

City of Pittsburgh
Under 2 MOU
PROFILE

What is your geographic, demographic, and economic profile?

- In what country are you located?

United States

- What is your population?

Located in southwestern Pennsylvania, Pittsburgh is the second largest city in the state with a population of 305,000 residents within the city's 151 km². Pittsburgh is the principal city of the 22nd largest metropolitan area in the United States, with over 2.3 million people in 14,780 km².

US Census Quick Facts statistics for Pittsburgh, PA based on the 2010 Census show the following:

Persons under 5 years, April 1, 2010	4.9%
Persons under 18 years, April 1, 2010	16.3%
Persons 65 years and over, April 1, 2010	13.8%

Median household income (in 2015 dollars), 2011-2015	\$40,715
Per capita income in past 12 months (in 2015 dollars), 2011-2015	\$28,097
Persons in poverty, percent	22.9%

- What is your Gross Domestic Product (or economic output measured by another economic indicator)?

135,662 USD as of 2014

TARGETS

- What are your targets for reducing and avoiding emissions?

In 2015, Mayor Peduto released a number of climate change mitigation goals which the City will strive to achieve by the year 2030. These goals address major emissions sources such as buildings, transportation, and energy generation. The 2030 goals include:

- 100% Renewable energy supply for municipal facilities
- 50% Citywide Energy consumption reduction
- 50% Citywide water use reduction
- 100% Fossil fuel free City fleet
- 50% Citywide transportation greenhouse gas emissions reduction
- Create a fossil fuel divestment strategy for City of Pittsburgh Funds

Mayor Peduto has also signed on with the Sierra Club's "Ready for 100" initiative. Pittsburgh will strive to achieve 100% renewable energy citywide by the year 2035.

Pittsburgh is working with the National Climate Action Agenda and 81 other cities to undertake additional actions to meet the 1.5 degrees Celsius target.

- What emissions reductions are you trying to achieve (percent/metric tons, overall/per capita)? By what year? From what baseline year are you measuring?

The 2003 Pittsburgh Greenhouse Gas (GHG) Emissions Inventory, published in 2006, determined Pittsburgh's baseline greenhouse gas emissions at 6.6 million tons CO₂e. In 2008, the City's first Climate Action Plan established a citywide goal to reduce GHG emissions by 20% below 2003 levels by the year 2023

Since the development of the first Climate Action Plan, Pittsburgh has set additional incremental greenhouse gas emissions targets.

These targets include:

- 20% reduction by 2023
- 50% reduction by 2030
- 80% reduction by 2050

- What additional emissions are you trying to avoid?

We are currently focusing on Scope 1 and Scope 2 emissions but we are also looking at options to reduce Scope 3 emissions. As of now, we are unable to accurately calculate Scope 3 emissions but hope to do so in the near future.

- Do you have any intermediate targets?

Since the development of the first Climate Action Plan, Pittsburgh has set additional incremental greenhouse gas emissions targets.

These targets include:

- 20% reduction by 2023
- 50% reduction by 2030
- 80% reduction by 2050

- Are you focused on reductions in any particular priority GHGs?

We are looking at tracking and reducing emissions such as methane (CH₄) which is 28 times more potent than carbon dioxide and retains proportionally more heat in the atmosphere.

- What are your current emissions (total, by sector, by pollutant)?

Based on our most current inventory which calculates emissions for 2013.

Total emissions (metric tonnes CO₂e)
4,851,452

End user / Economic sector / IPCC sector / Other	Sector	Scope	Emissions (metric tonnes CO2e)
Buildings - Residential Sector Natural Gas Use - Stationary Combustion	Residential buildings	Scope 1	643685
Buildings - Commercial Sector Natural Gas Use - Stationary Combustion	Commercial buildings	Scope 1	479898
Buildings - Industrial Sector Natural Gas Use - Stationary Combustion	Industrial buildings	Scope 1	116192
Buildings - Residential Sector Electricity Use - Purchased Grid Electricity	Residential buildings	Scope 2	567244
Buildings - Commercial Sector Electricity Use - Purchased Grid Electricity	Commercial buildings	Scope 2	2008370
Buildings - Industrial Sector Electricity Use - Purchased Grid Electricity	Industrial buildings	Scope 2	153876
Transportation - On Road Vehicle Miles Traveled - Gasoline	Road	Scope 1	663827
Transportation - On Road Vehicle Miles Traveled - Diesel	Road	Scope 1	169954

Scope 1 & 2 emissions:

Scope 3 emissions:

Source	Emissions (metric tonnes CO2e)	Comment
Waste	48406	88,940 US tons residential waste. Estimated 156,648 tons commercial waste (used EPA 4.4lbs/person/day default to calculate). Used 2013 US EPA Municipal Solid Waste Study to derive the 2013 waste characterization (% of types of waste sent to landfill after recycling/composting)

- Do you have any monitoring or reporting obligations (internal/external, binding/non-binding)?

