within a single community. Pass through traffic is not included. See Appendix for Methodology.

Shifting toward alternative and cleaner modes of transportation as well as increasing multimodal access to trails and parks, will help to lower emissions, improve public health outcomes, and make CONNECT communities more equitable. Switching to electric or hybrid vehicles is one of the primary ways a community can help reduce transportation emissions associated with transboundary trips in cars. As electric vehicles become significantly cheaper and travel further[93], EV's are expected to become more widespread in your community – necessitating CONNECT's support of charging infrastructure. Municipalities can remove regulatory/permitting barriers to charging infrastructure and engage in public education to attract EV drivers to their communities. There are currently 13 public chargers in CONNECT communities outside Pittsburgh, however, in order to meet the statewide benchmark set in 2021 for achieving high EV use, CONNECT communities outside Pittsburgh should collectively look toward a goal of 80+ public chargers by 2030.[94] The City of Pittsburgh currently meets and exceeds that target with 157 public chargers.

Local governments are key players in improving multimodal accessibility and removing barriers to electric vehicles...

Besides emitting greenhouse gases, transportation fossil fuels also produce a host of criteria air pollutants when combusted, reducing local air quality and affecting our health. This chapter focuses on programs and policies to reduce emissions from transportation in CONNECT communities and includes infrastructure and design-oriented approaches as well as expansion of alternate modes such as walking, biking, or public transportation. See Resources & Air Quality Vulnerabilities Section for more information useful to municipalities.

Expanding local & regional public transportation was among the top 5 climate actions for residents in CONNECT...

When asked how local governments can best help them with EV's, CONNECT residents want their municipality to:

1. Add public charging stations
2. Publicize incentives for the community
3. Upgrade its own fleet to electric

See Results

SUCCESS STORY

Electric & Cleaner Fleet Vehicles in Allegheny County

Action: In response to local air quality concerns and a commitment to reduce its carbon footprint, Allegheny County has successfully transitioned a number of county fleet vehicles, including employee, police, and public works vehicles to electric or other cleaner fuels. In early 2020, the county installed chargers near the downtown building and purchased four all-electric Chevy Bolts. The county also plans to purchase more cleaner dual-fuel garbage and dump trucks for public works and parks staff in 2022 to add to their fleet of hybrid electric vehicles currently used by Public Works. Additionally, the Allegheny County Sheriff's Office recently purchased an all-electric police cruiser, making them the only department in the Commonwealth of Pennsylvania to have an all-electric vehicle in its fleet. The vehicle is all-wheel drive, tolerant of Pittsburgh's winter weather conditions, and rated to drive over 200 miles per charge.

Funding: Although typically more expensive than a traditional gasoline powered vehicle, in many cases the County's replacements were made possible by grant funding, like the Alternative Fuels Incentive Grant, that offsets the cost. In many cases, EV's are best procured during the scheduled replacement of older vehicles or in lieu of a future purchase of a gasoline powered fleet addition.

Benefits: Electric vehicles and cleaner fuel vehicles are beneficial to the climate and local air quality, emitting far fewer greenhouse gas emissions and harmful particulates than traditional fuel vehicles. Due to the grant and lower maintenance costs compared to those of a gas vehicle, the purchase of the Chevy Bolts is expected to result in cost savings for the County. According to the Sheriff's Office, the electric police cruiser is expected to save the County at least $26,000 in fuel and maintenance costs per electric vehicle. The Sheriff's Office plans to add a second in a few months, and is considering buying solar-powered charging stations, hoping to eventually make their entire fleet electric.

Contact: Brittany Prischak – Allegheny County Website

The following tables contain CONNECT's objectives and potential actions for transportation.

See Legend

	Objective	Benefits	Emissions Reduction Potential
Goal 4: Motivate cleaner modes of transportation by residents and in our fleets.	TR 1 – Encourage and increase accessibility to alternate modes of transportation such as walking, biking, or transit in our communities.	⚖ ❤	🍃 🍃
	TR 2 – Increase electric vehicle use in municipal fleets and the broader community.	❤ 🌲 $	🍃 🍃

See Legend

Objective TR 1 – Alternate Modes of Transportation	Co-Benefits:	Consider Coactions in:	Emissions Reduction Potential
Encourage and increase accessibility to alternate modes of transportation such as walking, biking, or transit in our communities.		Infrastructure Planning, Land Use, Public Health, Equity	

	#	Action	CONNECT Opportunity?	Cost	Actors	Difficulty	Resources/Funding
Planning, Development, & Accessibility							
GOOD	TR-1A	Activate your planning commission to prioritize various smart growth policies and analyze current code for gaps	CONNECT		Govt., Planning, Community		DCED Assistance, SPC Active Transportation Resource Center
BETTER	TR-1B	Prioritize compact and Complete Streets development strategies during planning and zoning for the community	-		Planning, Economic Development		SP Complete Streets, Active Allegheny Grant Program. PA Walk Works Grant.
BEST	TR-1C	Reduce or eliminate parking minimums within zoning ordinances	-		Planning, Economic Development		-
BEST	TR-1D	Join other CONNECT communities to implement transit oriented development and inclusionary zoning in your community	CONNECT		Planning, Economic Development		MAP Grant
Community Mode Shift							
GOOD	TR-1E	Establish a transportation baseline by creating a survey asking where residents live, work, and how they travel to track progress to 2030	CONNECT		Govt.		-
GOOD	TR-1F	Help your community form a neighborhood biking and walking committee to help build community and expertise around	CONNECT		Govt., Community, External		-

		alternate modes of transport with BikePgh's Toolkit					
BETTER	TR-G	Build trail networks to encourage sustainable use of land, promote transportation connectivity	-		Planning, External		Trail Dev. Fund Multimodal Fund
BETTER	TR-1H	Encourage carpool, vanpool, or bikeshare options through local government and community programs	-		Govt., Community		-
BEST	TR-1I	Update or create an active transportation plan for the community or with surrounding municipalities	CONNECT		Planning, Govt., Community		Community Development Block Grant(CDBG), DCED Assistance, Active Allegheny Grant Program.
BEST	TR-1J	Implement new bike infrastructure, walking paths, and lanes, targeting busy or dangerous areas that can benefit most.	-		Planning, Public Works, Community		SP Bike Infrastructure, Multimodal Fund
Regional Advocacy							
GOOD	TR-1K	Implement an equitable or free fare program through Port Authority to increase ridership among lower income areas in CONNECT communities	-		External		-
GOOD	TR-1L	Advocate for greater local safety and access considerations during state transportation development	CONNECT		CONNECT, External		-
BETTER	TR-1M	Expansion of Port Authority routes/frequency and park and ride lots in CONNECT communities	-		External, Planning		
BETTER	TR-1N	Partners form a sidewalk construction program that prioritizes building complete	CONNECT		External, Planning		-

		walkshed networks to transit in areas of high need					
BEST	TR-1O	Work with SPC and Transit Operators Committee to advocate for more transit funding and ped/bike infrastructure in the region	CONNECT		External, Govt.		-
Air Quality							
GOOD	TR-1P	Work with an organization to improve and promote awareness of air quality or clean diesel idling policies in your community	-		External, Govt.		Illinois Idling Toolkit
GOOD	TR-1Q	Pass an ordinance limiting idling or requiring clean construction practices by diesel equipment for certain municipal projects	-		Govt.		Illinois Idling Toolkit
BETTER	TR-1R	Review and strengthen current enforcement of idling rules	-		Govt.		-
BETTER	TR-1S	Pursue a ACHD Air Quality Ambassador Mini-Grant to fund air quality outreach in CONNECT communities, particularly in the Mon Valley or in high traffic density areas	CONNECT		Govt.		-
BEST	TR-1T	Install dashboards and monitors, such as Purple Air Quality Monitors in key areas of the community for planning and monitoring progress	-		Planning, External		-
BEST	TR-1U	Target tree preservation and planting in high-risk areas, such as low canopy cover or high urban heat indices along sidewalks, to improve air quality and walkability	-		Planning, Shade Tree Commission		-
BEST	TR-1V	Encourage alternate modes of transportation in the community instead of passenger vehicles					Transportation Alt. Set Asides Funding

See Legend

Objective TR 2 – Electric Vehicles & Charging Infrastructure	Co-Benefits:	Consider Coactions in:	Emissions Reduction Potential
Increase electric vehicle use in municipal fleets and the broader community.		Infrastructure Planning, Land Use, Codes & Zoning, Air Quality	

	#	Action	CONNECT Opportunity?	Cost	Actors	Difficulty	Resources/Funding
Community Education & Partnerships							
GOOD	TR-2A	Work with a partner to create a local or CONNECT member EV info sheet to help your community navigate EV issues	CONNECT		External, Community		-
BETTER	TR-2B	Conduct public education surrounding federal, state, & DLC EV and charging grants/rebates, or hold a ride and drive event, to increase EV use in your community	CONNECT		External, Govt.		-
BEST	TR-2C	Encourage energy efficiency and 100% renewable energy technologies in transit vehicles (i.e. Battery electric buses, clean diesel, etc.) that operate in your community or school district	CONNECT		External		Clean School Bus Program, Grants for Buses/Facilities
Collaborative Purchasing							
GOOD	TR-2D	Engage in maintenance or cost sharing arrangements with a neighboring municipality for EV's	CONNECT		Govt. Fleet, Finance		Community Charging Pilot, Fleet Charging Pilot, Fleet Advisory Service
BETTER	TR-2E	CONNECT becomes a member of a consulting org like Pittsburgh Region Clean Cities on behalf of municipalities to assist with	CONNECT		External, Govt.		-

		municipal EV needs, grant writing, permitting, technical support, etc."					
BEST	TR-2F	Join the voluntary Climate Mayors EV Purchasing Collaborative, to enable municipalities to procure electric vehicles and chargers at a discounted price and without bidding	CONNECT		Govt., External, Finance		-
Municipal EV's							
GOOD	TR-2G	Using a toolkit, create a list of the top ten municipal vehicles to replace with electric and then compare with an electric vehicle alternative	CONNECT		Fleet Managers, Govt.		-
BETTER	TR-1H	Participate in DLC's Fleet Advisory Service Program to create an individualized strategic EV plan for your fleet	CONNECT		Govt, Fleet, External		-
BEST	TR-2I	Use an EV incentive, such as AFIG or Level 2 EV Charging Rebate Program, to purchase a municipal electric vehicle at a lower cost	-		Fleet, Finance		EV Funding Guide

See Legend

#		Action	CONNECT Opportunity?	Cost	Actors	Difficulty	Resources/Funding
Charger Friendly Policies							
GOOD	TR-2J	Review and amend municipal code to remove barriers to electric charging infrastructure	CONNECT		Govt., Planning		-
BETTER	TR-1K	Adopt policies, parking rules, and zoning ordinances that promote electric vehicle growth and adoption.	CONNECT		Govt., Planning		-
BETTER	TR-2L	Require electric vehicle accommodations in new public buildings or all development	-		Planning, Govt.		-

BEST	TR-1M	Consider municipal incentives, through code or as a rebate program for commercial business or multi-unit dwelling charging infrastructure	-		Govt.		-
Municipal Charging							
GOOD	TR-1N	Assess viable siting and other placement considerations for installing a charger for a current or future municipal vehicle	-		Planning, Govt.		-
BETTER	TR-2O	Participate in DLC's Fleet Charging Pilot Program for financial assistance in installing fleet chargers	CONNECT		Finance, Fleet		-
BEST	TR-2P	Target municipal/public EV chargers to parking garages, lots, parks, and other public venues	-		Planning		-
Assisting Community Charging							
GOOD	TR-1Q	Participate in DLC's Community Charging Pilot Program for financial assistance in installing public, workplace, and multi-unit dwelling chargers	CONNECT		Planning, Govt., Finance		-
BETTER	TR-2R	Start a municipal initiative to organize local commercial businesses to be Duquesne Light charging partners	-		Govt., Community, External		Community Charging Pilot
BEST	TR-1S	Target public charging infrastructure to multi-unit dwellings and environmental justice areas in your municipality and receive higher consideration (pg11) for grant funding	-		Planning, Community		-

Land Use & Climate Adaptation

Actions for:

Municipal Planners

Tree Committees

Development

Strategies:

Land Use Planning & Alternative Transportation

Tree Canopy/Greenspace Preservation

Sustainable and Resilient Development

Land Use & Climate Adaptation

Besides contributing to greenhouse gas emissions through more urban development, climate conscious land use practices can reduce CONNECT's risk from severe weather events exacerbated and made more frequent by a changing climate. Sustainable land use can protect long term infrastructure and natural resources from these risks while encouraging water, soil, and natural systems conservation.

