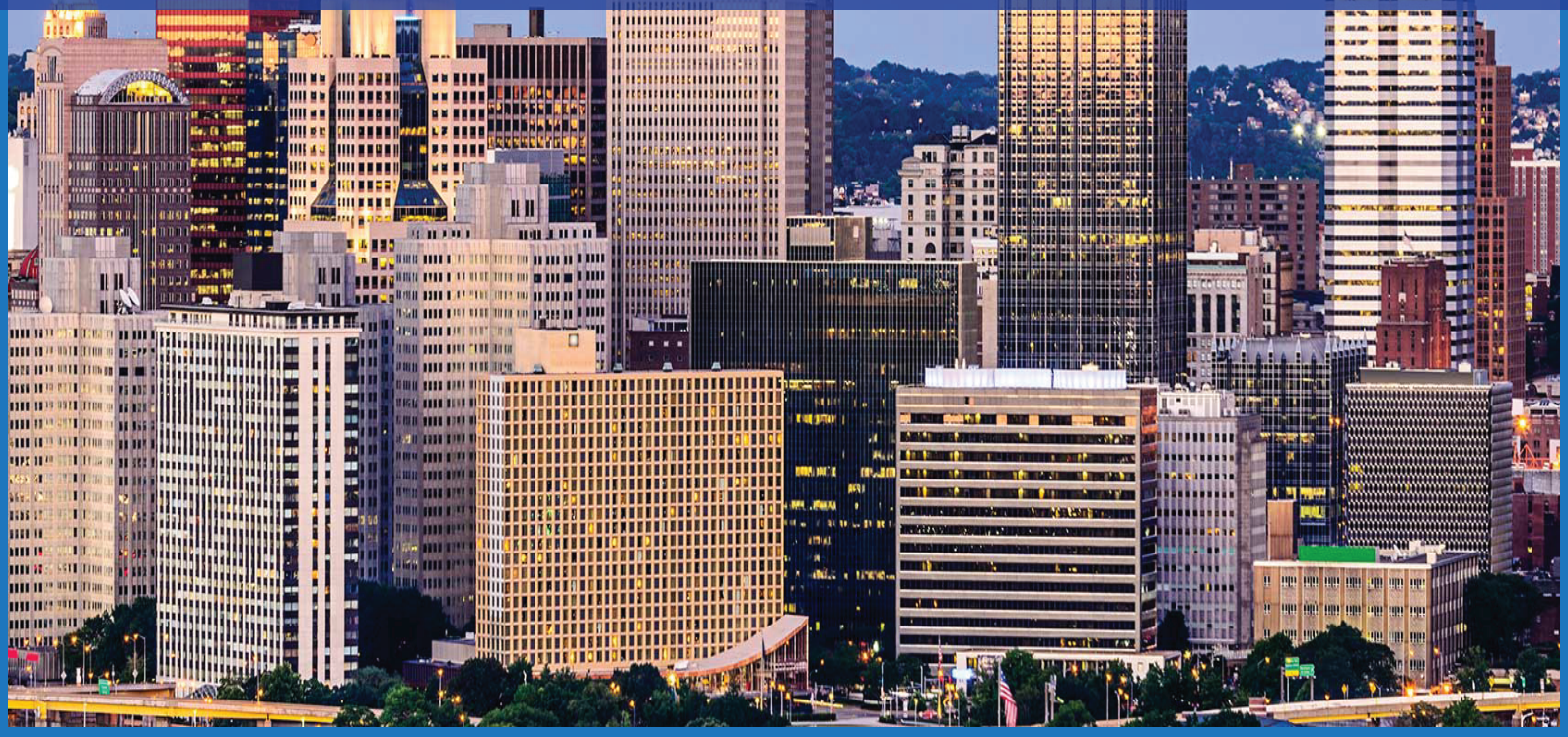
# PITTSBURGH ROADMAP
## for Inclusive Innovation



CITY OF PITTSBURGH
DEPARTMENT OF INNOVATION & PERFORMANCE

ura
Urban
Redevelopment
Authority
of Pittsburgh

# Table of Contents


**Introduction**

**Letter from Mayor Peduto and Chief Lam** ..... 3

**Objective** ..... 4

**Address the digital divide** ..... 7

Increase digital literacy in underserved populations ..... 7

Work with communities to expand internet access ..... 8

Promote STEAM and Maker programming ..... 9

**Empower City-to-citizen engagement** ..... 10

Deepen and expand digital public engagement ..... 10

Improve City web-services ..... 11

Expand visibility and quality of City Channel Pittsburgh ..... 12

**Provide Open Data to Pittsburgh** ..... 13

Establish the Western PA Regional Data Center ..... 13

Employ data-driven operations ..... 14

Increase 311 call center capacity and services ..... 15

**Improve internal operations & capacity of the City** ..... 16

Streamline the City's procurement processes ..... 16

Improve technology capacity and training for the civil workforce ..... 17

Modernize the public infrastructure ..... 18

Institute smarter trash and recycling collection ..... 19

**Advance the Clean Tech sector** ..... 21

Create energy, water, and air quality benchmarks for the City ..... 21

Support clean technology development & infrastructure projects ..... 22

Increase awareness and demand for clean technology ..... 23


Feel free to provide your thoughts by either using our Feedback Form, tweet @PghIP using #PghRoadmap, comment directly on the Google Doc, or email us at ip-innovation-roadmap@pittsburghpa.gov.

**Promote the local business environment** ..... **24**
Support local business in Pittsburgh ..... 24
Support mentoring and fellowship programs ..... 25
Connect local businesses with capital and resources ..... 26
Brand Pittsburgh as an "Inclusive Innovation City" ..... 26

**Closing & Call to Action** ..... **28**

**Appendix**
**Methodology** ..... **29**
Mayor's Innovation Roundtable Series ..... 30
Strengths Weaknesses Opportunities & Threats (SWOT) Analysis ..... 31
Best Practices ..... 33
Public Engagement & Presentations ..... 34
Criteria & Prioritization ..... 35

Feel free to provide your thoughts by either using our Feedback Form, tweet @PghIP using #PghRoadmap, comment directly on the Google Doc, or email us at ip-innovation-roadmap@pittsburghpa.gov.

# Letter from Mayor Peduto and Chief Lam

Dear Friends,

Pittsburgh has a long tradition of being a center for innovation, discovery and invention. From the aluminum can to the Salk Polio Vaccine, Pittsburgh's institutions and residents have given back to our region, nation and the world time and again. In the past two decades, Pittsburgh has become a hotbed for healthcare, higher education, robotics and information technology. Pittsburgh has received national accolades, including most livable and smartest city, and we want to continue to thrive. Our city has always found pride in its accomplishments, and it is in this same spirit that we have challenged our City government to adapt and change in order to meet the challenges of the digital age.

Many of our nation's cities have been working on technology plans which seek to address these same challenges. We find that looking to other cities for inspiration is paramount in ensuring we continue to challenge ourselves and improve upon our current framework. Too few cities directly address the goal of innovation through the lens of inclusivity. Our decision to be one of those cities will make the Pittsburgh Roadmap for Inclusive Innovation a tool that will not only better the City, but also its community.