Benchmarking & Transparency Ordinance

At the end of 2016, Pittsburgh passed a Building Benchmarking Ordinance which will require owners of large, nonresidential buildings with >50,000 sq. ft. to report their energy and water usage annually. This increased transparency will allow businesses and individuals to make informed choices related to building specifications while also providing a method for tracking building efficiency and monitoring for maintenance needs. The ordinance was adopted by the City in October of 2016 and reporting deadlines began in 2017.

Pittsburgh 2030 District

The Pittsburgh 2030 District, a Green Building Alliance strategic initiative, is an interdisciplinary private-public-nonprofit collaborative working to create groundbreaking high performance building districts in downtown Pittsburgh and Oakland neighborhoods. District Partners will do this by developing realistic, measurable, and innovative

strategies to assist district property owners, managers, and tenants in meeting aggressive goals that keep properties and businesses competitive while operating buildings more efficiently, reducing costs, and reducing the environmental impacts of facility construction, operations, and maintenance

Yearly GHG Inventory

We are currently working to develop yearly GHG data sharing agreements with the utility partners so an inventory can be done on a yearly basis rather than every 5 year.

TOOLS

- What goals, standards, policies, technologies, etc. are you implementing or planning across various sectors to develop sustainably and meet your GHG emissions reduction targets? For instance, what are your actions and commitments around...
- Renewable energy, energy efficiency, and energy storage?

Pittsburgh is embarking on a new renaissance of sustainable economic development. Over the last generation, Pittsburgh established itself as a leader in industrial site reclamation; and in the construction of green buildings. Pittsburgh is home to the David L. Lawrence Conventions Center, one of the largest LEED certified buildings and 110 other LEED certified structures in the Pittsburgh Region. Building on our heritage of environmental reclamation and innovation; Mayor Peduto is charting a course by establishing development standards for four economic investment zones that extend across the city. In the next several years, the City will seek LEED-ND certification for the 28 acre Lower Hill Development District adjacent to the Central Business District, begin to establish the City's first eco-district – the Uptown Eco-Innovation Zone; encourage green infrastructure standards for all sites – particularly those adjacent to our rivers such as the Allegheny River Green Boulevard and begin infrastructure installation in the multi-use ALMONO clean industrial complex (the former home of LTV Steel).

Creating a Grid of microgrids- District Energy Plan

In 2015, the City of Pittsburgh signed MOUs with US Department of Energy (DOE) and National Energy Technology laboratory (NETL) to develop a clean energy plan focused on district energy systems. Additionally, a number of regional and local organizations that crosscut industry, private-sector, academia, and foundations are partnering in the work being performed under the MOU. The scope of the activities will support Pittsburgh's efforts to modernize its energy grid through a network of small-scale, distributed energy systems. The five existing distributed energy systems that the City and NETL see as energy districts could serve as a spine for future network of microgrid development. Our city is uniquely positioned to implement a network of microgrids because of the topography of Pittsburgh and its preexistent distributed energy sites.

Some of the projects that are currently underway include but are not limited to: Duquesne Light installing a 10 MWe microgrid at their Woods Run operations center on Pittsburgh's Northside, scheduled to be operational in late 2017; UPMC Mercy partnering with NRG Energy to create a generating facility which will become operational in early 2018; NETL partnering with NRG to implement a 400 kWe solid oxide fuel cell (SOFC) power system at its North Shore plant.

Residential Energy Efficiency Programs

Duquesne Light, Pittsburgh's leading utility, provides rebates to its residential customers for purchasing and installing energy-saving equipment. Eligible equipment includes dehumidifiers, freezers, refrigerators, air conditioning units, ceiling insulation, programmable thermostats, house fans, indoor and outdoor lighting, pipe wrap, insulation, controls, and pool pumps. The Whole-House Energy Audit program offers instant rebate of \$250, reducing the total cost of audit to \$149. Households that qualify for income-eligibility requirements receive the audit at no cost.