Sustainable zoning and land use decisions that discourage sprawl and encourage transit accessibility, mixed use, and adaptive reuse help to avoid community emissions that would otherwise be generated. In addition to water management and recreational benefits, the expansion, preservation, and continued maintenance of greenspace and tree canopies naturally sequester carbon and pollutants from the air, and avoid emissions associated with development on those sites. Increasing access to these sites promotes community health and equity.

Although not a substitute for a comprehensive adaptation plan, the following section highlights those climate actions found throughout this document that could align with such an adaptation plan. This section also lists other actions that reduce emissions associated with urban land use practices and those that can strengthen CONNECT's resilience to climate risks.

SUCCESS STORY

Dormont Transit Oriented Development

Action: The Borough of Dormont sought to update their zoning code to integrate transit-oriented development planning concepts. Dormont is home to several light rail stations and bus stops, making it a hub for frequent, high-quality transit in a suburban area. Further, the zoning code had not been updated since 1995, becoming outdated in several ways to the current needs of borough.

Dormont partnered with Yard and Company to oversee the community engagement process of developing and proposing such changes. The initiative came to be known as Code Dormont. Through this, they were able to conduct multiple engagement programs with stakeholders, such as a chalk-walk and a walk-&-tell. The project connected with over 1000 Dormont residents. In 2021, the Borough adopted Ordinance 1641, which repealed and replaced the existing zoning code with the proposal that was developed through the Code Dormont project. The new code better aligns with the borough's comprehensive plan goals. It also creates two zoning districts around three light-rail stops which encourage buildings of three to eight stories with an emphasis on pedestrian access to the stops and other walkable amenities in the area

Funding: The project received a Municipal Assistance Program (MAP) grant from Pennsylvania's Department of Community and Economic Development, which funds up to 50% of eligible costs. The rest of the funding came from local revenue.

Benefits: Transit-oriented development (TOD) recognizes the importance of proximity to transit as it relates to future development. Higher density, mixed-use development within walking distance of transit hubs supports more mobility and vitality in the area. TOD also helps mitigate against the negative consequences of single-occupancy vehicle use such as traffic congestion and increased emissions per capita, thus lessening the dependency for vehicles in such areas and increasing more efficient land use. The new code is also form-based, meaning the emphasis of the build environment is in a structure's form rather than location or use. Form-based zoning encourages maintaining character and considers a building's relationship to the street.

Contact: Ben Estell – bestell@boro.dormont.pa.us

The following tables contain CONNECT's objectives and potential actions for land use/climate adaptation.

See Legend

	Objective	Benefits	Emissions Reduction Potential
Goal 3: Strengthen CONNECT's resilience through land, water, & materials management by its members	LU 1 – Implement sustainable and resilient land use and development practices in our communities to reduce risk, increase access to greenspace, and avoid emissions generating activities		
	LU 2 – Implement other cross-sector adaptation actions found throughout this Plan to reduce water, landslide, and air quality risks		

See Legend

Objective LU 1 – Sustainable Land Use & Development	Co-Benefits:	Consider Coactions in:	Emissions Reduction Potential
Implement adaptation actions, such as sustainable and resilient land use practices in our communities to reduce risk, increase access to greenspace, and avoid emissions generating activities		Transportation, Trees, Water Management, Infrastructure Projects, Housing	

	#	Action	CONNECT Opportunity?	Cost	Actors	Difficulty	Resources/Funding
Land Use Limitations to Reduce Risk							
GOOD	LU-1A	Update your Local Hazard Mitigation/Emergency Management Plan with expected climate vulnerabilities	-		Govt., Planning, Public Works		PennDOT Planning Resources
GOOD	LU-1B	Implement a steep slope ordinance to limit disturbance and reduce risk in the community	-		Planning		-
BETTER	LU-1C	Use planting plans to limit erosion through natural methods like micro meadows and trees	-		Planning, Shade Tree Commission, Public Works		WeConservePA Land Use Planning Resources
BETTER	LU-1D	Designate a project moratorium on "high-risk areas" in the municipality through CoordinatePA	CONNECT		Public Works, Planning, External		-
BEST	LU-1E	Increase waterway buffer zones to at least 150ft setbacks to minimize business and residential activities in areas at risk of flooding	-		Planning, Economic Development		SPC Sustainable Land Use Planning
Encourage Greenspace & Sustainable Development of Vacant Land							
GOOD	LU-1F	Incorporate ecosystem management and native species into development and planning considerations	-		Planning, Economic Development		-
BETTER	LU-1G	Partner with an organization to implement vegetation recovery and reclamation on vacant land	-		External, Economic Development, Planning		-
BETTER	LU-1H	Local government uses a public financing method, such as TIF, LERTA, and SDF financing to	-		Finance, Economic Development, Planning		-

		sustainably redevelop brownfields and vacant lots					
BETTER	LU-1I	Build trail networks to encourage sustainable use of land, promote transportation connectivity	-		Planning, External		Trail Development Fund, GTRP Fund
BEST	LU-1J	Update local codes to encourage more sustainable land use and better protect from natural hazards	-		Economic Development, Planning		-
BEST	LU-1K	Work with local land trusts to conserve community land or procure sustainable carbon offsets in the region	CONNECT		External, Finance, Planning		-
Tree Canopy Preservation							
GOOD	LU-1L	Form or reactivate a shade tree committee, or form a multijurisdictional shade tree committee to bring local expertise and reduce canopy loss	CONNECT		Govt., Shade Tree Commission		Sample Ordinance
BETTER	LU-1M	Use DCNR toolkit for climate resilient tree and street tree planting considerations	-		Shade Tree Commission, Public Works		-
BETTER	LU-1N	Implement an official tree ordinance to better protect and plan the tree canopy in the community, including fines and required replacements for removals of high value trees	-		Govt., Shade Tree Commission, Planning		-
BEST	LU-1O	Target tree preservation and planting in high-risk areas, such as low canopy cover or high urban heat indices along sidewalks, to improve air quality and walkability	-		Shade Tree Commission, Planning, Public Works		TreeVitalize Grant

BEST	LU-1O	Partner with an organization or project, such as TreeVitalize, that provides technical or financial assistance on a community tree project, plan, or ordinance	-		External, Shade Tree Commission, Public Works		TreeVitalize Grant
Encouraging Sustainable Development & Mitigating Sprawl							
GOOD	LU-1P	Ensure Community Benefits Agreements with developers includes local climate actions, like stormwater mitigation, greenspace, or solar installation	-		External, Community		-
BETTER	LU-1Q	Consider adopting a Transportation Demand Management (TDM) policy for new, larger developments	-		Planning, Zoning External		-
BETTER	LU-1R	Amend local zoning ordinances to permit or encourage more residential density and mixed use	-		Planning, Zoning		SP Equitable Housing
BEST	LU-1S	Join other CONNECT communities to implement transit oriented development and inclusionary zoning in your community	CONNECT		Govt., Planning, Zoning		MAP Grant, SPC Active Transportation Center
BEST	LU-1T	Amend local zoning to broaden the array of housing types available	-		Planning, Zoning		SP Equitable Housing

See Legend

Objective LU 2 – Cross-Sector Adaptation Actions	Co-Benefits:	Consider Coactions in:	Emissions Reduction Potential
Implement other cross-sector adaptation actions found throughout this Plan to reduce water, landslide, and air quality risks and promote resource security		All Sectors	

Climate Risk	Adaptive Actions
Flooding	Refer to Water/Wastewater Management Section
Landslides	Refer to Water/Wastewater Management Section, Land Use Section above
Air Quality & Public Health	Refer to Transportation & Mobile Sources, Land Use Section above, Residential Buildings Section, Materials Management Section
Energy Security	Refer to Commercial/Industrial Buildings & Residential Buildings Sections, Water & Wastewater Management

Equity

Actions for:

Local Governments

Community Organizations

Nonprofits

Strategies:

Ensuring Access to Energy Incentives

Incorporating Environmental Justice into Operations

Land Use & Transportation Considerations

Equity

Because regional inequalities undermine the prosperity and health for all residents of a community, climate planning in the CONNECT region must tightly incorporate equity measures when addressing climate change. There are a number of areas in the county where minority, vulnerable, and disadvantaged communities are disproportionately impacted by environmental issues, according to the ACHD.[95] In its climate planning efforts, CONNECT looks to support climate actions that advance environmental justice - the idea that all people, regardless of race, ethnicity, gender, or income, have the right to a clean and healthy environment. Over three quarters of surveyed CONNECT residents were moderately to extremely concerned about environmental justice in our communities, with level of extreme concern being highest among non-white respondents. Despite our engagement efforts thus far, less than 10% of respondents to CONNECT's regional climate survey identified as nonwhite – indicating that there is much more work to be done.

Nearly 75% of CONNECT residents are concerned about environmental justice in our communities...

See results

CONNECT will continue to engage with its partners, and encourage its members to reach out to key constituents and listen to their community on this issue. Members should consult with any organizations/departments who represent underserved/frontline populations in their communities, including seniors, low-income families, non-English speaking/English as a second language, people of color, people experiencing houselessness/housing insecurity, and/or people with disabilities/access and functional needs. Oftentimes, sustainability projects by municipalities can receive additional funding consideration if located in "Environmental Justice Areas" designated by the state. There are over 140 such areas in CONNECT, 38 outside Pittsburgh, with over half of CONNECT members having at least one. Members can use the figure to the right to determine how many areas in their communities would receive special consideration and where to target those opportunities.

EJ Areas in CONNECT

Municipality	Number of	
	EJ Census Tracts	EJ Block Groups
Bellevue	2	3
Carnegie	3	3
Castle Shannon	1	1
Clairton	3	6
Duquesne	3	7
Edgewood	1	1
Forest Hills	1	1
Homestead	1	3
Ingram	1	1
Jefferson Hills	1	1
McKees Rocks	2	5
Millvale	1	3
Munhall	1	1
Pittsburgh	103	213
Ross Twp	1	1
Sharpsburg	1	4
Swissvale	4	7
Turtle Creek	1	5
West Mifflin	3	3
Wilkins Twp	1	1
Wilkinsburg	7	15
Grand Total	142	285

Figure: Shows number of state-designated EJ areas in CONNECT as of 2015. Municipalities can visit data source to determine which census tracts/block groups to target.

There are dozens of environmental justice opportunity areas in CONNECT municipalities...

Reducing emissions, and therefore avoiding the climate effects that disproportionately impact BIPOC communities, is a priority of CONNECT. CONNECT's community-driven planning process generated many potential actions across multiple sectors that concurrently address both GHG emissions reductions and equity. Such actions include developing, promoting, and using financing options to encourage energy efficiency by low-income residents, implementing sustainable transportation planning and practices, and addressing risks in climate vulnerable communities – often those disadvantaged or left out of the climate discussion. Although by no means exhaustive, this chapter highlights those actions that local governments can implement to reduce their emissions while advancing environmental justice in the CONNECT region.

SUCCESS STORY

Targeted Home Repairs for Sharpsburg Homeowners in Need

Action: The Sharpsburg Neighborhood Organization established a new program for low-income renters and homeowners to access up to $250 in funding for critical home repairs or upgrades that also increase energy efficiency in their homes. Applicants may also take advantage of the organization's free home energy assessment program in partnership with Rebuilding Together Pittsburgh (RTP). The assessment will provide project ideas for the home repairs and may provide up to an additional $100 in funding.

