Prepared by:

SmartWorks Partners
312 S. Fourth St.,
Suite 700
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REQUEST FOR PROPOSAL

RFP #18000264

Telecommunication and Cable Strategy Consulting Support

Prepared for:

City of Pittsburgh, PA

Office of Management and Budget

414 Grant Street

Pittsburgh, PA 15219

www.smartworkspartners.com

August 2018

SUBMITTED electronically

Wednesday, August 29, 2018

Mr. Thoryn Simpson
Manager Strategic Initiatives
City of Pittsburgh, PA
Office of Management and Budget - Procurement
414 Grant Street
Pittsburgh, PA 15219

RE: RFP #18000264 – Telecommunication and Cable Strategy Consulting Support

Dear Mr. Simpson:

The SmartWorks Partners team, working with City staff and local stakeholders, will develop a long-term, holistic telecommunications strategy for the City of Pittsburgh, PA (the "City"). This program will incorporate the monetization of publicly owned assets, use of competitive franchise and master use agreements, and a City-wide streamlined asset management process for all viable telecommunications assets. Together, these initiatives will allow the city to significantly enhance overall connectivity, manage smart city programs, and lower its cost burden. This comprehensive approach will provide a framework that will promote the advancement of 5G and IoT technologies, while maximizing the city's own ability to close the digital divide through re-investment in future technology initiatives.

Our team includes representation from CTC Technology & Energy ("CTC") and Cohen Law Group ("CLG"), nationally regarded experts in cable television franchise renewals, telecommunications, wireless and broadband projects, which has worked with hundreds of local governments in 8 states, including Pennsylvania, over the past 20 years. Collectively, our diverse talent, commitment and results are qualities that have allowed us to gain the trust of cities, counties and states nationwide.

We have enclosed the RFP response with required exhibits outlining the scope of services for your consideration. Dave George, Regional Market Director, will serve as our primary contact for communications regarding the proposal and further discussions. Dave can be reached by phone at (614) 218-5417 or by email at dave.george@smartworkspartners.com.

We appreciate the opportunity to present the following RFP response for your review and are ready to work together on this critically important initiative. Please do not hesitate to contact us if you have any questions or need additional information.

Sincerely,
SmartWorks Partners

Matthew Steadman
President

312 S. Fourth St., Ste 700, Louisville, KY 40202 | 866.881.9425 | info@smartworkspartners.com

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Section A: Firm's Qualifications, Experience & References

1.1. Company Qualifications

Authorized Principal:	Matthew Steadman, President
Legal Name:	1020 Digital, LLC (Delaware)
Federal Tax ID No.:	45-3957006
d/b/a:	**SmartWorks Partners**
Address:	312 S. Fourth Street, Suite 700 Louisville, KY 40202
Telephone:	+1 (267) 250-4639
Fax:	+1 (866) 579-0796
Website:	www.smartworkspartners.com
Email:	matt.steadman@smartworkspartners.com
DUNS No.:	032258789
Years in Business:	7 Years (performing services related to the RFP)

SmartWorks Partners (SWP) was created to help governmental jurisdictions develop smart city strategies and comprehensive broadband master plans that generate new revenue streams while closing the digital divide. This can be achieved through monetization of public assets and modernization of municipal policies, processes and fee schedules. SWP does this by facilitating public-private partnerships with broadband and smart city providers that rapidly accelerate broadband expansion for businesses, residents and visitors. It is important to note that SWP maintains only municipal and state level clients and does not maintain a telecommunications industry client base. We consider ourselves to be a true partner with municipalities, with your priorities and community interests as the drivers of our success. We provide a unique low, or no cost, service model to building smart city strategies for the future of your city.

SWP is headquartered in Louisville, Kentucky and maintains offices in Georgia, Tennessee, Nevada, Colorado, Ohio, Kansas and California. SWP is a comprehensive broadband and telecommunications advisory and development firm that assists public

clients in unlocking the value of their assets for broadband network expansion, digital equity and smart implementation platforms. SWP, is the commercial spinoff (2011) of Connected Nation ("CN"), an internationally recognized non-profit that has raised more than $100 million with 100+ staff over the last 15 years to help lead broadband expansion efforts across the United States.

1.2. Declarative Statement

Official Authorization

I certify that the undersigned is authorized to submit bids/quotations on behalf of 1020 Digital, LLC, a Delaware Limited Liability Company, dba SmartWorks Partners ("SWP"). The information provided about SWP's ability to perform the goods and/or services outlined in this solicitation document is true and accurate and no member of our Team has an open dispute or litigation with the City. I understand that our product and/or service offerings must follow all requirements of this solicitation document and will remain valid for ninety (90) days from the date of submission.

Sincerely,
SmartWorks Partners

Matthew Steadman
President

1.3. SWP Experience

The SWP team have diverse backgrounds in all facets of telecom expertise including legal, engineering, site development, operations, business development, marketing and sales. We are acutely aware of how providers think and act, and we bring this extensive expertise to bear on behalf of our clients.