Pittsburgh has always produced talent and ideas, and the Roadmap for Inclusive Innovation seeks build upon this tradition. We must work together with our local stakeholders to diversify our economy and workforce. It is our goal to lay out a vision for not only what city government can and will achieve, but to ensure that we provide these same opportunities to each of our residents through inclusive innovation.

Sincerely,

William Peduto
Mayor, Pittsburgh Pennsylvania

Debra Lam
Chief Innovation & Performance Officer

Feel free to provide your thoughts by either using our Feedback Form, tweet @PghIP using #PghRoadmap, comment directly on the Google Doc, or email us at ip-innovation-roadmap@pittsburghpa.gov.

# Objective

The objective of the City of Pittsburgh Roadmap for Inclusive Innovation is to provide a vision for Pittsburgh's future. By working together, the City and its residents can improve the quality of life for all the people of Pittsburgh. While authored by the Department of Innovation & Performance and the Urban Redevelopment Authority's Center for Innovation and Entrepreneurship, its creation has been a collaborative effort between other City departments, as well as local innovators and partners. It is built on the belief that the way forward for Pittsburgh is through inclusive innovation that benefits all of its communities. The City would like to thank the many members of Pittsburgh's innovation community who contributed to the Roadmap throughout the process, as roundtable participants, interview sources, survey takers, document reviewers and partners in many of the goals and actions which will be undertaken over the coming years.

***Inclusive Innovation provides equitable access to products and services by leveraging new technologies, ideas, personnel and inventions to meet new challenges and higher standards.***

The Roadmap for Inclusive Innovation lays out a number of initiatives the City of Pittsburgh should undertake in the coming months and years to remain a hub of innovation for social groups, companies and people. We identify areas of improvement for City government operations and citizen interaction. This Roadmap does not aim to be the sole solution, but an inclusive path forward to strengthen Pittsburgh's economy in the digital age. The City joins other interested parties in addressing these challenges. By working together and complementing local institutions, City government looks to serve as the conduit for action by opening up its resources and provide amplification for the work and needs to achieve these goals.

The Roadmap seeks to bridge the digital divide and provide opportunities for Pittsburghers to participate in the new economy. Focusing on inclusion means providing opportunities in the high-tech, high-skill innovation economy. Diversity of gender, race, and background strengthens the chance for success in a competitive environment by improving decision-making and understanding of diverse markets.

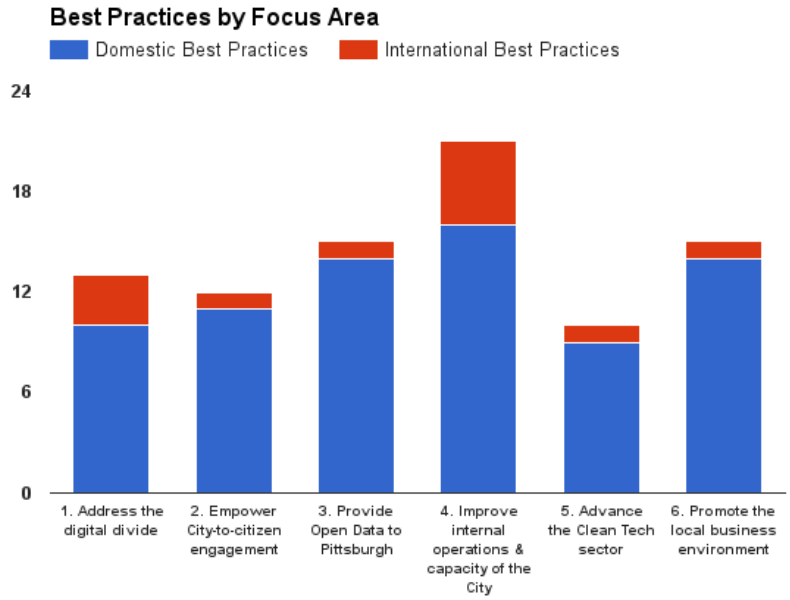
Feel free to provide your thoughts by either using our Feedback Form, tweet @PghIP using #PghRoadmap, comment directly on the Google Doc, or email us at ip-innovation-roadmap@pittsburghpa.gov.

The City's challenge is ensuring that these economic gains are reaped by all communities.

The goals laid out in the Inclusive Innovation Roadmap will be undertaken not only by City government, but in conjunction with our nonprofit partners. By staying abreast of sustainable methods the Roadmap will also improve upon Pittsburgh's resilience. These practices are not just apparent in technology and energy use, but also in the way the City operates and connects with residents. Diversification of Pittsburgh's economy and profile are important factors in improving quality of life for today and into the future.

The Roadmap is broken down into the following Focus Areas; Address the digital divide, Empower city-to-citizen engagement, Provide Open Data to Pittsburgh, Improve internal operations & capacity of the City, Advance the Clean Tech sector, and Promote the local business environment. Each section deals with a unique set of goals and potential actions to meet those goals. These projects range from improving the City's online services to creating new opportunities for local entrepreneurs to test business solutions. Each section of the Roadmap has a number of future actions for the City to undertake, as well as examples of similar programs and projects in other American and international cities. These **6 Focus Areas** encompass **20 Goals**, accounting for over **100 actions** for the City to undertake, with over **80 national and international best practices** cited.

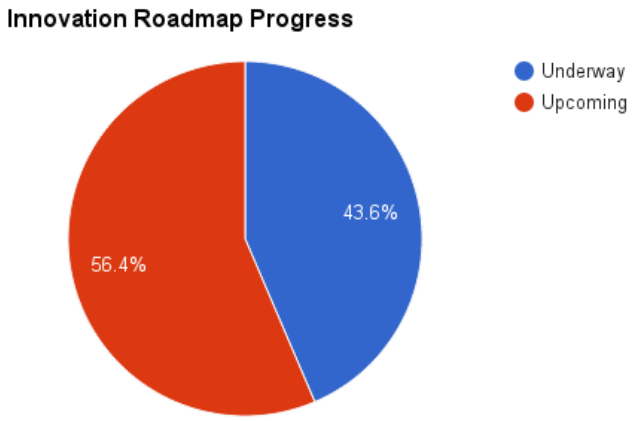
**Fig. 1 Roadmap for Inclusive Innovation Best Practices**




Feel free to provide your thoughts by either using our Feedback Form, tweet @PghIP using #PghRoadmap, comment directly on the Google Doc, or email us at ip-innovation-roadmap@pittsburghpa.gov.

To ensure that the benefits of the Roadmap are shared by all, the City invites all interested parties to help address the digital divide and improve Pittsburgh for each citizen. As you read the initiatives below we ask you provide us with your enthusiasm, concerns and thoughts on how the Pittsburgh community can support this inclusive and innovative framework. As a living document, the Roadmap for Inclusive Innovation is always open to new ideas, comments and concerns from the community. Feedback from Pittsburghers like you is a key factor in the formation and implementation of the Roadmap in the months and years to come. Please use our Feedback Form or email us directly at: ip-innovation-roadmap@pittsburghpa.gov with your thoughts.