Funding: The Home Repair Fund program is funded through a community impact grant from Duquesne Light Company. The Home Energy Audit and Repair program is funded by Rebuilding Together Pittsburgh which leverages Federal Home Loan Bank (FHLB) funding to sponsor home repairs. These are banks which have pledged at least 10% of their earnings to Affordable Housing Programs.

Benefits: These critical home repairs and energy audits serve to improve the quality of life of homeowners and to strengthen resilience in the face of weather events, such as flooding and extreme heat and cold temperatures. Home repairs have decreased the energy burden of low-income households by increasing energy efficiency and insulation. Weatherization improves overall indoor air quality, having a lasting impact on the health and wellness of residents. An increase in resilience and energy efficiency also saves homeowners money from energy and damage costs.

Contact: Brittany Reno – brittany@sharpsburgneighborhood.org

The following table contains CONNECT's objectives and potential actions that help promote equity across sectors. See Legend

Objective EQ 1 – Equity	Co-Benefits:	Synergies	Emissions Reduction Potential
Advance environmental justice in CONNECT communities by ensuring equity in climate actions		All Sectors	

	#	Action	CONNECT Opportunity?	Cost	Actors	Difficulty	Resources/Funding
Environmental Justice							
GOOD	EQ-1A	Highlight PADEP's Environmental Justice Participation Policy in your community to encourage involvement of minority/low income populations in	-		Govt.		SP Community Equity, PADEP EJ Page

		projects/operations that could affect the community					
BETTER	EQ-1B	Explicitly incorporate PADEP's environmental justice areas into municipal language, hazard plans, and projects	-		Govt.		PADEP Funding List
BETTER	EQ-1C	Form a task force to help promote diversity, equity, and inclusion in the community	-		Govt.		SP Community Equity
BEST	EQ-1D	Advocate to funders or partner with Universities and local organizations like EJGP or UrbanKind to gather community context and needs, and support EJ projects in your community	CONNECT		External, Govt., Community		-
BEST	EQ-1E	Advocate for Allegheny County to be designated as part of a EJ Hub Region, or EJ Community Hub to help activate and sustain EJ activities in the region	CONNECT		External, Govt.		EPA EJ Grants and Resources, EPA EJ Funding and Technical Assistance
Residential Buildings							
GOOD	EQ-1F	Publicize existing free utility and regional weatherization programs to increase efficiency of lower income homes	-		Govt.		-
BETTER	EQ-1G	Educate residents on electric and gas choice and choosing cheaper renewable power purchasing options through DLC and PA PowerSwitch/PA GasSwitch	CONNECT		Govt.		-
BETTER	EQ-1H	Target energy affordability services and energy bill	CONNECT		Govt, External		DOE LEAP

		assistance to EJ areas and high energy burden areas within CONNECT, especially those above 5% and during winter					
BEST	EQ-1I	Partner with a Solar Co-Op to offer cheaper solar to the community, free installation to select low-income homeowners.	CONNECT		Govt., External		PA Solar Incentives for Residents, DOE LEAP
BEST	EQ-1J	Partner with organizations to establish an energy efficiency program that provides assistance to residents to receive free home repair and reduced cost energy audits and retrofits	-		External, Govt., Finance		Community Impact Grant Program
BEST	EQ-1K	CONNECT and partners help to create a one-stop-shop webpage of financing mechanisms and resources that link residents with trusted regional contractors for energy audits/retrofits/etc.	CONNECT		Govt., External		-
Transportation & Air Quality							
GOOD	EQ-1L	Incorporate ADA Accessible stops and sidewalks into transportation planning	-		Planning		Multimodal Fund, Community Services Block Grant
GOOD	EQ-1M	Target public charging infrastructure to multi-unit dwellings and environmental justice areas in your municipality and receive higher consideration (pg11) for grant funding	-		Planning, Community		DOE LEAP, Alternative Fuel Incentive Grants

BETTER	EQ-1N	Pursue a ACHD Air Quality Ambassador Mini-Grant to fund air quality outreach in CONNECT communities, particularly in the Mon Valley or in high traffic density areas	CONNECT		Govt.		-
BETTER	EQ-1O	Expansion of Port Authority routes/frequency and park and ride lots in CONNECT communities	-		External, Planning		-
BEST	EQ-1P	Implement an equitable or free fare program through Port Authority to increase ridership among lower income areas in CONNECT communities	-		External		-
BEST	EQ-1Q	Install dashboards and monitors, such as Purple Air Quality Monitors in key areas of the community for planning and monitoring progress	-		Planning, External		-
Water & Wastewater							
GOOD	EQ-1R	Engage in SilverJackets flood education for residents and businesses, notify residents of flooding resources and any activities impacts on stormwater	CONNECT		Govt., Community, External		-
BETTER	EQ-1S	Build and support community gardens, urban farms, and alternative growing platforms like green rooftops in your community	-		Community, Govt., Planning		Community Garden Sustainability Fund
BEST	EQ-1T	Ensure municipal eligibility for funded floodplain insurance for residents by	-		Planning		-

		creating floodplain maps and enrolling in CRS					
Land Use							
GOOD	EQ-1U	Partner with an organization to implement vegetation recovery and reclamation on on vacant land	-		External, Economic Development, Planning		Community Block Grant
BETTER	EQ-1V	Target tree preservation and planting in high-risk areas, such as low canopy cover or high urban heat indices along sidewalks, to improve air quality and walkability	-		Shade Tree Commission, Planning, Public Works		TreeVitalize Grant
BEST	EQ-1W	Join other CONNECT communities to implement transit-oriented development and inclusionary zoning in your community	CONNECT		Govt., Planning, Zoning		MAP Grant, Multimodal Trans. Fund
BEST	EQ-1X	Include precautions for disadvantaged and most vulnerable populations during heat, flooding, air quality risks	-		Zoning, Planning, Public Safety		-
BEST	EQ-1Y	Amend local zoning to broaden the array of housing types available	-		Planning, Zoning		SP Equitable Housing

CONNECT

CONGRESS OF NEIGHBORING COMMUNITIES

Climate Action Plan 2022

Appendix I: Methodology

This appendix details calculation methods and other technical information gathered and used throughout the report. This section documents, or provides contact information to learn more about, all assumptions made in the quantification of emissions inventories, forecasting, and other data.

ICLEI Process

Figure: Five Milestones for Climate Mitigation

CONNECT's Plan was developed through participation in the Pennsylvania Department of Environmental Protection's Local Climate Action Program in partnership with ICLEI – Local Governments for Sustainability, USA (ICLEI).[96] The planning process for CONNECT's Climate Action Plan followed ICLEI's Five Milestones for Climate Mitigation, pictured right. Climate action planning in CONNECT is a continuous cycle and does not stop with the development of this document. However, this Climate Action Plan represents CONNECT's first planning cycle, including the completion of the first three milestones:

Milestone 1: This section summarizes the GHG inventory and forecast
Milestone 2: This section sets reduction targets
Milestone 3: These sections outline objectives and actions

Inventory Methodology:

CONNECT's Greenhouse Gas Inventory provides an accounting of the total amount of GHGs emitted in CONNECT member communities (members as of Fall 2020) during the base year 2018. Individual municipalities that make up CONNECT also have inventory data completed and available through this process. See example info sheet in Appendix III or ask for individual summaries upon request. Inventories evaluate the emissions from all possible sources: vehicle tailpipes, energy generated from fossil fuels, natural gas burned in homes and businesses, decomposing waste, etc. All of these activities and sources release various greenhouse gas emissions into the atmosphere, contributing to climate change. The various gases, each with different warming effects on the atmosphere, are normalized into a universally applicable standard, CO_2e.

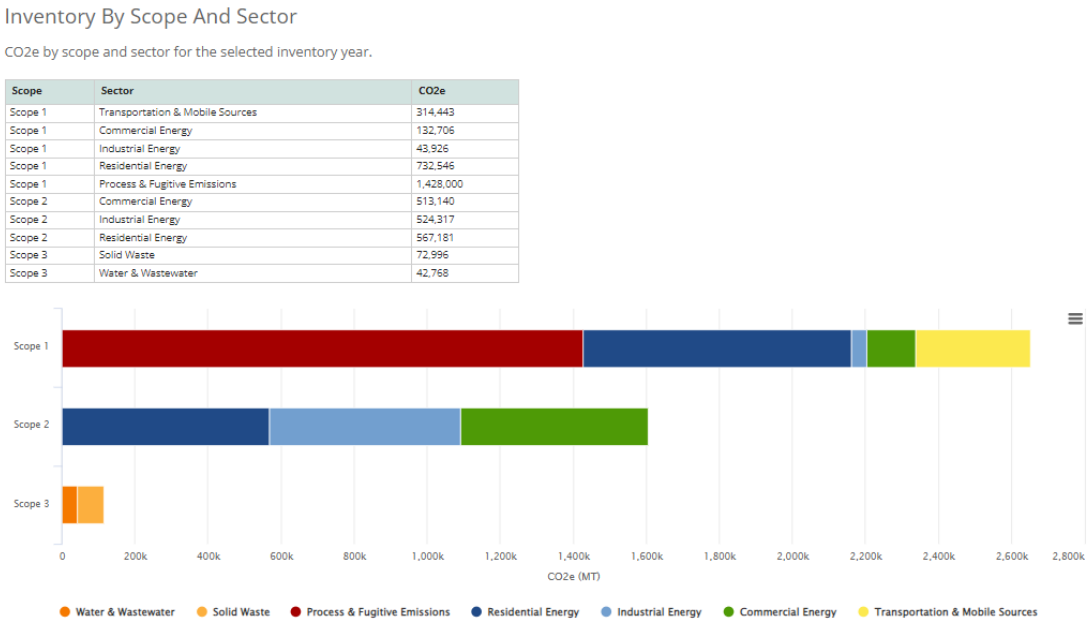
CONNECT's full GHG inventory detailed report, generated from ClearPath, is accessible through this link. However, individual local government inventories contained within CONNECT's full inventory are not included. Instead, emissions summaries by municipality are provided in Appendix III. For a full individual community report like CONNECT's, and any other data needs, please reach out to ejr73@pitt.edu.

General Notes/Protocol/Scopes:

- CONNECT's 2018 inventory is consistent with ICLEI's U.S. Community Protocol Reporting Framework that requires an inventory of emissions from the following five Basic Emissions Generating Activities (BEGAs)
    - Use of electricity by the community
    - Use of fuel in residential and commercial stationary combustion equipment

- On-road passenger and freight motor vehicle travel
- Use of energy in potable water and wastewater treatment and distribution
- Generation of solid waste by the community

- CONNECT's inventory includes emissions data for all of the above, and a few additional emissions sources relevant to CONNECT communities (water/wastewater treatment process emissions, industrial process emissions, estimated fugitive emissions from local natural gas distribution). CONNECT's GHG emissions activity data sources cover all three GHG scopes; scopes 1, 2, 3. Detailed below.
  - Scope 1 – direct emissions from sources located within a CONNECT communities boundaries (e.g., smoke stacks or tailpipes that release emissions within the community)
  - Scope 2 – indirect energy-related emissions occurring as a consequence of energy use (e.g., the use of purchased or acquired electricity regardless of where the energy is generated)
  - Scope 3 – other indirect emissions not covered in scope 2 that occur outside CONNECT's boundaries as a result of activities taking place within CONNECT's boundaries (e.g., methane release from CONNECT solid waste sent to landfills, and downstream emissions from the management of water and wastewater). Embodied emissions from extraction and production of fuels and materials are not included in this inventory.