2030 District progress

The 103 Property Partners of the Pittsburgh 2030 district challenge, managing over 78.7 million square feet across 491 commercial buildings in the Pittsburgh areas of downtown and Oakland neighborhoods have reduced energy use by 10.7% , water use by 7.4%, and carbon emissions from transportation by 24.2% below baselines. The 2016 energy use reduction of 982 million kBtu is equivalent to 113,540 metric tons of CO₂e.

Goal of installing 200 MW of local renewables

With a goal of installing 200MW powered by renewable energy, as Harvard Business review quotes- Pittsburgh is pioneering a renewable energy system, one that is driving job growth and economic dynamism. The city already employs 13,000 people in renewable energy and energy efficiency.

Alternative Fuel Incentive Grant

The City of Pittsburgh has been granted \$80,000 by the Pennsylvania Department of Environmental Protection (DEP), as announced in April 2017. As one of the award winners for the Alternative Fuel Incentive Grants (AFIG), to develop and promote the use of alternative fuels and develop supporting infrastructure, improving air quality through alternative fuel use, the City will receive 50% of the incremental cost for 10 Nissan Leaf EVs as part of their goal to operate a fossil fuel free fleet by 2030.

Under this program, the City of Pittsburgh will install multiple EV charging points to support the fleet.

- Sustainable transportation? (reduction of travel in single-occupant vehicles, fuel switching, fuel efficiency, freight/rail/aviation)

Emissions from on-road vehicles have been tracked in Pittsburgh since 2003, and Pittsburgh follows a national trend in decreased vehicle miles traveled. Mayor Peduto's transportation goals include reducing emissions from on-road transportation by 50% below 2003 levels by 2030.

The Pittsburgh Climate Action plan has detailed strategy that look at reducing vehicle miles traveled on Pittsburgh roads, shifting modes away from single occupancy motor vehicle, and shifting away from fossil fuels.

Pittsburgh is also working towards a fossil-fuel free fleet for its municipal operations; vehicle electrification and provision of charging stations for EVs across the city, including electrification of PORT Authority buses as well as Campus shuttles at the universities.

Department of Mobility and Infrastructure

Formed in early 2017, the new Department of Mobility and Infrastructure, will work with public works, planning and other city units on transportation projects. Starting this year with four workers — the department is set to handle, in time, the planning for driverless cars, bicycling accommodations and roadways, among other efforts.

Bus Rapid Transit System

BRT, often called "light rail on wheels," uses buses that often operate in a dedicated lane and make fewer stops than regular buses. The PORT Authority has started to work on its project for Pittsburgh's estimated \$200 million BRT system to operate with new electric buses on two of the busiest streets in the city. The dedicated lanes would be converted from the local bus and parking lanes that already are there. Bike lanes also would be added in existing parking lanes, and improved sidewalks, crosswalks, lighting and trees also would be installed and planted.

Complete Streets Policy Adopted

In November 2016, the Complete Streets Policy was unanimously adopted by City Council. Pittsburgh is changing how it thinks about mobility and transportation for its 1,300 miles of street network, making it safer to travel using multiple modes. Complete Streets encourage more than one way of travel, taking into account pedestrians, bicycles, transit, and private vehicles – an approach that is referred to as “multi-modal transportation”. Using a multi-modal approach when designing our streets will make our transportation network safer for more people and improve quality of life in the city. By creating streets that are great public spaces as well as safe, connected, and convenient transportation networks, the City's first ever Complete Streets Policy (and subsequent planning efforts and code changes) aims to enhance safety, mobility, and access for all Pittsburghers, regardless of how they travel.

First 4 Electric Vehicles purchased by the City of Pittsburgh

With the AFIG grant, the City of Pittsburgh has ordered 4 Electric vehicles in 2017 to be included as part of the fleet.

- Natural resource protection? (forestry and wild lands management, agricultural management, ecosystem services protection, coastal resource management, carbon sinks and sequestration)

The City of Pittsburgh recognizes the challenges resulting from climate change. As a result we are working to invest in more resilient infrastructure systems, risk mitigation that protects communities and businesses and diversification of our economic production capabilities including strategies for food security, ecosystem services protection and sequestration efforts.