**Fig. 2 Roadmap for Inclusive Innovation Overall Progress**



# Address the digital divide

## Increase digital literacy in underserved populations

Computer skills are necessary for many day-to-day tasks, such as taking college courses, tracking your child's progress in school and paying bills. In Pittsburgh, where nearly 13% of households do not have home access to a computer, providing a variety of access points is key to addressing these individuals. In order to address the digital divide, the City is partnering with local stakeholders to build a digital mentoring pilot program.

**Actions:**

- Provide digital literacy training for senior citizens and others at the City's recreational and senior centers.[1]
- Work with community groups and organizations to expand and provide literacy training throughout the City.[2]
- Pilot digital library options to the public in community spaces.[3]
- Expand access to technology in early childhood development centers through the My Brother's Keeper Initiative.[4]

**Best Practices:**

1. US Department of Commerce - DigitalLiteracy.gov
2. Boston - tech goes home
3. São Paulo - Acessa São Paulo
4. Carnegie Mellon- Message from Me

# Work with communities to expand internet access

Connectivity is an integral part of the 21st Century and affordable access to internet service has become as essential as any utility. A reported 62% of Americans find that Internet-based tasks are an integral part of their job. Over 23% of households do not have internet access, according to the US Census Bureau. There are also notable disparities between certain demographic groups - residents with low income, minorities and unemployed residents have less internet access relative to others.

**Actions:**

- Develop a plan based on the Digital Equity Study commissioned through Carnegie Mellon University. The study will include a spatial analysis and mapping of free WiFi hotspots.
- Increase public wireless internet accessibility in communities through public locations such as CitiParks and senior centers.[1]
- Establish and promote Welcoming Hubs at select city park recreation centers as community hubs through the Welcoming Pittsburgh Plan.[2]
- Provide options to check-out wireless hotspot stations from the library, providing options for communities who lack access to connectivity in the home.[3]
- Hire a Community WiFi Fellow to concentrate on increasing wireless access throughout the City's neighborhoods.
- Expand the municipal fiber network in partnership with anchor institutions to allow increased internet connectivity for communities in need.[4]

**Best Practices:**

1. Tel Aviv - Open Air Digital Libraries
2. Cleveland - Welcome Hubs
3. New York - Hotspot Program
4. Cleveland - One Community

# Promote STEAM and Maker programming

Maker programs focus on Science, Technology, Engineering, Arts and Mathematics (STEAM) education through project-based creation of anything from robotics to homemade marshmallow launchers. Local organizations such as Remake Learning, the Children's Museum of Pittsburgh, Tech Shop, the Grable Foundation, the Sprout Fund, and HackPittsburgh have all brought up ways the City can promote the successful STEAM and Maker organizations and programming already at work in Pittsburgh during the Mayor's Maker Movement Roundtable. Increasing STEAM education is a valuable tool to prepare Pittsburgh's workforce for the high-skilled jobs of the future. The current and future economy rewards innovative thinking and those able to create new innovative products. Pittsburgh is also a participant in the White House's Mayors Maker Challenge to promote and increase the City's visibility in the realms of STEAM and Maker spaces.

**Actions:**

- Work with local Maker organizations to increase the presence and access of Maker spaces and after-school programming. These projects would inform and inspire students to consider STEAM careers early on in their development.[1]
- Explore possible partnerships with local maker organizations to offer Maker spaces and classes at CitiParks' recreation centers in underserved communities.[2]
- Connect underserved communities with Maker and STEAM programming through existing AmeriCorps program funding.[3]
- Celebrate maker events throughout the city, such as Maker Faires and Maker Week.[4]
- Foster opportunities for coding education across all segments of the population. [5]
- Increase the number of youth acquiring digital badges through the City of Learning designation in competencies relating to the local economy in partnership with the My Brother's Keeper Initiative.[6]

**Best Practices:**

1. Louisville - FabLab (video)
2. Baltimore - Digital Harbor Foundation
3. National - Maker Education Initiative
4. Detroit - Maker Faire
5. Global - Hour of Code
6. National - Digital Badges

# Empower City-to-citizen engagement

## Deepen and expand digital public engagement

The City will work to upgrade and centralize its social media message and engagement to provide important information, receive feedback and build a web-based relationship between residents and the City. This digital engagement strategy seeks to meet people where they are, allowing for a more open line of communication between the City and local residents. The City has already expanded social media services by enabling residents to tweet requests to the 311 Twitter account, to connect with neighbors via NextDoor, and submit public feedback directly to the City through a variety of digital and face to face contact. The next step is to integrate these tools into existing methods and operations to help supplement and improve city services.

**Actions:**

- Finalize and implement a Citywide Social Media Policy that lays out guidelines for how City accounts will be overseen and operated with the goal of increasing coordinated communication.[1]
- Publicize social media channels on the City's website and other digital avenues.[2]
- Integrate social media into existing outreach, such as community meetings and other traditional forms, through the Office of Community Affairs.
- Provide a toolkit which empowers community groups to better disseminate information from community meetings, connect with their constituents, increase turnout, and run effective meetings.[3]
- Communicate new and longstanding city services to residents through a targeted campaign.
- Host Citizenship Days through the Welcoming Pittsburgh Plan to promote and celebrate citizenship.[4]

**Best Practices**

1. Boston - Social Media Center
2. Orlando - Social Media Page
3. Ottawa - Neighborhood Toolkit
4. Philadelphia - Step Up to Citizenship

# Improve City web-services

The Pittsburgh City website PittsburghPa.gov is the digital face of the City. While the homepage is the most visited page, most other pages are reached through internet search engines. The City website should allow citizens to complete transactions online, connect with decision makers, and find information on city services and initiatives which impact their lives. Additions to the website in the past year include the online snow plow tracker, text alerts for trash pickup and online purchases of CitiParks shelter rentals. Bringing all of Pittsburgh's services into the modern era will help to improve all aspects of government interaction.

**Actions:**

- Improve security measures so that the City website can provide and receive more information and traffic. The City is currently conducting a security audit, the results of which will inform the City's future steps.
- Bring government to the people through a mobile or centralized city service center, that makes it easier for residents to report issues to the City and find out what local government can do for them.[1]
- Create a user-first website organized into sections for residents and businesses to access the services and information they need.[2]
- Allow all possible city transactions to be made online, therefore making business transactions with the City easier for residents and business owners. This should include field and tennis reservations from CitiParks to right of way permits from the Department of Permits Licensing and Inspections.[3]
- Improve city document accessibility through format improvements, including multi-lingual options for documents which can be downloaded through the city website as a part of the Welcoming Pittsburgh Plan.[4]
- Provide a platform to solicit feedback from residents on their interactions with City departments.[5]

**Best Practices:**

1. Boston - City Hall To Go
2. Seattle - City Services Page
3. Washington DC - Best of the Web City Category
4. Washington DC - Language Access
5. Albany - Goodsnitch

Feel free to provide your thoughts by either using our Feedback Form, tweet @PghIP using #PghRoadmap, comment directly on the Google Doc, or email us at ip-innovation-roadmap@pittsburghpa.gov.

# Expand visibility and quality of City Channel Pittsburgh

Keeping residents informed of government news, work and discussion is a key aspect of community engagement. In the past year, City Channel Pittsburgh improved its range and quality of coverage and its dedication to the City and residents. By streaming the channel online, posting programs on its YouTube Channel and continuing to upgrade its equipment and providing coverage of groundbreaking City events, the channel is preparing to serve the City for decades to come.