Scope	Sector	CO2e
Scope 1	Transportation & Mobile Sources	314,443
Scope 1	Commercial Energy	132,706
Scope 1	Industrial Energy	43,926
Scope 1	Residential Energy	732,546
Scope 1	Process & Fugitive Emissions	1,428,000
Scope 2	Commercial Energy	513,140
Scope 2	Industrial Energy	524,317
Scope 2	Residential Energy	567,181
Scope 3	Solid Waste	72,996
Scope 3	Water & Wastewater	42,768

Figure: CONNECT's emissions inventory by scope and sector

Inventory Process

1. Retrieving activity data – CONNECT requested activity data from utilities, haulers, and other service providers on behalf of its municipalities. Data authorization and request forms were sent and received to collect all necessary information from utilities that serve each community. The raw data was collected from respective service providers

across all relevant sectors (Electricity use, gas use, water use, waste, transportation, etc.). See notes below for details on each sector.

2. Master Data Workbook (MDW) – Activity data and activity estimates from above were then organized into CONNECT's Master Data Workbook, an excel based sheet to keep track of each of CONNECT's governments respective activity data received from utilities. The first two tabs of the workbook provide an overview of the project information, describe all of the following workbook tabs, and organize inventory-specific parameters. The rest of the MDW contains separate tabs for all of the different emissions-generating sectors, and each tab includes tables that were designed to organize data for specific emissions sources. Tabs were designed to mirror ClearPath (see below) for ease of reporting and calculation. Each community's information in this workbook reflects the data that serves as the basis for their individual inventory. A CONNECT total column sums the activity data for each individual community in each sector to generate a CONNECT total. This aggregate total reflects the data that serves as the basis for CONNECT's official inventory. Refer to MDW for full data.
3. Entry into ICLEI's ClearPath Tool – Individual and aggregate activity data and activity estimates from above were then entered into ICLEI's ClearPath Tool, an emissions calculation and accounting software, in partnership with the PA Department of Environmental Protection. This takes the raw electricity/gas/transportation etc. activity data from utilities in your community and calculates how much greenhouse gases are associated with those activities. Using emissions factors or multipliers, ClearPath calculates the total gases released in a common reporting standard, MTCO2e or metric tons carbon dioxide equivalent, using the IPCC's 5th Assessment Global Warming Potentials. A list of emissions factor sets used in CONNECT's Inventory within ICLEI, as well as the sources for these factors, are provided in the MDW. As there are numerous calculations and factors that go into determining CO2 from any one activity, many organizations and governments use ICLEI's ClearPath or a similar tool to calculate their emissions. The sum of these calculations is your community's total carbon dioxide emissions, as presented in the ClearPath tool, and summarized in CONNECT's Official Inventory.

Note that any differences in emissions using CONNECT's aggregate total inventory record seen in the MDW, and a summary of individual community inventories outputs from ClearPath are primarily due to rounding error and incorporation of 2017 inventory data for select communities. Additionally, individual community totals may change depending on inclusion of sources such as pass-through traffic or industrial process sources, manual updating of inventory records, or automatically updated factor sets within the ClearPath Tool.

Inventory Process – Details By Sector/Source

Activity data collection methodology, assumptions, etc. by sector. The information below is also documented in CONNECT's (as well as individual communities) ClearPath accounts.

- Electricity (Residential, Commercial, Industrial) – Electricity consumption activity data was provided by utilities that serve each CONNECT community (Duquesne Light Co. & First Energy). Activity data used in CONNECT's total is the sum of measured usage utility data for each CONNECT local government in the year 2018. Electricity emissions from strictly local government operations are also embedded within the community total in the commercial sector. Communities marked with " *** " in the Master Data Workbook completed a previous GHG inventory for the year 2016 or 2017. These measured usage totals were added to the sum in the MDW and are included in this calculator. Raw data for both utilities is available in CONNECT's Master Data Workbook or from the utility upon request.
- Natural Gas (residential, commercial, industrial) – Natural gas consumption activity data provided by utilities that serve each CONNECT community (Columbia. & People's Gas). Activity data used in CONNECT's total is the

sum of measured usage utility data for each CONNECT local government in the year 2018. Total is the sum of measured usage utility data for each CONNECT local government in the year 2018. Gas emissions from strictly local government operations are also embedded within the community total in the commercial sector. Communities marked with " *** " in the Master Data Workbook completed a previous GHG inventory for the year 2016 or 2017. These measured usage totals were added to the sum in the MDW and are included in this calculator. Raw data for both utilities is available in CONNECT's Master Data Workbook or from the utility upon request.

- Transportation – CONNECT wide, the SPC provided both vehicle miles travelled for trips that begin and end within each community, and trips that pass through each community. Percentage of Cars/Light Trucks are counted as percentage gasoline, and percentage of Medium/Heavy Trucks is counted as percentage Diesel. The Origin Destination Model was used to calculate transportation emissions activity, therefore, 100% utility VMT of trips that begin or end in each community is used, while 50% utility VMT of trips that pass through each community are used. This method excludes "pass-through" traffic, as this source cannot be readily controlled by local governments. For those communities marked with an " *** ", annual VMT totals are broken down into Gasoline and Diesel, using National Default Vehicle Fuel Efficiency & Emissions Factors provided by ICLEI, and adjusted to comply with the Origin Destination model like 2018 communities. All communities VMT for each category is summed and included in this calculation. See MDW and excel workbooks for raw MPO data with calculations. Note that CONNECT's inventory does not include an explicit public transportation component, but VMT from public transportation is instead assumed to be embedded in SPC's VMT estimates, according to their modeling. VMT from strictly local government operations should also be considered embedded within the community total VMT. CONNECT possesses pass-through traffic data and port authority data on VMT of public tranpostation in each community should a community wish to integrate those. Rail, air, and waterborne traffic is not included in this inventory. Raw data for SPC is available in CONNECT's Master Data Workbook or from SPC upon request.
- Solid Waste – MSW data is collected via request from a CONNECT community's waste hauler. See excel sheet to see a list of waste haulers, both municipal and private, that serves each CONNECT community. As most haulers did not respond to repeated requests for data, CONNECT communities that did not receive measured activity data must instead use an estimate of solid waste tonnage for the year 2018. CONNECT's estimate is based on available reported 2016/2017/2018 tonnage data from a sample of 11 communities within CONNECT. Allocation to those remaining communities is based on population. Refer to excel worksheet for sample communities data and calculations. Will be updated with individual data specific to 2018 when/if waste haulers respond to requests. Commercial solid waste tonnage served by private collection companies is not included in any of CONNECT's totals. Most CONNECT communities send MSW to regional landfills, none of which are in jurisdiction – causing solid waste emissions to be considered scope 3 emissions.
- Water/Wastewater – Data for energy use from the movement of potable water is collected from PWSA, and for those communities not served by PWSA, estimated based on PWSA's average usage per municipality and adjusted for population. So as to avoid double counting, energy use for water facilities in jurisdiction are not counted in water/wastewater as their energy use is already reflected in the commercial sector. These situations are noted in the MDW. Data for energy use for the movement and treatment of wastewater, as well as emissions from the nitrification/denitrification process, wastewater discharge, and the combustion of biosolids and sludges is collected from ALCOSAN. Because CONNECT is served by ALCOSAN, whom serves multiple communities, activity data in the above categories was provided for the whole system in aggregate. Refer to the Master Data workbook for details. Values in this calculator use the "Allocation from Treatment System" table in the Master Data Workbook to allocate activity data based on individual community population. Communities marked with " *** " completed a previous GHG inventory for the year 2016/2017, and values for these communities are instead

taken from these inventories. Refer to the excel workbook sheet for raw data from ALCOSAN and calculations based on population of each community. All communities activity data are then summed in MDW and used as a CONNECT total in CONNECT's full inventory.

- Process/Fugitive – For fugitive emissions from CONNECT's natural gas distribution systems, the EPA Flight Model is used to determine People's Gas fugitive emissions, as fugitive data is directly available only for this utility. Quantity of Natgas per community (column C in MDW) is derived from the addition of residential, commercial, and industrial natural gas consumption data. Natgas used in water and wastewater is included and is split proportionally between People's Gas and Columbia Gas in cases where communities are served by both. Columbia's Gas totals are not included in this value, but are instead estimated using community gas usage (same method as above) and ICLEI's recommended national default leak rates, gas densities, and composition within ICLEI. For large industrial process emitters (currently not counted in CONNECT's official inventory, as local governments have little control, and they occur only in a handful of CONNECT's communities) the EPA Flight Model is used to collect self-reported emissions data for the year 2018 from industrial facilities. Communities with this data are noted in the MDW, at the bottom of the industrial sources tab. ICLEI recommends to focus on non-industrial sources, but for communities with very large industrial emissions it is beneficial to present the inventory both with and without those emissions. As such, CONNECT's official inventory includes these emissions, and subsequent pages exclude them for planning purposes.

Forecast Methodology:

CONNECT's GHG emissions forecast is a "Business as Usual" forecast, a scenario estimating future emissions levels through 2030 and until 2050 if no further local action is taken to reduce the measured emissions in CONNECT's GHG inventory. As population models were the best available indicator, and such are commonly used for forecasting, ICLEI protocol recommended to base CONNECT's emissions forecast for all sectors on population (i.e. Residential, Commercial, and Industrial Energy, Transportation, Water & Wastewater, Solid Waste, and Process and Fugitive forecasted emissions are solely based on expected changes in population through 2050.) Note that CONNECT's forecast is not based on the several possible future scenarios for global CO2 concentration considered by the IPCC. Should one of these worst-case scenarios become more likely, such as RCP8.5, CONNECT's forecasted emissions would likely be much higher than that found in this population-based analysis.

POPULATION CHANGE SCENARIOS USED:

CONNECT's current forecast assumes that its population will continue to experience a modest decrease until 2030, before stabilizing through 2050. Note that these are CONNECT-wide assumptions made for a business as usual forecast, and could change pending an updated or more complete projection. Because population change rates vary across CONNECT's members, CONNECT communities should refer to any municipal population projections (such as these) when forecasting their individual emissions inventories.

- Through 2030 - CONNECT's population projections to 2030 use historical Allegheny County U.S. Census data from 2010-2018, which show a 0.4% decrease over the ten-year period[97]. Through 2030, County population totals are generally projected to begin stabilizing and eventually increase[98], however, most CONNECT communities experienced a larger relative decrease compared to the County during that 2010-2018 period.[99] Therefore, it has been assumed for CONNECT's current population forecast that this trend (-0.4% decrease) will continue through 2030 rather than follow the County's current trajectory.
- Through 2050 - Two scenarios for post-2030 growth are considered in CONNECT's preliminary population forecast. The first, and the scenario currently used in CONNECT's official forecast, assumes that population decline will slow and then remain stable (no change) through 2050. The second, available in ClearPath but not

used in the current forecast, uses REMI model data to project a post-2030 population growth scenario of 10% during 2030 to 2050.[100] The 1999 REMI model is "a detailed regional econometric model purchased by UCSUR jointly with the Southwestern Pennsylvania Commission (SPC), the designated Metropolitan Planning Organization (MPO) for ten counties of Southwestern Pennsylvania."[101] Because no more recent model is available that takes into account the actual population decline experienced in the County since projections were first made, the "no change" scenario is preferred.

- Electricity Note: Emissions forecasts would typically include considerations for changes to carbon intensity of the grid over time. Carbon intensity change rates for grid electricity would ideally be based on CONNECT's specific electricity provider's (DLC) and the Public Utility Commission's (PUC) plans to change the grid mix. Upon request DLC, could not provide a generation mix, or expected generation mix of its service area. Therefore, as there are currently no default national carbon intensity change rates for grid electricity, carbon intensity of electricity is kept constant using eGrid values until otherwise noted. (NOTE: this may change with an update given by Duquesne Light following inquiry)
- Transportation Note: Emissions forecasts would typically include considerations for changes fuel standards for vehicles over time. The transportation sector is forecasted using Default Carbon Intensity Growth Rates (CAFE Standards), a rate reflective of increasing efficiencies/inefficiencies in MPG and fuel emissions factors of vehicles on the road through the inventory period. For the forecast, these standards are only applied to the "carbon intensity" of transportation, as it does not affect electricity or energy use in other sectors. This change in fuel standards applied to the forecast is the primary driver of differences in emissions between the beginning and end of the forecast period.