Pittsburgh leads major US cities in urban tree canopy with 42% of the city sheltered by trees. Almost 40,000 street trees help Pittsburgh avoid around 3,265 metric tons CO₂e through shading and cooling.

The Pittsburgh urban forest sequesters 13,900 metric tons CO₂e, but this only considers the carbon stored in the trees, and does not account for the carbon stored in soil.

The soon to-be-launched Greenways for Pittsburgh 2.0 is a recommendation of the Open Space Plan (the City's Open Space, Parks, and Recreation Plan), which was adopted in July 2013, to expand and enhance the City's greenways as well as developing a network of hiking/mountain biking trails. The project will create policy and stewardship components with the goals to foster stewardship, improve the quality, connectivity and accessibility to these open spaces, as well as strive for the highest level of sustainability in regards to conservation, green infrastructure and maintenance. The outcome of the program will be the development and implementation of greenways to meet the public need/desire for proximate open space.

In fall of 2016, the City of Pittsburgh joined the global network of Biophilic Cities—an initiative dedicated to strengthening urban ties to nature and highlighting the emotional and physical wellness benefits of connecting with the outdoors. Along with this commitment to nature, the Biophilic Cities network formalizes the City's commitment to conservation.

CAPACITY

- How will you ensure adequate financial, institutional, and workforce capacity to develop sustainably and meet your GHG emissions reduction targets?

Pittsburgh's economy will need to rely on a new cadre of middle-skilled workers. There are many city-sponsored activities currently underway to assist with workforce development and career and technical training for adults, including technical training programs sponsored by industries anticipating workforce transitions. With City planning implementing innovative and sustainable pathways for the growth of the city infrastructure through renewable energy efforts, and the universities such as Carnegie Mellon and University of Pittsburgh providing quality education, it would help establish a pipeline of qualified Pittsburghers ready to fill vacancies left by retirees and positioned to take on the jobs of the future in healthcare, technology, energy, utilities, transportation, 21st century manufacturing, and other areas.

- What market incentives and funds are in place or planned to support implementation of emissions reduction measures? (What additional funding is needed to meet your emissions reduction goals? Over what period of time?)

The city plans to use policy and budgeting tools to develop municipal based implementation measures. Private sector targets are also a component of compliance including the voluntary Pittsburgh District 2030 Standard and mandatory energy transparency and benchmarking ordinance.

- Are you leveraging existing domestic and international partnerships to fund reduction measures? (Are you hoping to establish new partnerships?)

Rockefeller Foundation

Since December 2014, Pittsburgh has been a part of the Rockefellers 100 Resilient Cities (100 RC) Network. As a 100RC City, Pittsburgh is working to reduce the risks that threaten our communities and overcome the challenges that make our residents vulnerable. The OnePGH Resilience strategy, launched in March 2017, is the strategy for Pittsburgh to thrive in the 21st century as a city of engaged, empowered and coordinated neighbors. A number of programs and events have been planned and launched as part of the resilience implementation. Some of these include the Love Your [Resilient] Block grant program, the resilience fair and food matchup, as well as partnership engagements with the 100RC platform partners such as Intermedix and Arcadis.

City Energy Project

Pittsburgh has been chosen as one of ten cities to be a part of the second ever cohort for the City Energy Project, which is a national initiative to create healthier and more prosperous American cities by improving the energy efficiency of buildings. Working in partnership, the Project and cities support innovative, practical solutions that cut energy waste, boost local economies, and reduce harmful pollution. The pioneering actions of the cities involved in the City Energy Project will be models for communities nationwide and around the world.

Urban Sustainability Directors Network

Pittsburgh is a part of the Urban Sustainability Directors Network (USDN), which is a peer-to-peer network of local government professionals from cities across the United States and Canada dedicated to creating a healthier environment, economic prosperity, and increased social equity. This dynamic network enables sustainability directors and staff to share best practices and accelerate the application of good ideas across North America.

2030 District/USGBC

The Pittsburgh 2030 District, is an interdisciplinary private-public-nonprofit collaborative working to create groundbreaking high performance building districts in downtown Pittsburgh and Oakland. With the Architecture 2030 Challenge providing property performance targets, the Pittsburgh 2030 District seeks to prove that high performing buildings are the most profitable buildings in Pittsburgh. District Partners will do this by developing realistic, measurable, and innovative strategies to assist district property owners, managers, and tenants in meeting aggressive goals that keep properties and businesses competitive while operating buildings more efficiently, reducing costs, and reducing the environmental impacts of facility construction, operations, and maintenance.