**Actions:**

- Highlight municipal events, sustainability programming, interviews with city leadership, and cablecast community content centered on civic policies and events.[1]
- Cablecast City Channel Pittsburgh in high definition on television and online by 2020. This is a necessary next step to ensure the City Channel remains technologically relevant.[2]
- Post the City Channel schedule on Comcast and Verizon's TV guides. The schedule is currently available on the city website.
- Digitize and archive the thirty-year catalogue of City Channel Pittsburgh recordings.[3]
- Upgrade the City Channel's control room, studio, Council Chambers, playback server, and all necessary equipment to modern standards.

**Best Practices:**

1. Waco - High definition streaming
2. Baltimore - TV25
3. St. Petersburg - StPeteTV

# Provide Open Data to Pittsburgh

## Establish the Western PA Regional Data Center

Open data is more than just government transparency—it's about using data to make the government more efficient to provide better public services. The City has gathered institutional backing by partnering with the University Center for Social and Urban Research at the University of Pittsburgh, Carnegie Mellon University, and Allegheny County to create the Western Pennsylvania Regional Data Center (WPRDC). The City has implemented open budget information with Fiscal Focus Pittsburgh, a platform for constituents to generate and download customized budgetary reports up to the current month. The regional leadership involved in this project makes it the first Open Data portal of its kind.

**Actions:**

- Distribute the data collected through the WPRDC including; crime, 311 questions, tax delinquency, and others. Open Data provides a valuable service to the city, the region, and country, by providing data and turning it into comprehensible information for use by government leaders, civic groups, and entrepreneurs.[1]
- Provide regional leadership by bringing new municipalities, nonprofits and local organizations into a community of practices within the WPRDC.[2]
- Work with local civic software programmers such as the Pittsburgh Code for America Brigade to engage community members with Open Data to build tools and visualizations that help everyone better understand our community.[3]
- Work with research universities to install modular "Neighborhood Nodes" (sensor boxes) to collect real-time data on the neighborhood's air quality, human activity, noise, surface temperature, and weather.[4] This data can be used to identify the healthiest and unhealthiest areas of the city, help night-time pedestrians know the most populated routes, identify road temperatures

for strategic street salting and more. Nodes could also be used as information conduits for university research projects to collect real-time health or other data from enrolled research subjects.[5]

**Best Practices:**

1. Helsinki - Open Data
2. Philadelphia - Open Data Philly
3. Chicago - Open City Apps
4. Chicago - Array of Things
5. Louisville - Tracking Inhaler Usage

# Employ data-driven operations

To improve service delivery the City of Pittsburgh will work to identify and enhance key aspects of departmental operations. The City has already begun considering how best to implement methods to evaluate and improve the performance of services provided by a variety of departments. By using data to inform decisions, the City will not only become more effective, but also find previously unrealized opportunities for improvement.

**Actions:**

- Embed service delivery goals within the budget process and analyze the results to improve the performance of City departments' service delivery and operations.[1, 2, 3]
- Institute a public performance measurement dashboard displaying City progress in meeting departmental performance goals and indicators.[4]
- Improve asset management by instituting a preventive maintenance program for City buildings, signs, shelters and more before they are damaged beyond repair.[5]
- Develop a 3-5 year citywide paving decision plan to help coordinate with local utility companies and authorities to reduce the City's financial burden on paving city streets. In 2015 the City will spend around $12 million dollars from its budget on street resurfacing. Increased coordination would allow for more roads to be repaved without significantly increasing cost.
- Create a traffic incident management process to review accident data, identify dangerous streets in order to provide safety solutions that account for all people, whether they walk or roll, drive, cycle, or utilize transit. The "complete streets" focused coordination between Public Works, Public Safety and City Planning would draw upon the City's traffic management systems.[6]

**Best Practices:**

1. Louisville - LouieStat
2. Denver - Peak Academy

3. Fort Collins - Community Performance Measurement Dashboard
4. New Orleans - Nolalytics
5. Los Angeles - InfoMaster
6. I-95 Corridor Coalition - Traffic Incident Management Teams Best Practice Report

# Increase 311 call center capacity and services

In 2015, the 311 Call Center saw a 75% increase in the number of telephone service requests it received from 2014, while lowering the rate of dropped calls from 9.1% to 4.2%. To remain ahead of the curve, the City is in the process of retooling its 311 service, the non-emergency question & answer provider for residents. Enhancing this service can improve service provision and communication between citizens and City employees. In the past year the 311 call center expanded its hours to 7am-7pm and began taking service requests through its twitter account (@pgh311). In May 2015 the Department of Innovation & Performance hosted a National 311 conference to collect best practices on how to boost 311's profile and coordination with other City departments.

**Actions**:

- Increase awareness of public service announcements and other communications through 311.[1]
- Provide Automatic Call Distribution by recording, monitoring, and transferring calls in order to improve customer service and increase resilience in operations.
- Expand cooperation with other local service call centers like 211 and City authorities.
- Host a 311 Knowledge Base on the City website that includes information on City laws, permitting and other general service information.[2]
- Implement a City-branded application and website that allows users to create and track service requests, with personalized accounts for a customizable experience.[3]
- Publish 311 stats to account for City performance.[4]

**Best Practices**:

1. Philadelphia - Philly 311 Show
2. Tuscaloosa - 311 Knowledge Base
3. Boston - Permit Tracker
4. New York - Citywide Performance Reporting

# Improve internal operations & capacity of the City

## Streamline the City's procurement processes

The City declared 2015 the "Year of Procurement", with several departments working together to understand and reevaluate how the City spends money. As host for the Code for America fellows, the City will support the development of new applications and processes to save time and money as well as expand access to contracting opportunities. The City worked with National Institute of Government Purchasing to come up with a plan to better manage internal processes for evaluating contracting and purchasing options. To provide the best services possible to the residents of Pittsburgh, the City will implement a coordinated software strategy to improve internal processes. This will lead to better experiences for both the City and vendors during the proposal process. Clean investments are also an important factor in procurement decisions; the City of Pittsburgh currently purchases 30% of its electricity for municipal facilities and operations from renewable sources. In addition, the City is implementing a strategy that includes converting a portion of its vehicle fleet to run on biodiesel and roll out the second phase of DeLight Pittsburgh.

**Actions:**

- Improve the City's procurement process; in 2015 three Code for America fellows will create a web-based application to streamline the purchasing process, improving procurement efficiency, transparency, and effectiveness.[1]
- Embed sustainable and healthy living standards into the City's procurement process.[2]
- Develop a formal plan for vetting, purchasing and utilizing new and existing technologies with end user focus. This allows departments to easily identify

and submit their requirements for new software and hardware purchases and agreements, and for the City to maintain an accurate inventory of equipment and minimize unnecessary purchases.[3]
- Create and implement a strategic technology plan that includes software and hardware, allowing for coordination across departments. This will assure that new technology solutions can be used Citywide.[4]

**Best Practices:**

1. Code for America Blog - Procurement
2. Canada - Municipal Sustainable Procurement
3. Philadelphia - FastFWD
4. Virginia Beach - Technology Plan

# Improve technology capacity and training for the civil workforce

To ensure successful implementation of new technologies, the City will need to provide new technology and data literacy trainings for City workers, as well as seek qualified candidates for new positions. In 2015, the Office of Personnel and Civil Service Commission implemented City University, a revamped training program for City workers aimed at fostering a community of learning focusing on professional development, financial, and personal stability as well. The City currently offers three programs that bring more internship opportunities to local students and serve to make City government more accessible to the next generation; the Learn to Earn Summer Youth Employment; the year-round College Intern Program and summer internships in City Government to local High School students accomplish this task.