Targets Methodology:

When this Plan is further developed, and specific reduction actions are chosen – CONNECT's reduction targets may be modified to reflect expected emissions reductions among members from those actions. These targets are also acceptable for use in planning by individual CONNECT communities. If each community in CONNECT (regardless of size, population, or current emissions) successfully reduced their individual emissions by these amounts, CONNECT would collectively meet its 2030 and 2050 targets. For planning purposes, these targets apply to an inventory that excludes Process and Fugitive Emissions from large industrial sources, and "pass-through" traffic. (Both over which a local government has little control). The described targets would change if a local government chose to include pass through traffic, or large industrial process sources in their inventories.

As described in the "CONNECT's GHG Reduction Target" section of the main document, the short term 2030 target (30%) is based on:

- PADEP/ICLEI's requirement of at least 30% by 2030.
- Inclusivity of individual CONNECT members, those with similar reduction targets and those not yet engaged.
  - 7 communities with independent reduction targets defined
    - Ex. City of Pittsburgh – 50% by 2030, 80% by 2050 from 2003 levels
    - Ex. Borough of Etna – 25% by 2030 from 2016 levels
    - Ex. Borough of Forest Hills – 30% by 2030, net zero by 2050 from 2016 levels
  - 30+ CONNECT communities having no targets defined

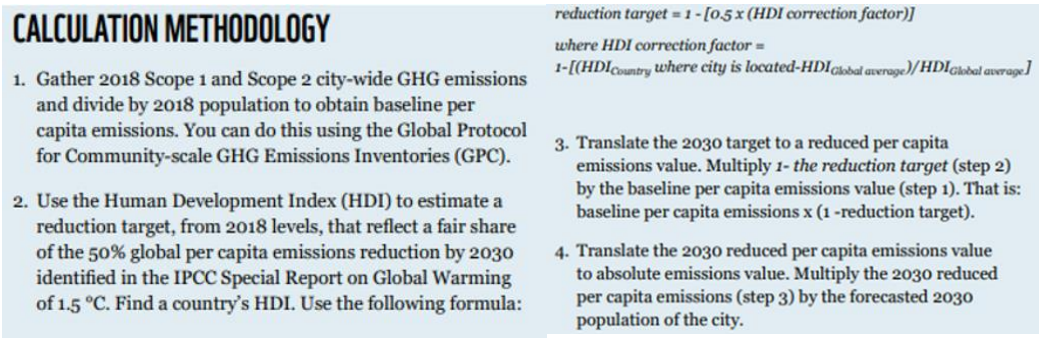
The long-term target of net-zero by 2050 is based on:

- The purpose of this Plan is to act as a resource for local governments to understand and plan for what is possible.

- The most updated scientific recommendations detailing the need to keep warming below 1.5*C.
- An ambitious, but feasible, 3% per year reduction until 2050 for local governments in the region, dependent on expected contributions from federal policies and assistance.

Alternate long-term 2050 target (65%) is based on feasibility of the above, as well as the following factors:

- Eventually meeting and exceeding CONNECT's calculated Science-Based Target (SBT) for 2030 (Part of the One Planet City Challenge) by 2050. See figure below for ICLEI's SBT calculation methodology and request the excel workbook to see calculations.
- 65% represents an ambitious, but feasible, 2% per year reduction from 2018 until 2050 for local governments in the region.
- The possibility that a number of CONNECT governments, especially high emitters, may be unlikely to make efforts at the local government level to reduce emissions within their jurisdiction. Additionally, local governments may have little control over certain emissions sources, such as large industrial process emissions, or pass through traffic, that would be required to significantly address emissions in their communiities and as a part of CONNECT – limiting CONNECT's collective ability to achieve a more ambitious target.



CALCULATION METHODOLOGY

1. Gather 2018 Scope 1 and Scope 2 city-wide GHG emissions and divide by 2018 population to obtain baseline per capita emissions. You can do this using the Global Protocol for Community-scale GHG Emissions Inventories (GPC).
2. Use the Human Development Index (HDI) to estimate a reduction target, from 2018 levels, that reflect a fair share of the 50% global per capita emissions reduction by 2030 identified in the IPCC Special Report on Global Warming of 1.5 °C. Find a country's HDI. Use the following formula:

reduction target = 1 - [0.5 x (HDI correction factor)]

where HDI correction factor =
1-[($HDI_{Country}$ where city is located-$HDI_{Global\ average}$)/$HDI_{Global\ average}$]

3. Translate the 2030 target to a reduced per capita emissions value. Multiply *1- the reduction target* (step 2) by the baseline per capita emissions value (step 1). That is: baseline per capita emissions x (1 -reduction target).
4. Translate the 2030 reduced per capita emissions value to absolute emissions value. Multiply the 2030 reduced per capita emissions (step 3) by the forecasted 2030 population of the city.

Figure: ICLEI's Calculation Methodology for One Planet City Challenge's Science Based Target

Actions Methodology:

Sources for Actions

Climate actions listed in this Plan were developed primarily from stakeholder engagement, but also are sourced from a combination of research and inspiration from local climate plans as well as PADEP's climate action plan. Stakeholder engagement included:

- CONNECT's Infrastructure & Utilities Coordination Working Group Meetings in 2020-2021 including discussions with energy, water/stormwater, and utilities partners with a focus on climate planning issues.
- Marshall Plan Alignment Meetings – link to jamboard of potential collaboration actions.
- CONNECT's Climate Subcommittee Meetings – link to jamboard of regional climate wishlist actions by sector (Contact ejr73@pitt.edu for meeting minutes of the above engagement forums)
- Additional meetings with stakeholders, members, and partners from 2020-2021.

Additional Information for Actions

High level GHG reduction potentials "🌿", co-benefits "⚖ ❤ 🌲 $", cost & difficulty "▪ ▪ ▪ ▪", and the potential to reduce climate risk for each objective and associated action are relative, and are based on research,

feasibility of reductions in that space, and/or high-level estimations of actions within ClearPath rather than specific calculations. They should not be taken as fully accurate predictions of emissions reductions or expected cost and benefits should that action be implemented. Although not included in this Plan for feasibility reasons, many actions' emission reductions can be estimated through official calculators provided in ICLEI's ClearPath tool.

Actions labelled with 

are considered climate actions that CONNECT may be able to implement in the form of a CONNECT-wide project to reduce our emissions, increase resilience, and promote equity or are actions that members may find extra benefits from when implementing together as a region. These actions were primarily recommended through stakeholder engagement.

All actions and objectives use a letter-numbering system for tracking amongst members, however, note that numbering is subject to change pending addition, removal, or reorganization of actions.

Appendix II: Climate Change Science

The following section details, in summary but by no means exhaustively, the current scientific consensus on climate change. The links below provide federal, state, and local resources for further information.

Intergovernmental Panel on Climate Change: https://www.ipcc.ch/

U.S National Oceanic and Atmospheric Administration: https://www.ncdc.noaa.gov/monitoring-references/faq/global-warming.php

National Climate Assessment report of the United States: https://nca2018.globalchange.gov/

Pennsylvania Dept. of Environmental Protection: https://www.dep.pa.gov/Citizens/climate/Pages/default.aspx

PA Climate Action Plan: https://www.dep.pa.gov/Citizens/climate/Pages/PA-Climate-Action-Plan.aspx

City of Pittsburgh Climate Action Plan: https://pittsburghpa.gov/dcp/climate-action-plan

Note: The IPCC is currently in its Sixth Assessment Cycle, during which the IPCC will produce the Assessment reports of its three Working Groups, three Special Reports, a refinement to the methodology report and the Synthesis Report. The Synthesis Report will be the last of the 6th Assessment products, due for release in September 2022. Information and references to reflect that most recent report will be updated when appropriate.[102]

The Intergovernmental Panel on Climate Change (IPCC)'s Fifth Assessment Report affirms that "warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level"[103]. Researchers have made progress in their understanding of how the Earth's climate is changing in space and time through improvements and extensions of numerous datasets and data analyses, broader geographical coverage, better understanding of uncertainties, and a wider variety of measurements.[104] These refinements expand upon the findings of previous IPCC Assessments – today, observational evidence from all continents and most oceans shows that "regional changes in temperature have had discernible impacts on physical and biological systems"[105].

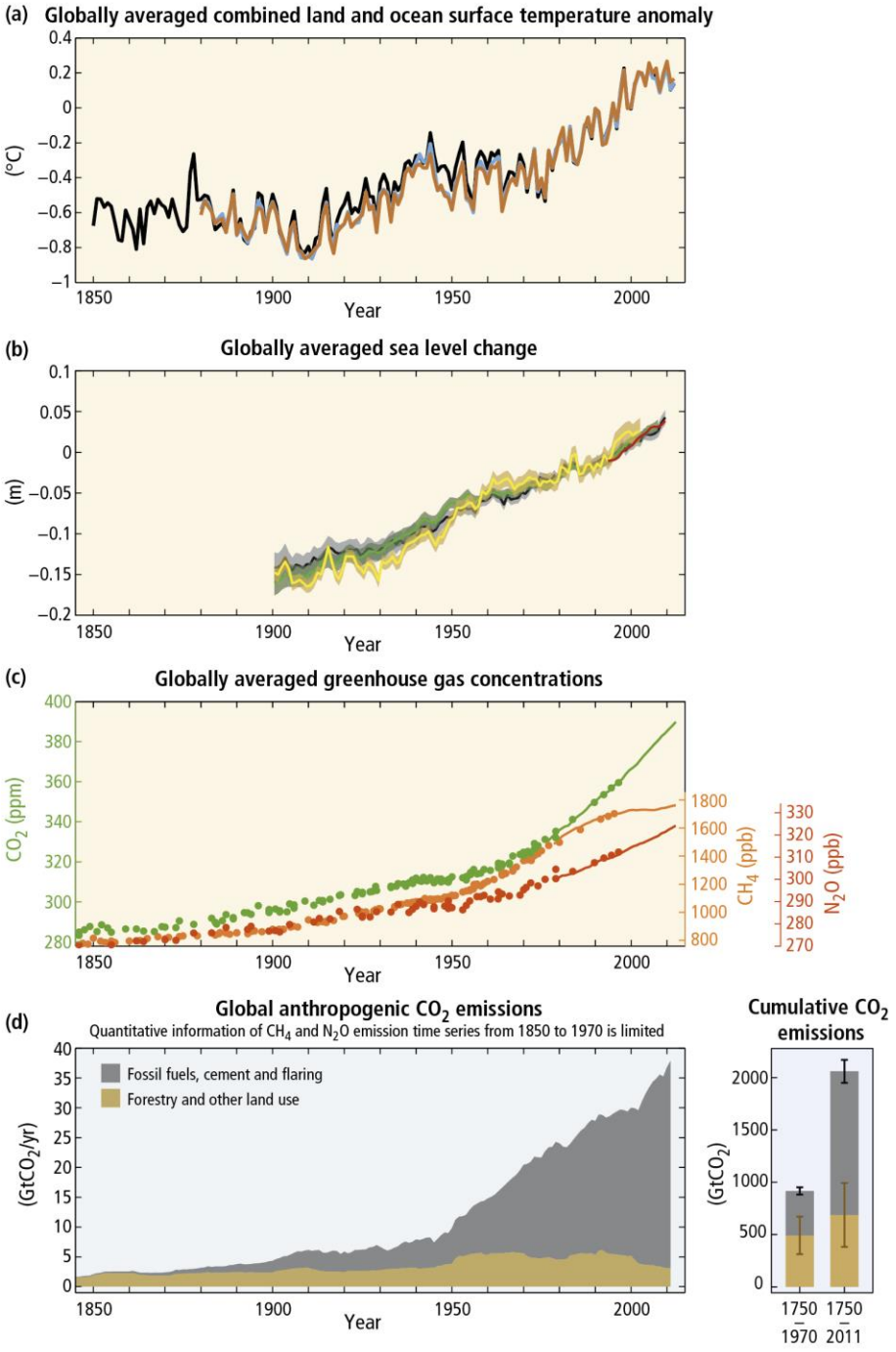


Figure: Observations and other indicators of a changing global climate system

The Fifth Assessment also asserts that "it is *extremely likely* that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in GHG concentrations and other anthropogenic forcings together. Globally, economic and population growth continued to be the most important drivers of increases in CO2 emissions from fossil fuel combustion. Changes in many extreme weather and climate events have been observed since about 1950. Some of these changes have been linked to human influences, including a decrease in cold temperature extremes, an increase in warm temperature extremes, an

increase in extreme high sea levels and an increase in the number of heavy precipitation events in a number of regions"[106].