Carbon Disclosure Project

The Carbon Disclosure Project (CDP) is a not-for-profit organization that runs the global disclosure system for investors, companies, cities, states and regions to manage their environmental impacts. Over the last 15 years, it has become the most comprehensive collection of self-reported environmental data in the world, representing over \$100 trillion of investments and spending globally. Pittsburgh is currently in its 4th year of annual reporting to CDP (2016-17).

Global Covenant of Mayors for Climate and Energy

The Global Covenant of Mayors for Climate and Energy is the world's largest cooperative effort among mayors and city officials to reduce greenhouse gas emissions and climate risks in cities. By establishing a common platform to capture the impact of cities' collective actions through standardized measurement of emissions and climate risk, and consistent, public reporting of their efforts, it provides hard evidence that cities are true climate leaders, and that local action can have a significant global impact.

As a signatory to the GCMCE, Mayor Peduto was one of the 12 Mayors from the United States who travelled to Paris, France and announced the City's goals at COP21 summit during November 2015, for reducing its emissions by 2030 through renewable energy consumption, energy and water conservation, fleet conversion, landfill diversion and transportation emission reductions.

Others

As a part of the reporting process for both the CDP and GCMCE, Pittsburgh has been able to track initiatives to reduce GHG emissions year on year and has remained among the Top 20

cities nationally in terms of Energy efficiency (ACEEE), Cleantech Leadership Index and various other key performance indicators.

- What institutional structures are in place or planned to implement and monitor your emissions reductions policies? (Are you hoping to strengthen institutional structures through internal development and/or external partnerships on technology transfer and research?)

The City is planning on developing a Sustainability and Resilience Commission to monitor and provide guidance towards the implementation of the Climate Action Plan. The group of citizen leaders will be charged with ensuring project follow up and emissions measurement.

- Are you investing in workforce development and leveraging public- private partnerships to achieve long-term emissions reductions across economic sectors? (Are you hoping to partner with new investors?)

Pittsburgh is constantly looking for opportunities to research and provided investments as well as research for workforce development and leveraging public- private partnerships to achieve long-term emissions reductions across economic sectors such as waste management and creating more economic prospects for the city. We are also on constant look out for new investors and partners on this front.

Circular Economy in Pittsburgh

In February 2017, the German Marshall Fund, in partnership with the City of Pittsburgh and GTECH Strategies (a non-profit organization), conducted a workshop exploring the development of a local energy-from-waste ecosystem through the application of circular economy paradigms.

We are also working with the organization Circle Economy to identify key industries for circular economy opportunities for the City of Pittsburgh.

Roadmap to Zero Waste

In coordination with 100 Resilient Cities, Regions 20 – Regions of Climate Action (R20) helped create a “Roadmap to Zero Waste” document for the City of Pittsburgh to use as guideline for developing a Zero Waste Strategic Plan (ZWSP). This ZWSP will serve as the mechanism that ties all stakeholders together in the City’s quest for Zero Waste.

Based on site visit meetings and years of expertise, it is the belief of the R20 team that the City of Pittsburgh has the potential to achieve the goal of “Zero Waste by 2030” as pronounced by Mayor Peduto in 2015. To achieve the goal of Zero Waste by 2030, the

City must change the existing value proposition from an expense-based (budget line item) approach to a resource management-based approach by thinking of waste as an asset to be managed instead of a liability. A key strategy that may well serve the city and accelerate Zero Waste efforts would be the formation of a public-private partnership to provide oversight and management of “Zero Waste Pittsburgh”, a program specifically created to meet the City’s Zero Waste goal. By leveraging the strategy to coordinate and manage “Zero Waste Pittsburgh”, the Mayor and City Council will work to mitigate the risk of tackling the Zero Waste goal alone, while taking advantage of the wealth and resources available to the City.

- Are you conducting outreach to increase public awareness and encourage public engagement on climate change mitigation?

In developing the Climate Action Plan 3.0, the City has had the opportunity to host multiple workshops at Universities and non-profits, thus engaging 300+ individuals to help gather content to go into the plan itself.

Pittsburgh Climate Compact

As part of the Pittsburgh Climate compact, the City has regular meetings with local stakeholders, companies, NGOs, community groups, etc. More recently, the Mayor called for a meeting with the Compact to announce the Climate Action plan 3.0 and will soon make it available to the PCC and for public comment in September 2017.