**Actions:**

- Provide technology and mechanical skills training for City employees through a partnership with TechShop in Bakery Square. [1]
- Allow City crews and managers to view existing and completed work orders on mobile devices and communicate completed orders to residents and management through a Citywide application.[2]
- Provide data literacy training for City workers to ensure that adoption of Open Data is smooth and effective.[3]
- Provide 311 and other public-facing employees with customer relationship management training opportunities.
- Work with local education partners to provide new in-depth trainings on technological topics and provide employees with online self-paced training opportunities. To keep these opportunities accessible to all employees, the option to attend any training virtually should be made available.

- Host fellowship, internship, and sabbatical/residency opportunities for tech-savvy professionals and students who want the chance to get a start in City Government.[4]
- Provide an innovation space for City employees to talk about methods to improve operations or ideas.[5]
- Offer lunchtime workshops through the I&P Speaker Series for City employees on technological solutions, sustainable practices, workplace management, and other professional development topics. These speeches should be recorded and posted on the City YouTube channel for the public and City employees who are unable to attend.
- Implement cultural awareness, access training, and protocol to improve City staff interactions with residents through the Welcoming Pittsburgh Plan.[6]

**Best Practices:**

1. New York City - Citywide Learning & Development
2. Mecklenburg County - Mobile/Cloud Enabled Devices
3. Chicago - Chicago Data Literacy
4. San Francisco - Fuse Corps
5. PennDOT - Safety Innovations Grant
6. Seattle - The Race and Social Justice Initiative

# Modernize the public infrastructure

To meet the challenges of a growing population and an aging infrastructure, the City will explore a variety of improvements to benefit the lives of both commuters and residents. Pittsburgh is the 25th largest transit operator in the country, with half of Downtown Pittsburgh's workforce commuting using public transit. The average rider saves approximately $796 each month by not traveling by car. In fact, in the summer of 2014, Pittsburgh created three new protected bike lanes and the Penn Avenue lane was named in the top ten new bike lanes in the country. Providing better streets benefits everyone: drivers, cyclists, pedestrians, and even businesses.

**Actions:**

- Develop and implement a "complete streets" policy: a planning method which considers all users of the road, whether they walk or roll, drive, cycle, utilize transit, are individuals with special needs, or are utilities and businesses in the area.[1]
- Expand and coordinate the synced traffic lights in the City to increase safety, optimize travel time, and reduce carbon emissions. Neighborhoods such as East Liberty and Downtown already make use of such traffic systems.[2]
- Explore building a Bus Rapid Transit Line (BRT) between Downtown Pittsburgh and Oakland in coalition with a variety of partners and the City. The BRT would provide a quick and energy-efficient method to connect these two

key neighborhoods. It would also utilize a "complete streets" system by better considering walking, cycling, and transit users between these neighborhoods.[3]

- Design and deploy Bus shelters and stops which are accessible, provide information, and are integrated within the context of the community's needs.[4, 5]
- Expand bike infrastructure through a targeted plan, looking at the possibilities of installing additions to existing bike routes such as large, bright signs, dedicated traffic signals and painted asphalt which can make drivers more attentive and aware of bikers to increase bike safety.[6,7]

**Best Practices:**

1. Littleton - Complete Streets Policy
2. Los Angeles - Synced Traffic Lights
3. Rio de Janeiro - Bus Rapid Transit
4. London - Interactive Bus Shelter
5. San Francisco - Green Bus Shelters
6. Seattle - Bike Signals
7. National - People for Bikes

# Institute smarter materials collection

Making the collection of materials as easy as possible for Pittsburgh residents is key to any successful materials collection plan. The City handles over 400 tons of refuse daily and runs 34 routes. Meanwhile only 20% of recycled materials are diverted from landfills, with about 72% of households participating in the City's recycling collection efforts. However, of all recyclable materials, approximately 44% are not sorted for recycling. The Bioenergy Roundtable brought up a number of areas for City leadership and involvement. The City is currently piloting a project on the Northside with the Pennsylvania Resources Council to distribute standardized residential recycling bins and evaluate the recycling activity of residents.

**Actions:**

- Provide increased awareness and education for recycling, composting, and waste management to residents.
- Expand the number of "smart" trash cans which send out alerts when full, making waste management more efficient and reducing litter and operational costs in business areas.[1]
- Build upon the Northside recycling pilot project and work to expand recycling pickup collection by providing solid waste collection bins.[2]
- Investigate movement towards a weekly recycling pickup schedule.[3]
- Explore ways of introducing curbside composting pickup for businesses and residents.[4]

- Invest in a bio-energy plant to save residents money and help the transition of the local energy economy to renewable sources.[5]

**Best Practices**:

1. Barcelona - Smart Trash Cans
2. Toronto - Recycling Collection
3. San Francisco - Smaller Trash Bins
4. San Francisco - Curbside Composting
5. Wooster - Waste to Energy Power

# Advance the Clean Tech sector

## Create energy, water, and air quality benchmarks for the City

Despite the huge improvement in the past three decades, Pittsburgh's air quality indices remain some of the worst in the nation. Outdoor air quality is primarily comprised of industrial and transportation combustion emissions, and the City and Allegheny County Health Department should explore clean technology to reduce the amount of air pollution released into the air. However, indoor levels of pollutants may be 2 to 5 times higher - and occasionally more than 100 times - higher than outdoor pollutant levels. The City is currently in the process of monitoring and metering its indoor air quality, water quality, water consumption and electricity consumption in order to establish baselines. Through this process, the City should work with the County Health Department to encourage regional stakeholders to take similar measurements and make informed, cost-effective efficiency and reduction decisions.

**Actions:**

- Equip five City-owned buildings, including the City-County Building, with building diagnostic dashboards to report indoor air quality and energy and water consumption as part of the City's partnership with CMU's Metro21 Initiative.
- Continue piloting an indoor air quality analysis of City buildings in partnership with CMU's CreateLab.
- Develop legislation mandating commercial businesses to track and report their energy and water usage by 2016.[1] This will help property owners and businesses conserve resources, improve health and save money, and help inform future tenets of the historical consumption and trends of the building.[2]

**Best Practices:**

1. Philadelphia - Mandated Commercial Energy Benchmarks
2. Seattle - Energy Benchmarking Laws

# Support clean technology development & infrastructure projects

The City has a unique opportunity to convene partners to promote clean technology projects. While the City can promote clean technology through legislation, investing directly in clean technology improves quality of life through economic development and conserves natural resources, while still meeting the current demand for energy and development. By being an early adopter of clean technology the City can spur local development and adoption directly. The Clean technology sector is one of Pittsburgh fastest growing, as discovered Clean Tech systems project completed by Heinz College Students in 2014.