In short, the Earth is already responding to climate change drivers introduced by mankind.

Temperatures and Extreme Events are Increasing Globally

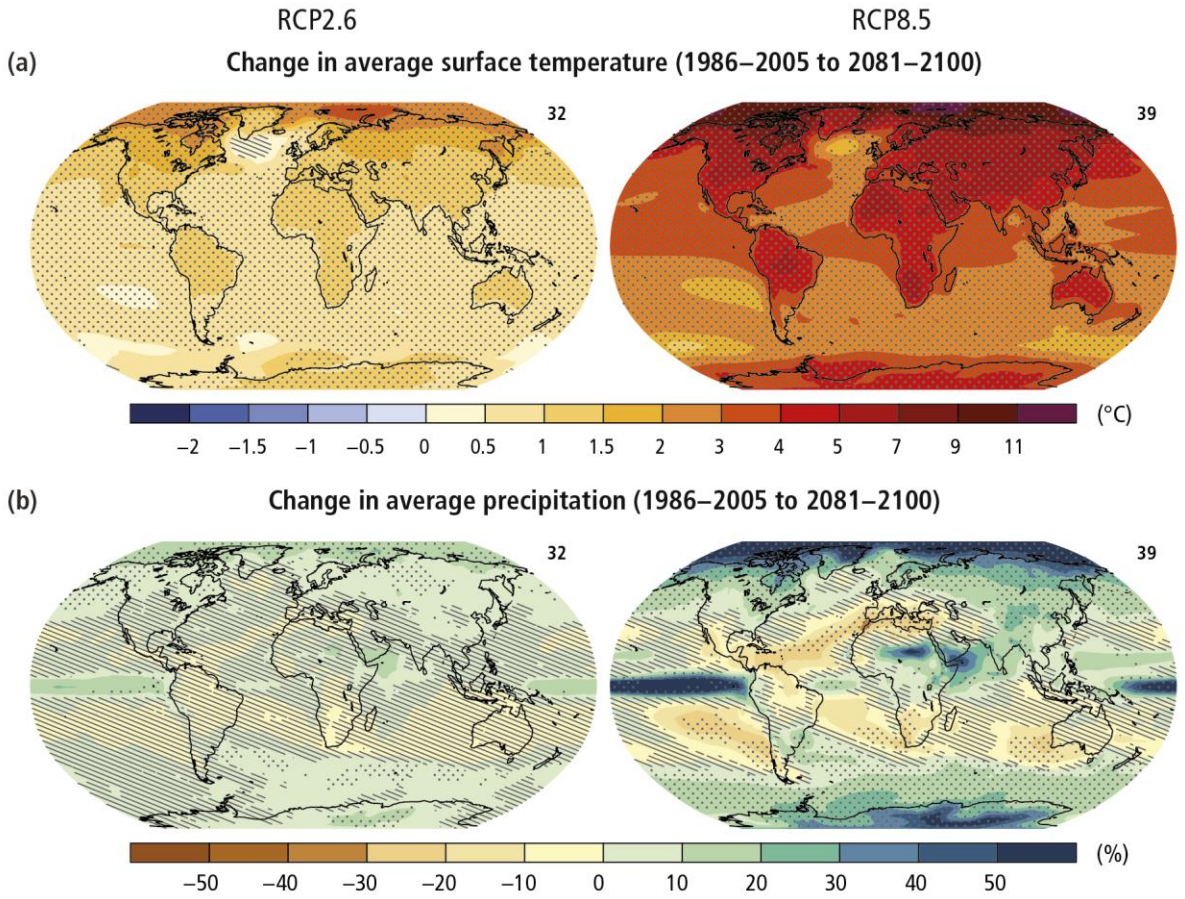


Figure: Change in average surface temperature (a) and change in average precipitation (b) based on multi-model mean projections for 2081–2100 relative to 1986–2005 under the RCP2.6 (left) and RCP8.5 (right) scenarios.

Surface temperature is projected to rise over the 21st century under all assessed emission scenarios. It is very likely that heat waves will occur more often and last longer, and that extreme precipitation events will become more intense and frequent in many regions. The ocean will continue to warm and acidify, and global mean sea level to rise. Changes in many extreme weather and climate events have been observed since about 1950. Some of these changes have been linked to human influences, including a decrease in cold temperature extremes, an increase in warm temperature extremes, an increase in extreme high sea levels and an increase in the number of heavy precipitation events in a number of regions.[107]

Climate Risks

Climate change is projected to undermine food security. Due to projected climate change by the mid-21st century and beyond, global marine species redistribution and marine biodiversity reduction in sensitive regions will challenge the sustained provision of fisheries productivity and other ecosystem services. For wheat, rice and maize

in tropical and temperate regions, climate change without adaptation is projected to negatively impact production for local temperature increases of 2°C or more above late 20th century levels, although individual locations may benefit. Global temperature increases of ~4°C or more above late 20th century levels, combined with increasing food demand, would pose large risks to food security globally. Climate change is projected to reduce renewable surface water and groundwater resources in most dry subtropical regions, intensifying competition for water among sectors.

Until mid-century, projected climate change will impact human health mainly by exacerbating health problems that already exist. Throughout the 21st century, climate change is expected to lead to increases in ill-health in many regions and especially in developing countries with low income, as compared to a baseline without climate change. Health impacts include greater likelihood of injury and death due to more intense heat waves and fires, increased risks from foodborne and waterborne diseases and loss of work capacity and reduced labor productivity in vulnerable populations. Risks of undernutrition in poor regions will increase. Risks from vector-borne diseases are projected to generally increase with warming, due to the extension of the infection area and season, despite reductions in some areas that become too hot for disease vectors.

In urban areas, climate change is projected to increase risks for people, assets, economies and ecosystems, including risks from heat stress, storms and extreme precipitation, inland and coastal flooding, landslides, air pollution, drought, water scarcity, sea level rise and storm surges. These risks are amplified for those lacking essential infrastructure and services or living in exposed areas. Rural areas are expected to experience major impacts on water availability and supply, food security, infrastructure and agricultural incomes, including shifts in the production areas of food and non-food crops around the world.

Climate change is projected to increase displacement of people. Populations that lack the resources for planned migration experience higher exposure to extreme weather events, particularly in developing countries with low income. Climate change can indirectly increase risks of violent conflicts by amplifying well-documented drivers of these conflicts such as poverty and economic shocks[108].

Greenhouse Gas Emissions Must be Reduced

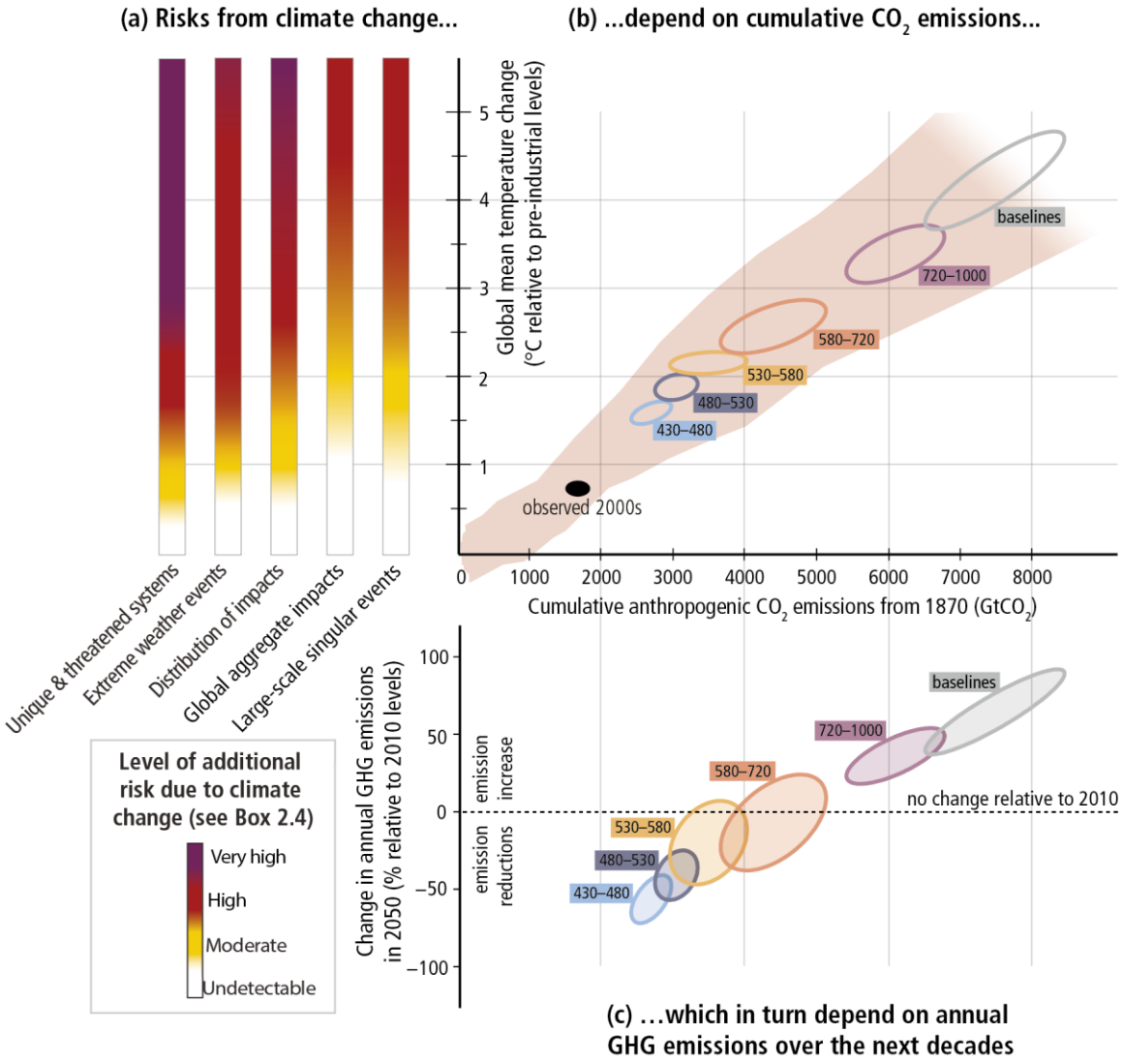


Figure: The relationship between risks from climate change, temperature change, cumulative carbon dioxide (CO2) emissions and changes in annual greenhouse gas (GHG) emissions by 2050.

Limiting risks across Reasons For Concern (a) would imply a limit for cumulative emissions of CO2 (b) which would constrain annual GHG emissions over the next few decades (c). Panel A reproduces the Five Reasons For Concern. Panel B links temperature changes to cumulative CO2 emissions (in GtCO2) from 1870. They are based on Coupled Model Intercomparison Project Phase 5 simulations (pink plume) and on a simple climate model (median climate response in 2100), for the baselines and five mitigation scenario categories (six ellipses). Panel C shows the relationship between the cumulative CO2 emissions (in GtCO2) of the scenario categories and their associated change in annual GHG emissions by 2050, expressed in percentage change (in percent GtCO2-eq per year) relative to 2010. The ellipses correspond to the same scenario categories as in Panel B, and are built with a similar method.[109]

The recent and massive buildup of greenhouse gases in our atmosphere is conceivably even more extraordinary than changes observed thus far regarding temperature, sea level, and snow cover in the Northern hemisphere - in

that current levels greatly exceed recorded precedent going back much further than the modern temperature record.