The City has worked extensively with various partners across different sectors to create public awareness and encourage public engagement in its activities for climate adaptation and mitigation efforts. Some of the events from 2016 and 17 are highlighted below:

Watershed Resilience Accelerator Pittsburgh Workshop with Arcadis

The City of Pittsburgh recognizes the clean air and water are key aspects of maintaining our city’s health and are first to get impacted due to effects of climate change.

On December 7, 2016, Arcadis and 100RC hosted the Watershed Resilience Accelerator Workshop for the City of Pittsburgh (WRAP) to help address water-related implementation challenges. The workshop included leaders from the City of Pittsburgh, ALCOSAN, PWSA, and other organizational stakeholders from southwestern Pennsylvania. Together, these groups conducted a 360-degree implementation assessment, focused on interagency collaboration and strategies that will help accelerate implementation of green infrastructure projects in the Negley Run Watershed. The Negley Run watershed was identified for the exercise due to its size, need for public improvements, and hazard mitigation and safety implications. These qualities presented an opportunity to develop a template for green infrastructure implementation in

Pittsburgh, particularly the ability to scale project size and scope.

Roundtable Series: Advancing the Green Technology Sector

On February 23, 2017 the Department of Innovation & Performance and the Urban Redevelopment Authority held a Roadmap for Inclusive Innovation roundtable discussion on advancing the Green Technology sector in Pittsburgh. The roundtable discussion focused on brainstorming ideas and strategies for the City of Pittsburgh to increase the demand, supply, and awareness of green technology in Pittsburgh. Representatives from various organizations including startup incubators, universities, and private sector were invited to participate, identify challenges, and propose solutions.

Air Quality modeling Resilience Workshop: University of Pittsburgh

In April 2017, City of Pittsburgh, in partnership with the University of Pittsburgh's Graduate School of Public Health, Intermedix, and 100 Resilient Cities conducted a one-day workshop as part of the City's ONEPGH initiative. The purpose of the workshop was to utilize predictive analytic tools to improve the region's response to emergency situations, and it did this by simulating a scenario similar to the 1948 Donora smog event, in which a prolonged temperature inversion is compounded by a heat wave causing an air quality emergency in the Pittsburgh region.

The audience was split across different groups based on their skills and expertise in modeling dynamic public health scenarios to learn more about how modeling platforms can be used in investigating responses to a wide range of public health threats; and further engaging Emergency Response Partners in operational resilience through strong collaboration and communication between emergency management and critical infrastructure agencies (energy, water, chemical plants, food system, and hospitals) necessary for effective response.

ADAPTATION

- How will you adapt to climate change?

In March of 2017, Pittsburgh released the City's strategic plan for climate change adaptation and resilience, called OnePGH- to help Pittsburgh thrive in the 21st century as a city of engaged, empowered and coordinated neighbors. Pittsburgh will become resilient when the city is livable for all residents. OnePGH establishes a bold vision for the city, building on recent successes and a wealth of community assets, while directly confronting the complex challenges that its residents all continue to face.

- How will you address equity and environmental justice?

Stresses & Shocks Addressed

- Inequity
- Aging infrastructure

- Environmental degradation
- Climate change: Flooding, extreme heat
- Invasive species

Actions for Implementation

- Conserve, invest in, and connect to nature (Biophilic city)
 - Recycle Pittsburgh's land for its best and highest use
 - Provide access to clean water for drinking and recreation (3 Rivers, 365)
- How will you safeguard human health?

Stresses & Shocks Addressed

- Inequity: health
- Aging population
- Air quality
- Opioid epidemic

Actions for Implementation

- Implement a Public Health 3.0 model
 - Address the opioid epidemic
 - Improve outdoor and indoor air quality
 - Provide food security and healthy food access
 - Support aging Pittsburghers and those with disabilities
 - Integrate social services into Pittsburgh Public Schools (PPS Community Schools)
 - Create green and healthy homes
 - Support veterans and homeless Pittsburghers
- How will you prepare for extreme weather events?

Stresses & Shocks Addressed

- Aging infrastructure
- All acute shocks

Actions for Implementation

- Improve disaster preparedness and response (THIRA and Hazard Mitigation Plan Update)
- Upgrade and improve the resilience of the power grid (District Energy Pittsburgh)
- Develop a smart transportation system