**Actions:**

- Continue the development of the Uptown Eco-Innovation District. The program will attract new residents and firms, and use sustainable infrastructure to redevelop this high-potential neighborhood. The UpTown team plans to implement economic and ecological development that increases equity and creates a healthy community with diverse cultural and economic backgrounds, while improving air and water quality and conserving natural resources.[1]
- Support the incubation of Clean Tech through a public and private partnership that empowers local clean tech entrepreneurs with a place to test new clean energy and technology solutions.[2]
- Foster the Pittsburgh Green Garage Initiative to reduce carbon emissions through convenience information technology and integrated with an environmentally conscious context.[3]
- Install Smart Street Lights with LED energy efficient bulbs to reduce electricity usages and costs by 50%, and provide a platform for integration with a suite of smart city technology.[4]
- Undertake a green infrastructure master study to explore storm water runoff solutions and biodiversity, such as green alley ways.[5]

**Best Practices:**

1. Portland - EcoDistricts
2. Pittsburgh - AlphaLab
3. Colorado - National Renewable Energy Lab
4. San Jose - Smart Street Lights
5. United States - Urban Alleys

# Increase awareness and demand for clean technology

Considering the ecological challenges facing the residents of Pittsburgh, the City must begin to emphasize the adoption and awareness of clean technologies. Total employment in the clean technology sector increased by 29% from 2003 to 2010. However, the sector continues to lag behind the growth seen in other metropolitan areas which have begun to aid in the development of their clean technology clusters. With Pittsburgh already identified as a clean technology cluster a number of recommendations were laid out by the Clean Tech systems project completed by students at Carnegie Mellon University's Heinz College in 2014.

**Actions:**

- Encourage developers to use clean tech in their building designs through workshops and trainings code enhancements and design standards.[1]
- Provide leadership through the City's participation in the 2030 District Challenge, which aims to reduce energy and water consumption by 50% by the year 2030.[2]
- Create a Sustainable and Resilient Energy Plan for Pittsburgh, that increases City purchases of renewable energy from clean energy companies operating in Pittsburgh, with an ultimate goal of 100% renewable energy consumption by 2030 and LEED certification of the City-County Building by 2020.[3]

**Best Practices:**

1. Denmark - Clean Cluster
2. National - 2030 District Challenge
3. Asheville - Community Energy Plan

# Promote the local business environment

## Support local business in Pittsburgh

Small businesses are a cornerstone of the Pittsburgh economy and an integral part of the unique culture in each neighborhood. Providing business piloting opportunities and sharing city information and resources are a few focus areas for the City to aid Pittsburgh's local businesses. During the Mayor's Coworking Space and Startup Roundtables the City received feedback from local entrepreneurs for ways the City could help improve Pittsburgh's business environment. Coworking spaces are shared work environments that allow new companies to share resources and lower costs during their startup phase. Numerous organizations have been working in these areas for years. Increasing governmental cooperation with these organizations already at work will be key to improving Pittsburgh as a place to do business.

**Actions:**

- Engage with businesses through programs that could include; mobile trucks, pop up business sites, or temporary retail kiosks for entrepreneurs to test their business concepts.[1]
- Highlight unique local products and services through partnerships and awareness programs.[2]
- Map the business creation process for the average Pittsburgh entrepreneur in order to recommend improvements and lower barriers to start a business.
- Create a framework or working group focused on adapting and testing local business products and services within City government.[3]
- Work with local community coworking spaces to subsidize qualified applicants who would otherwise be unable to afford membership.

- Identify, promote and fill the gaps of local E-commerce tutoring and mentorships aimed at small business owners.[4]

**Best Practices:**

1. Memphis - Start-Up Competition
2. Akron - Unbox Akron
3. Seattle - Technology Matching Fund
4. Chicago - Smart Communities

## Support mentoring and fellowship programs

Pittsburgh has an expansive network of knowledgeable leaders across different business sectors and the public sector. Using this network to connect organizations with emerging leaders and enterprises advances the success of new entrants, diversifying Pittsburgh's local economy. Initiatives that involve connecting mentors with new businesses and students would help advance Pittsburgh's position as a "best city to start a business" and advance job opportunities for students. In 2015, the City began the Summer Youth Employment Program in order to increase internship and employment opportunities for Pittsburgh students.

**Actions:**

- Support existing small-business mentorship programs to connect established companies with smaller businesses, newer businesses, or even potential clients to provide guidance when starting a new venture.[1]
- Expand local and national fellowship programs to connect businesses and government to local universities and create a pipeline for students. This would help secure the City's talented graduating population by encouraging students to stay in Pittsburgh.[2, 3]
- Launch a leadership mentor matching program for immigrant entrepreneurs and community leaders through the Welcoming Pittsburgh Plan.[4]

**Best Practices:**

1. Small Business Administration - Mentorship Program
2. San Francisco - Code 2040
3. National - Black Girls Code
4. Saint Louis - Mosaic Project

# Connect local businesses with capital and resources

Investment and contributions from local corporations as well as pilot opportunities are necessary in order for the innovation economy to thrive. Without early funding, young companies cannot survive. Access to resources, both educational and monetary, are paramount to a company's success. This was a key topic from local entrepreneurs and investors during the Mayor's Accelerator, Startup and Venture Capital Innovation Roundtables.

**Actions:**

- Create an impact investment tool such as a fund of funds to focus on inclusive innovation.[1]
- Support the expansion of local resources for access to capital through Community Development Finance Institutions (CDFI) such as Bridgeway Capital and Northside Community Development Fund, and Urban Redevelopment Authority programs that encourage new businesses and foster investment.
- Strengthen the City's support of business through the enhancement of the City's Small Business Resource Fairs and LaunchPGH.com .[2]
- Grow immigrant and minority businesses through the Welcoming Pittsburgh Plan.[3]

**Best Practices:**

1. Cincinnati - Cintrifuse Fund of Funds
2. Austin - Getting Connected
3. National - Welcoming Economies (WE) Global Network

# Brand Pittsburgh as an "Inclusive Innovation City"

Promoting Pittsburgh as a center for new and creative industries while also highlighting areas of inclusive innovation is important in attracting new residents, businesses and investment. Doing so will not only improve Pittsburgh's Business environment, but also the surrounding region as well.

**Actions:**

- Begin a multi-year media campaign that works with community partners and promotes both their work and the Pittsburgh region.
- Invite prominent native Pittsburghers who have scattered across the globe to re-engage with the City through deliberate programs and partnerships.[1]

Feel free to provide your thoughts by either using our Feedback Form, tweet @PghIP using #PghRoadmap, comment directly on the Google Doc, or email us at ip-innovation-roadmap@pittsburghpa.gov.