Anthropogenic greenhouse gas emissions have increased since the pre-industrial era driven largely by economic and population growth. From 2000 to 2010, emissions were the highest in history. Historical emissions have driven atmospheric concentrations of carbon dioxide, methane and nitrous oxide to levels that are unprecedented in at least the last 800,000 years, leading to an uptake of energy by the climate system.[110]

In response to the problem of climate change, many communities in the United States are taking responsibility for addressing emissions at the local level. Since many of the major sources of greenhouse gas emissions are directly or indirectly controlled through local policies, local governments have a strong role to play in reducing greenhouse gas emissions within their boundaries. Through proactive measures around land use patterns, transportation demand management, energy efficiency, green building, and waste diversion, local governments can dramatically reduce emissions in their communities. In addition, local governments are primarily responsible for the provision of emergency services and the mitigation of natural disaster impacts. While this Plan is designed to reduce overall emissions levels, as the effects of climate change become more common and severe, local government adaptation policies will be fundamental in preserving the welfare of residents and businesses.

Appendix III: Supplementary Data

CONNECT Communities Emissions Summaries(tons CO2e):

CONNECT Community Summaries

		Residential Energy		Residential Energy Total	Residential Energy Total	Residential Energy Total	Commercial Energy		Commercial Energy Total	Commercial Energy Total	Commercial Energy Total
Municipality	Population 2018	Electricity	Natural Gas		%	per capita	Electricity	Natural Gas		%	per capita
Aspinwall	2707	5,751	7,315	13,066	67%	4.8	2,122	1,537	3,659	19%	1.4
Baldwin	1934	3,708	4,289	7,997	62%	4.1	1,019	977	1,996	15%	1.0
Bellevue	8076	15,232	18,165	33,397	54%	4.1	11,197	7,867	19,064	31%	2.4
Brentwood	9314	16,939	22,323	39,262	62%	4.2	10,379	3,818	14,197	22%	1.5
Carnegie	7844	16,330	17,446	33,776	57%	4.3	10,672	3,728	14,400	24%	1.8
Castle Shannon	8256	14,518	13,844	28,362	47%	3.4	14,664	7,653	22,317	37%	2.7
Churchill	2936	7,800	12,851	20,651	72%	7.0	4,049	152	4,201	15%	1.4
Clairton	6574	11,319	17,793	29,112	36%	4.4	6,178	2,854	9,032	11%	1.4
Collier	8036	12,047	19,630	31,677	17%	3.9	25,190	4,188	29,378	16%	3.7
Crafton	5800	11,631	16,021	27,652	64%	4.8	8,029	1,646	9,675	22%	1.7
Dormont	8321	15,074	22,057	37,131	63%	4.5	8,781	4,842	13,623	23%	1.6
Duquesne	5541	9,816	13,085	22,901	55%	4.1	7,994	1,905	9,899	24%	1.8
Edgewood	3020	6,457	10,890	17,347	61%	5.7	6,868	626	7,494	27%	2.5
Etna	3324	6,549	7,191	13,740	44%	4.1	4,627	2,262	6,889	22%	2.1
Forest Hills	6328	12,869	19,379	32,248	63%	5.1	9,215	2,163	11,378	22%	1.8
Fox Chapel	5099	19,732	22,911	42,643	76%	8.4	4,620	288	4,908	9%	1.0
Green Tree	4854	13,568	10,718	24,286	28%	5.0	39,904	6,884	46,788	55%	9.6
Heidelberg	1213	2,630	3,102	5,732	63%	4.7	1,156	711	1,867	21%	1.5
Homestead	3163	5,357	7,919	13,276	28%	4.2	22,179	2,233	24,412	52%	7.7
Ingram	3214	6,714	8,176	14,890	74%	4.6	2,021	349	2,370	12%	0.7
Jefferson Hills	11132	17,078	21,540	38,618	46%	3.5	23,464	2,275	25,739	30%	2.3
McKees Rocks	5884	10,440	12,899	23,339	46%	4.0	10,264	5,855	16,119	32%	2.7
Millvale	3680	6,725	7,094	13,819	48%	3.8	5,151	2,229	7,380	26%	2.0
Mt. Lebanon	32505	66,026	75,619	141,645	53%	4.4	52,714	22,415	75,129	28%	2.3
Munhall	11046	30,868	22,948	53,816	54%	4.9	14,873	4,893	19,766	20%	1.8
Reserve	3283	6,123	8,125	14,248	78%	4.3	812	268	1,080	6%	0.3
Ross	30705	63,315	70,530	133,845	47%	4.4	69,280	11,251	80,531	28%	2.6
Shaler	28213	47,147	79,524	126,671	64%	4.5	19,801	4,281	24,082	12%	0.9
Sharpsburg	3334	3,692	6,977	10,669	43%	3.2	4,287	2,883	7,170	29%	2.2
Swissvale	8691	16,240	25,494	41,734	71%	4.8	5,586	2,014	7,600	13%	0.9
West Homestead	1874	5,745	4,075	9,820	28%	5.2	15,706	4,309	20,015	56%	10.7
West Mifflin	19681	37,162	43,817	80,979	14%	4.1	54,630	7,303	61,933	11%	3.1
West View	6550	12,185	16,099	28,284	64%	4.3	5,974	1,843	7,817	18%	1.2
Wilkins	6250	12,974	17,105	30,079	51%	4.8	17,888	1,248	19,136	33%	3.1
Wilkinsburg	15366	30,044	45,578	75,622	65%	4.9	21,619	2,949	24,568	21%	1.6

CONNECT Community Summaries												
		Industrial Energy		Industrial Energy Total	Industrial Energy Total	Industrial Energy Total	Transportation & Mobile Sources		Transportation & Mobile Sources Total	Transportation & Mobile Sources Total	Transportation & Mobile Sources Total
Municipality	Population 2018	Electricity	Natural Gas		%	per capita	Diesel	Gasoline		%	per capita
Aspinwall	2707	0	0	0	0%	0.0	173	955	1,128	6%	0.4
Baldwin	1934	59	0	59	0%	0.0	277	1,574	1,851	14%	1.0
Bellevue	8076	2,789	0	2,789	5%	0.3	261	1,947	2,208	4%	0.3
Brentwood	9314	0	0	0	0%	0.0	605	4,811	5,416	9%	0.6
Carnegie	7844	0	116	116	0%	0.0	1,000	5,769	6,769	11%	0.9
Castle Shannon	8256	102	0	102	0%	0.0	779	4,331	5,110	9%	0.6
Churchill	2936	0	0	0	0%	0.0	272	2,187	2,459	9%	0.8
Clairton	6574	34,637	18	34,655	43%	5.3	567	4,088	4,655	6%	0.7
Collier	8036	60,066	41,325	101,391	55%	12.6	3,127	14,683	17,811	10%	2.2
Crafton	5800	866	0	866	2%	0.1	274	1,924	2,198	5%	0.4
Dormont	8321	0	0	0	0%	0.0	462	3,191	3,653	6%	0.4
Duquesne	5541	2,970	30	3,000	7%	0.5	387	2,382	2,769	7%	0.5
Edgewood	3020	0	0	0	0%	0.0	226	1,402	1,628	6%	0.5
Etna	3324	2,470	1,006	3,476	11%	1.0	1,633	3,996	5,630	18%	1.7
Forest Hills	6328	59	0	59	0%	0.0	984	3,896	4,880	10%	0.8
Fox Chapel	5099	0	0	0	0%	0.0	605	5,297	5,902	10%	1.2
Green Tree	4854	1,167	34	1,201	1%	0.2	2,105	8,391	10,496	12%	2.2
Heidelberg	1213	198	0	198	2%	0.2	59	413	472	5%	0.4
Homestead	3163	2,580	0	2,580	5%	0.8	1,052	3,865	4,917	10%	1.6
Ingram	3214	0	0	0	0%	0.0	99	987	1,086	5%	0.3
Jefferson Hills	11132	2,182	1,300	3,482	4%	0.3	1,727	10,624	12,351	15%	1.1
McKees Rocks	5884	4,520	15	4,535	9%	0.8	612	3,099	3,711	7%	0.6
Millvale	3680	234	2	236	1%	0.1	1,594	3,969	5,563	19%	1.5
Mt. Lebanon	32505	0	0	0	0%	0.0	4,947	28,039	32,986	12%	1.0
Munhall	11046	14,757		14,757	15%	1.3	1,847	4,873	6,720	7%	0.6
Reserve	3283	20	0	20	0%	0.0	94	1,156	1,251	7%	0.4
Ross	30705	3,799	0	3,799	1%	0.1	9,275	41,950	51,226	18%	1.7
Shaler	28213	5,817	1	5,818	3%	0.2	3,387	27,717	31,104	16%	1.1
Sharpsburg	3334	433		433	2%	0.1	1,473	3,858	5,331	21%	1.6
Swissvale	8691	1,151	4	1,155	2%	0.1	483	3,162	3,646	6%	0.4
West Homestead	1874	576	2	578	2%	0.3	835	2,201	3,036	9%	1.6
West Mifflin	19681	396,485	74	396,559	68%	20.1	5,678	29,497	35,175	6%	1.8
West View	6550	1,325	0	1,325	3%	0.2	408	2,912	3,319	8%	0.5
Wilkins	6250	640	0	640	1%	0.1	799	4,618	5,417	9%	0.9
Wilkinsburg	15366	364	0	364	0%	0.0	1,120	7,540	8,660	7%	0.6

CONNECT Community Summaries																	
		Solid Waste		Solid Waste Total	Solid Waste Total	Solid Waste Total	Water & Wastewater			Water & Wastewater Total	Water & Wastewater Total	Water & Wastewater Total	Process & Fugitive Emissions	Process & Fugitive Emissions Total	Process & Fugitive Emissions Total	Process & Fugitive Emissions Total	Grand Total
Municipality	Population 2018	Other	Waste Sent to Landfill		%	per capita	Fugitive Emissions	Wastewater Energy	Water Supply Energy		%	per capita	Other		%	per capita	
Aspinwall	2707		786	786	4%	0.3	40	161	228	429	2%	0.2	318	318	2%	0.1	19,386
Baldwin	1934		610	610	5%	0.3	25	115	168	308	2%	0.2	62	62	0%	0.0	12,883
Bellevue	8076		2,009	2,009	3%	0.2	122	482	681	1,285	2%	0.2	853	853	1%	0.1	61,605
Brentwood	9314		2,291	2,291	4%	0.2	141	556	813	1,510	2%	0.2	899	899	1%	0.1	63,575
Carnegie	7844		1,956	1,956	3%	0.2	120	468	672	1,259	2%	0.2	764	764	1%	0.1	59,040
Castle Shannon	8256		2,050	2,050	3%	0.2	123	492	701	1,316	2%	0.2	704	704	1%	0.1	59,961
Churchill	2936		620	620	2%	0.2	43	175	247	464	2%	0.2	466	466	2%	0.2	28,861
Clairton	6574		1,667	1,667	2%	0.3	100		573	673	1%	0.1	916,866	916,866	92%	139.5	996,660
Collier	8036		2,000	2,000	1%	0.2	121	479	597	1,197	1%	0.1	49,936	49,936	21%	6.2	233,390
Crafton	5800		1,459	1,459	3%	0.3	87	346	501	933	2%	0.2	634	634	1%	0.1	43,417
Dormont	8321		2,065	2,065	4%	0.2	124	496	724	1,343	2%	0.2	902	902	2%	0.1	58,717
Duquesne	5541		1,409	1,409	3%	0.3	83	331	467	881	2%	0.2	539	539	1%	0.1	41,398
Edgewood	3020		857	857	3%	0.3	43	180	254	477	2%	0.2	413	413	1%	0.1	28,216
Etna	3324	1,096	46	1,142	0%	0.3	35	216		251	1%	0.1	305	305	1%	0.1	31,433
Forest Hills	6328		1,848	1,848	4%	0.3		789		789	2%	0.1			0%	0.0	51,202
Fox Chapel	5099		1,331	1,331	2%	0.3	79	304	430	813	1%	0.2	831	831	1%	0.2	56,428
Green Tree	4854		1,275	1,275	1%	0.3	68	290	373	730	1%	0.2	585	585	1%	0.1	85,361
Heidelberg	1213		445	445	5%	0.4	19	72	105	197	2%	0.2	131	131	1%	0.1	9,042
Homestead	3163		890	890	2%	0.3	45	189	267	500	1%	0.2	364	364	1%	0.1	46,939
Ingram	3214		901	901	4%	0.3	45	192	281	517	3%	0.2	306	306	2%	0.1	20,070
Jefferson Hills	11132		2,705	2,705	3%	0.2	165	664	895	1,725	2%	0.2	30,506	30,506	26%	2.7	115,126
McKees Rocks	5884		1,509	1,509	3%	0.3	85	351	496	933	2%	0.2	624	624	1%	0.1	50,770
Millvale	3680		1,319	1,319	5%	0.4	36	235		271	1%	0.1			0%	0.0	28,588
Mt. Lebanon	32505		7,340	7,340	3%	0.2	480	1,939	2,792	5,211	2%	0.2	3,296	3,296	1%	0.1	265,607
Munhall	11046	44	2,028	2,072	2%	0.2	115	981	677	1,773	2%	0.2			0%	0.0	98,904
Reserve	3283		917	917	5%	0.3	46	196	277	519	3%	0.2	301	301	2%	0.1	18,336
Ross	30705		7,164	7,164	3%	0.2	456	1,832	2,587	4,875	2%	0.2	2,908	2,908	1%	0.1	284,348
Shaler	28213		6,597	6,597	3%	0.2	417	1,683		2,099	1%	0.1	3,005	3,005	2%	0.1	199,376
Sharpsburg	3334		940	940	4%	0.3	31	141		172	1%	0.1	322	322	1%	0.1	25,037
Swissvale	8691		1,987	1,987	3%	0.2	127	518	732	1,377	2%	0.2	987	987	2%	0.1	58,486
West Homestead	1874	851	420	1,271	1%	0.7	18	154	297	468	1%	0.2	244	244	1%	0.1	35,432
West Mifflin	19681		4,653	4,653	1%	0.2	291		1,712	2,004	0%	0.1	404,506	404,506	41%	20.6	985,809
West View	6550		1,661	1,661	4%	0.3	100	391	552	1,043	2%	0.2	644	644	1%	0.1	44,093
Wilkins	6250		1,593	1,593	3%	0.3	89	373	527	988	2%	0.2	658	658	1%	0.1	58,511
Wilkinsburg	15366		2,713	2,713	2%	0.2	228	917	1,295	2,440	2%	0.2	1,741	1,741	1%	0.1	116,108

*Shaded cells are conditionally formatted using max and min values in each column. All population data is from 2018 ACS Census Data[111].

Communication Tools

The purpose of this page is to help elected and appointed officials/as well as residents and other stakeholders activate their community around the CONNECT Climate Plan, a local community climate action plan, or the climate issues they care about. Communities are encouraged to use sections of this Plan and will have access to other materials posted on the connect website for this purpose.

Use These Sections of the Plan

Sections of the Plan & Brief that are especially helpful to communicating to your residents on this issue:

Custom Emissions Summary:

A 1-Page summary of your community's individual impact on emissions & what areas to target.

Co-Benefits Section:

To provide readers with facts & studies that support the benefits of climate action in our communities

Survey Results Page:

See what CONNECT residents think about climate change & your individual community's feedback

Other Materials / Social Media Toolkit

Other useful CONNECT materials that are especially helpful to communicating to your residents/local government officials on this issue. Note that this section will be updated Summer 2022 with additional materials:

"Why CONNECT Acts on Climate Change" Video:

A short video showcasing local government official's perspectives on the importance of local climate action, the necessity of regional collaboration on this topic, and how CONNECT can help local governments in this space.

"What Is CONNECT & How to Get Involved with Local Climate Planning" Slides:

PowerPoint Slides to review or modify that inform stakeholders about CONNECT and how to get started with climate planning if you are a local government or resident in Allegheny County. Credit CONNECT.

Social Media Toolkit Coming Soon Summer 2022:

A toolkit for local governments to raise awareness about the CAP, guide municipalities on how to share info with their residents, and provide example social media that educates and creates dialogue.

Example CONNECT Community Info Sheet:

Reach out to ejr73@pitt.edu to receive your community's indivual data sheet to distribute to residents/council.

Aspinwall's 2018 Greenhouse Gas Emissions Inventory

What are greenhouse gases?

Greenhouse gases, such as CO_2, are released from our communities as a result of fossil fuel combustion from energy use, heating, and transportation. These gases trap heat and contribute to climate change.

Why does it matter?

Climate change is already impacting our natural systems, infrastructure, and energy prices. For our region, climate change will continue to impact local air quality, cause more flooding events, more severe heat waves, and more landslides.

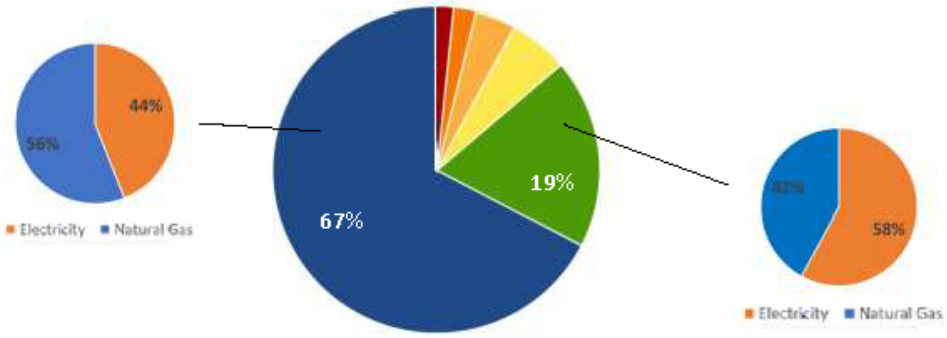
Why Does Aspinwall matter?

Each community's emissions add up. Collectively, CONNECT members emit as much CO_2 every year as the entire city of Pittsburgh. Emissions also do not stay within your borders. Every year, each ton of CO2 released is estimated to result in 46$ in local and global damages. Your community has the opportunity to contribute to a regional plan to reduce our greenhouse-gas emissions, improve our air quality and our resilience, and slow the effects of climate change.

Aspinwall's 2018 Total Emissions: 19,398 tons of CO_2e

Emissions Per Capita: 7 tons; 3.5x the international recommendation to slow warming

Aspinwall's Carbon Dioxide Emissions by Source



Reducing Emissions:

Each community's breakdown is different. In high emissions areas, like residential and commercial energy, local actions such as efficiency improvements and solar installation will have the greatest impact. Projects in green infrastructure, materials management, and electric transportation can also help to meet your community's emissions reduction goals. Actions also promote equity, improve health, and generate cost savings for Aspinwall.

CONNECT
Congress of Neighboring Communities

To learn more about your inventory, to discover where to act, or to set up a meeting with us, reach out to CONNECT's Regional Climate Plan Coordinator at ejr73@pitt.edu

CONNECT's Goals:

Climate plans help local governments choose, strategize around, and implement these actions for their communities. CONNECT has resolved to craft a regional plan that coordinates and elevates our individual efforts. CONNECT wants to help facilitate climate action, emissions reductions, and other sustainability projects in your community by being a a forum for municipal coordination and capacity building around this issue.

Regional Climate Survey Results (Distributed June 2021 – April 2022)

Access the live results here: https://ql.tc/dC4Wim

For results specific to a community or for a survey template, reach out to ejr73@pitt.edu.

CONNECT REGIONAL CLIMATE SURVEY

What Our Residents Think About Climate Change

A successful climate action plan ensures that all stakeholders have a part in shaping it. In the summer of 2021, CONNECT launched a corresponding survey to all residents in Allegheny County to garner feedback on their concerns, priorities, and ideas on how our local governments can address the effects of climate change.

Since then...

1,484 people have completed the survey in Allegheny County*

1,123 are residents of CONNECT communities

34% of respondents are under 40

18% of respondents are over 65

8% of respondents are nonwhite

Along with over **800** (844) responses from similar surveys by our local governments:

Carnegie **Etna** **Forest Hills** **Sharpsburg** **Swissvale**

CONNECT and its members have consulted over

2,000 residents on climate action in our region.

Our communities are in consensus on what they'd like to see

TOP 10 COMMUNITY PRIORITIES

1. Improve **regional & indoor air quality**.
2. Build up local **recycling/composting** infrastructure.
3. Build **green stormwater infrastructure** and encourage water management.
4. Expand existing local **public transportation.**
5. Incentivize business **energy efficiency improvements.**
6. Expand local **tree planting** and urban tree canopy.
7. Work with **communities uphill in our watershed** to build better storm water infrastructure.
8. Incentivize **residential energy efficiency** improvements.
9. Adopt more sustainable local development **zoning policies**.
10. Highlight and negotiate cheaper **green power purchasing** options.

Community Concerns

Survey responses showed several areas of high priority for our community members:

Air Quality

Over **75%** of respondents are concerned with poor air quality. A third **(32%)** have or know someone with a respiratory condition.

Flooding

Over **60%** are concerned about flooding. Over **31%** have experienced flooding in their home.

Landslides

Over **60%** are concerned about landslides. **18%** have experienced erosion or landslides around their home.

Environmental Justice

74% of respondents are concerned about environmental justice. Non-white residents report higher concern for certain vulnerabilities, such as poor air quality.

CONNECT
CONGRESS OF NEIGHBORING COMMUNITIES

*Results reflect completed responses received as of closure of the survey on 4/29/2022.
Thank you to those who completed the survey and to our CONNECT communities who shared their survey results with us.
Contact EJR73@pitt.edu for your community's individual results (if available).

Regional Climate Survey Results (Distributed June 2021 – April 2022)

HOW TO ADDRESS COMMUNITY CONCERNS

Where do we go from here?

In addition to the top 10 concern areas for citizens, survey respondents highlights several ways that their local governments can better serve them and the environment, including:

#1 Partner with other governments to bring energy efficiency services to our community.

#2 Provide information about local, state, and federal energy efficiency funding programs.

#3 Add public charging stations.

#4 Publicize local, state, and federal solar incentives and tax credits for homeowners.

#5 Publicize local, state, and federal EV purchasing incentives and tax credits.

What residents are saying:

"It's cost prohibitive right now to do most of these things, both individually as a resident and as a business. We need more incentive programs!!"

"Solar panels should be put on all municipal buildings, and there should be incentives for people of the community to do so as well."

"Transportation is huge for this. Expanding alternative forms of transportation and ensuring safety is important. Connecting multiple transportation options and discouraging vehicle use is important."

"Focus heavily on public/mass transit improvements, build less roads and properly maintain existing infrastructure while transitioning to greener options"

"Just acknowledging that the main barriers for a lot of people are money and time/convenience. Those are pretty large, complex barriers for a lot of people, especially lower to moderate income individuals."

CONNECT
CONGRESS OF NEIGHBORING COMMUNITIES

*Results reflect completed responses received as of closure of the survey on 4/29/2022.
Thank you to those who completed the survey and to our CONNECT communities who shared their survey results with us.
Contact EJR73@pitt.edu for your community's individual results (if available).

Appendix IV: References

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Note: Monetary damages only include those events and damages actually reported on NOAA's storm events database in CONNECT communities since 2018, and includes weather damages from floods, flash floods, heavy rain, winter weather, and winter storms. Figure should be used as a low estimate.

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