- Form a national network with other cities' innovative leaders to help stay abreast of successful regional policies and projects.[2]
- Highlight the success of companies across the City in a consistent and deliberate fashion.[3]
- Coordinate economic development activity between the City, Allegheny County, Universities and local economic development organizations, through programs such as PowerUp Pittsburgh.
- Deepen the City's engagement with local universities to tie academic research to help develop innovative City policies.[4]
- Promote best practices to increase the hiring of immigrants through the Welcoming Pittsburgh Plan.[5]

**Best Practices:**

1. Ireland - The Gathering Ireland
2. New Orleans, Detroit, Cleveland and Durham - Forward Cities
3. Chicago - Innovation Day
4. New York - NYU Center for Urban Science and Research
5. National - Strengthening Communities By Welcoming All Residents

# Closing & Call to Action

The City of Pittsburgh Roadmap for Inclusive Innovation is an agreement between City Government and the residents of Pittsburgh that together we can work towards building a community in which all residents can share in new technological and social advances. Pittsburgh can ill afford to let entire portions of the City become neglected while growth and innovation occur elsewhere. It is our inclusive focus that will enable Pittsburgh to thrive and meet its full potential.

Yet the City cannot do this alone, and so we seek to grow the City's list of partners to help us reach the full ambition of this Roadmap. If there is a Focus Area, Goal or Action which excites you or your organization, you are encouraged to contact the Department of Innovation & Performance at ip-innovation-roadmap@pittsburghpa.gov for more information on how to join our team.

Also, if you have thoughts or additional comments please fill out our Feedback Form or tweet us using #PghRoadmap @PghIP.

Together we will meet and exceed the challenges of the 21st century and take Pittsburgh to the next level of innovation.

# Methodology

The Roadmap for Inclusive Innovation is the culmination of the Mayor's Innovation Roundtable Series, as well as a comprehensive analysis of Pittsburgh's strengths, weaknesses, opportunities and threats. Projects and initiatives from the Roadmap stem from multiple sources, including the Innovation Roundtables, national and international best practices, City staff, and University partners. Each project has been measured and has demonstrated value in **affordability, partnerships, timeline, inclusivity, City capacity and innovation**. The following sections breakdown the methodologies used during the process of authoring the Roadmap for Inclusive Innovation.

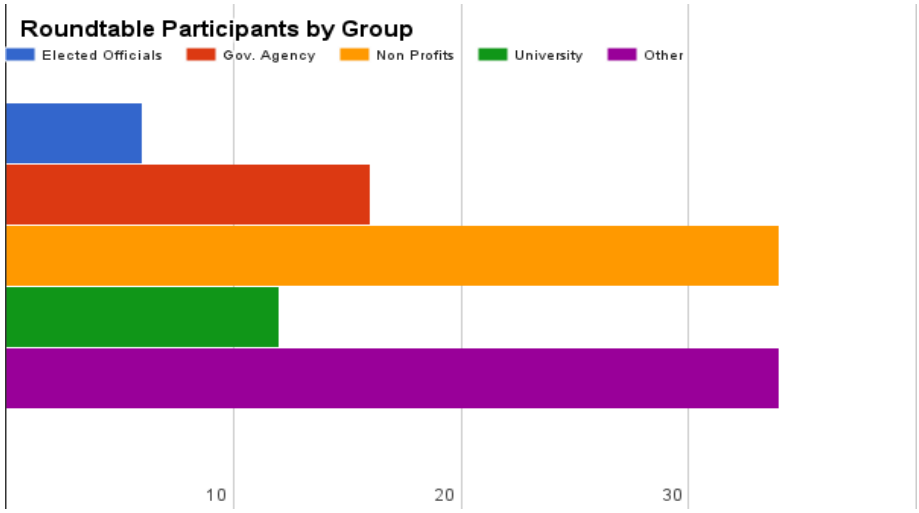
**Fig. 3 Methodology Process**

Feel free to provide your thoughts by either using our Feedback Form, tweet @PghIP using #PghRoadmap, comment directly on the Google Doc, or email us at ip-innovation-roadmap@pittsburghpa.gov.

# Mayor's Innovation Roundtable Series

In order to better understand the current state of Pittsburgh's innovation community the Mayor's Office along with the Department of Innovation & Performance coordinated a series of Roundtables. The topics for the Roundtables included the Maker Movement, Clean Technology, Coworking & Accelerator Spaces, Startups & Entrepreneurs, Venture Capital and Bioenergy. Key stakeholders in each area were invited to give presentations and provide insight into how their sector of the innovation community could become more inclusive and partner with City government.

**Fig. 4 Roundtable Participants by Group**




Roundtables were cablecast live on City Channel Pittsburgh, with City staff live tweeting with the public. Each Roundtable was made available on the City YouTube channel along with a summary report to accommodate those who were unable to attend the events.

**Fig. 5 Roundtable Stats**

| Roundtable Stats | | | |
|---|---|---|---|
| **Participants** | 102 | **Organizations** | 84 |
| **Presenters** | 17 | **Social Media Engagement** | 685 |

Feel free to provide your thoughts by either using our Feedback Form, tweet @PghIP using #PghRoadmap, comment directly on the Google Doc, or email us at ip-innovation-roadmap@pittsburghpa.gov.

# Strengths Weaknesses Opportunities & Threats (SWOT) Analysis

Several overlapping trends emerged through the SWOT analysis of regional business, government, and social tendencies. While some trends can be characterized as building upon steps the City has already initiated and opportunities that loom on the horizon, others can be characterized as detracting from Pittsburgh's innovation efforts and threats that prevent future growth in the innovation sector. Information for the SWOT was provided by City personnel, the Mayor's Innovation Roundtable Series, and nationally reported statistics for comparison.

The SWOT concluded that in order for Pittsburgh to remain competitive, it must not only count on its incumbent businesses and startups to innovate, but also leverage what is currently available. While consistently marked as one of the world's "most livable cities", the City misses out on many rankings of innovation. The Department of Innovation & Performance has identified four key sectors where City Government can help foster and build innovation: Clean Tech/Sustainability, Community Investment/Infrastructure, Business & Enterprise, and Civic Engagement, Open & Transparent Government. Below are the identified and overlapping SWOT facing the City across the identified sectors. The Roadmap for Inclusive Innovation was designed to accommodate and address each of these as well as other conclusions from the SWOT analysis.

**Fig. 6 SWOT across Sectors with Overlap**

Feel free to provide your thoughts by either using our Feedback Form, tweet @PghIP using #PghRoadmap, comment directly on the Google Doc, or email us at ip-innovation-roadmap@pittsburghpa.gov.

The City's ability to bring organizations from different sectors/neighborhoods together is a major strength that overlaps all categories. This is most evident in the City's Open data initiative. The Mayor's Innovation Roundtable series is a further example of growing and fostering local partnerships.

The organizational capacity of the City is one of its biggest handicaps across each of the identified sectors. Without fully staffed departments equipped with trained personnel who have a clear understanding of the new methods, systems, and structures, many of the initiatives set out in this Roadmap may be unattainable.

The City's Personnel and Civil Service Commission Department in conjunction with Innovation & Performance has been exploring the creation of City University to address the needs of the City's capacity.

Given its Act 47 status the City of Pittsburgh has difficulty in meeting all its funding obligations. This fact hinders the City's opportunity for investment in new programs, and instead it must focus on its current obligations. While some funding for new investments in innovation are possible most of the funding for these initiatives will have to come from sources outside of the City's budget.

The toughest factor facing communities in the 21st century is ensuring that innovation and technology have an impact on everyone, regardless of age, race or background. Though the income gap continues to grow nationally, addressing this trend falls upon local municipalities. Pittsburgh aims to be the first city to directly address these concerns through its Roadmap for Inclusive Innovation.

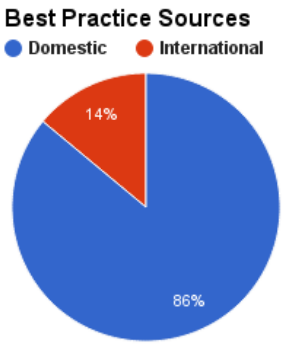
The Office of the Mayor's new administration began its term by building and strengthening its partnerships. Through its work with universities, community organizations, neighborhoods, and business, Pittsburgh can build and maintain an innovative and collaborative City government.

The aging physical infrastructure of Pittsburgh offers a number of problems for innovation within the City and the government. This strain on resources keeps the City from investing in programs which may offer benefits over the long run instead of the immediate gains, such as fixing city roads. The aging infrastructure also impacts businesses of all kinds, making business operation within the City limits difficult.

# Best Practices

Innovation is not built solely out of thin air. Compelling ideas are often founded from existing ones, and are perfected through new applications and circumstances. Keeping this fact in mind, City and URA personnel undertook an extensive search of national and international best practices. Many of the cities profiled in the search have been cited within the Roadmap for Inclusive Innovation itself. In total the Roadmap includes direct references to **49 different cities, countries, states, and municipalities**. Twelve of the references are international with the remaining 36 being domestic. **These 49 sites provide a total of 86 different projects, meaning each of the Roadmaps 20 different goals have on average over 4 different projects already in existence to model a Pittsburgh centric initiative after.**

**Fig. 7 Map of Roadmap for Inclusive Innovation Best Practice Locations and Sources**




Additionally reports and technology plans from domestic and international cities were consulted to understand how to best lay out the roadmap, the scope of such a document, and the areas of focus typically undertaken. The four most influential digital/innovation/technology plans were those from New York City, Kansas City, Chicago and San Francisco. All four cities focused on retooling government to better meet the needs of its residents, while also increasing the availability of technology and connectivity to their residents through inclusion. These goals are also a major thread of Pittsburgh's own Roadmap for Inclusive Innovation.

# Public Engagement & Presentations

The Roadmap team also conducted a series of internal and external meetings and presentations with members of the innovation community and City personnel. These meetings sought to understand what other initiatives were needed from the Roadmap as well as the solutions other departments are already working on or towards. Internal meetings were held to ensure the Roadmap served as a complement to the goals of each of the City departments. Additionally, in the early fall of 2014, a short survey was sent out to attendees of the Innovation Roundtables to ask which statistics and areas should be a focus of the City going forward.

By end of 2014 and early 2015 a number of external presentations were hosted by Department of Innovation & Performance. The purpose of these presentations was to keep the innovation community as involved as possible leading up to the release of the roadmap. After each presentation, the floor was open for feedback, comments and suggestions.

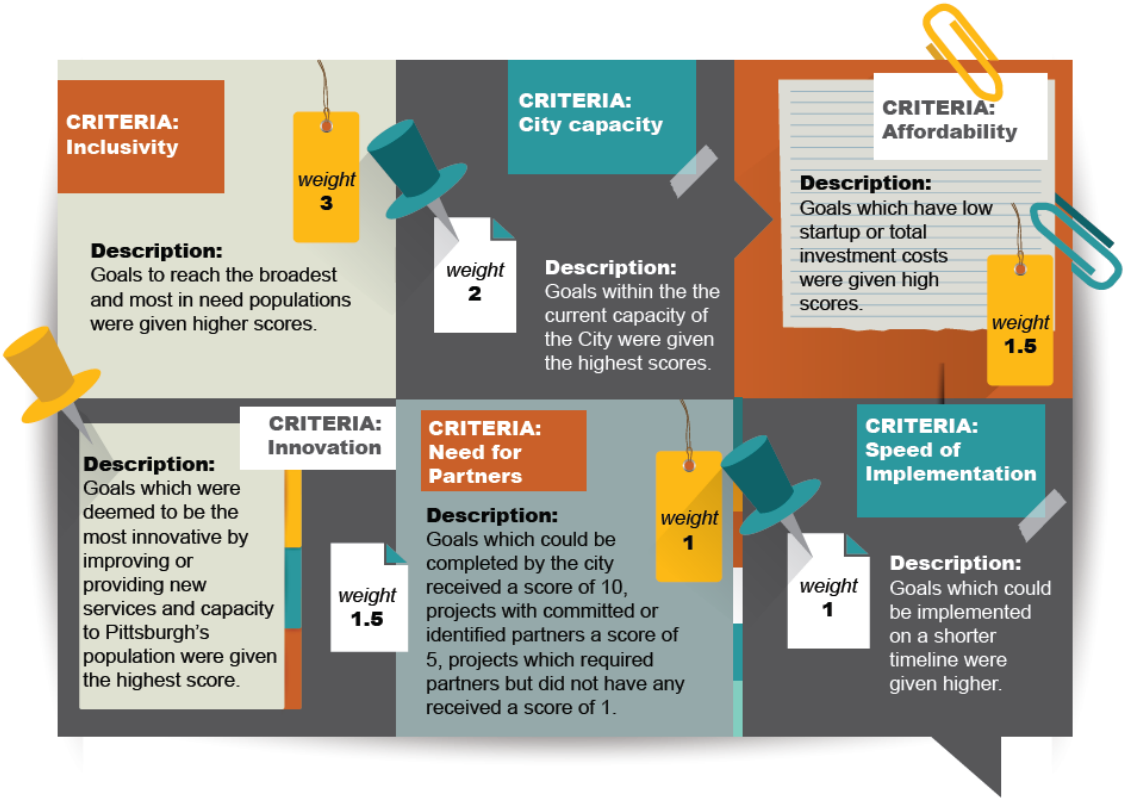
**Fig. 8 Outreach Timeline**

| Outreach Timeline | |
|---|---|
| Summer 2014 | Innovation Roundtable Series |
| Fall 2014 | Roundtable Attendee Survey |
| Fall 2014 | Engage Pittsburgh Campaign |
| Fall 2014 | Internal Meetings |
| Winter 2014/2015 | External Presentations |
| Spring 2015 | Stakeholder Meetings |
| Spring 2015 | Public Comment Period |
| Fall 2015 | Official Release |

# Criteria & Prioritization

Goals and projects which made the Roadmap were scored on their demonstrated value in six areas by the Roadmap Team. These areas are; affordability, need for partners, speed of implementation, inclusivity, City capacity, and innovation. The Roadmap team scored each goal by six criteria on a scale from 1 to 10.

**Fig. 9 Criteria Categories and Descriptions**




It should be noted that not every project present in the Roadmap for Inclusive Innovation is equally likely to be undertaken and completed. Each recommendation will receive the same vetting and legal processes required by any City project. This first round of scoring was meant to quickly and systematically determine which projects should be considered by the Roadmap Team and the City. The Roadmap is designed as a living document, and not just a snapshot in time. As new projects and best practices are identified they will be added to the Roadmap, and existing ones may be removed to reflect current conditions.