FCC Chairman Pai appointed SWP to sit on the Broadband Deployment and Advisory (BDAC) Committee to help shape national policy for the collaboration between cities and wireless carriers in the deployment of 5G technologies. Our position on this carrier intensive committee has been to protect the rights of cities and states in the drafting of model codes that governmental entities can adopt to accelerate wireless deployments.

Over the last several years, SWP has won or secured competitive contracts with cities, counties and states of all sizes including Columbus, OH, Nashville, TN, Warren

County, KY, Clark County, NV, Chattanooga, TN, Knoxville, TN, Pittsburgh, PA, Charleston, SC and the States of Ohio, Michigan and Kentucky. Our government customers trust us to develop strategic plans that develop, optimize, and monetize their assets to broadband providers and establish an infrastructure foundation for “Smart City” connectivity. The client list below shows the wealth of staff experience with aggregating community input, municipal broadband and wireless master planning, mobile wireless site selection and management, and optimizing the revenue generating potential of publicly-owned assets.

- **City of Columbus, Ohio** (2015 – current) – retained to develop and implement a city-wide broadband strategy and fiber network expansion initiative revolving around four pillars of economic development, public safety, digital literacy and government services. Project includes the **brokered use of the city’s 650-mile fiber network by public entities and commercial carriers**. SWP was recognized by Mayor Michael Coleman as instrumental in the city’s selection as 2015 Intelligent Community of the Year, an international award presented by the Intelligent Community Forum.

- **Metro Nashville, TN** (2015 – current) – selected as lead contractor to create and implement Metro’s broadband strategic plan focused on **mobile broadband expansion and asset management** initiatives that incorporate “Smart City” planning**.**

- **Clark County, NV** (2017 – current) – retained to **create a wireless master plan** for Clark County, Nevada including a subsection exclusively designed for “the Resort Areas” within the County jurisdiction. Given the increasing demands for a wireless small cell siting application solution, Clark County contracted with SWP to create a wireless master plan with coverage overlays, Platform integration, ordinance review and recommendations, design standard review and recommendations, and best practices review and recommendations to meet the future market demands for densification of wireless network coverage within the County.

- Chattanooga, TN (2016 – 2017) – contracted to assist the city and its counsel focused on wireless broadband expansion, asset management and telecommunication ordinance review.

- **Pittsburgh, PA** (2017 – current) – contracted to assist the city and its counsel focused on **aesthetic design standards** for small cell deployments in the city**.**

- **Knoxville, TN** (2017 – current) – contracted to assist the city and its counsel focused on the creation of **a wireless master plan** with gap coverage analysis, Platform integration, ordinance review and recommendations, design standard review and recommendations, and best practices review and recommendations to meet the future market demands for densification of wireless network coverage within the City**.**

- **Charleston, SC** (2018 – current) – contracted through **a success-based asset leasing and management program** as well as assisting the city and its counsel focused on the creation of **a wireless master plan.** The plan includes gap coverage analysis, Platform integration, ordinance review and recommendations, design standard review and recommendations, and best practices review and recommendations to meet the future market demands for densification of wireless network coverage within the City**.** SWP is also the asset leasing partner for the city in which **SWP will perform all Program Management functions** outlined in the response.

1.4. Subcontractor Experience

1.4.1. Cohen Law Group Experience

The Cohen Law Group (CLG) is a law firm that specializes exclusively in representing local governments in cable franchise, telecommunications, wireless, and broadband matters. This has been the single-minded and passionate focus of our law firm for over 20 years. Located in Pittsburgh, CLG guides local governments through these intricate and constantly changing fields. CLG has represented hundreds of local governments in eight states (PA, NY, MD, MO, WA, OR, DE, and WV) in these matters.

CLG offers technical expertise, depth of experience, and a tireless commitment to help our clients solve complex telecommunications issues.

Our law firm has assisted over 450 municipalities and counties in cable franchise negotiations with nearly every major (and many minor) cable operator in the United States. Our cable franchise clients have included large urban cities as well as smaller, suburban and rural jurisdictions. In Pennsylvania, for example, CLG has represented the following cities in cable franchise negotiations: City of Pittsburgh, City of Allentown, City of Scranton, City of Lancaster, City of Harrisburg, City of Reading, and City of Erie. In New York, we have represented the City of Yonkers, the City of White Plains, and the City of Rochester in cable franchise negotiations. CLG is currently negotiating cable franchise renewals with Verizon and with Comcast on behalf of numerous jurisdictions throughout the United States.

Our attorneys actively engage in rulemakings and related proceedings of the Federal Communications Commission ("FCC") and the Pennsylvania Public Utility Commission ("PUC") as they pertain to local governments. For example, our law firm recently represented the four statewide municipal associations (Pennsylvania Municipal League, Pennsylvania State Association of Boroughs, Pennsylvania State Association of Township Supervisors, and the Pennsylvania State Association of Township Commissioners) in the wireless DAS proceeding before the PUC in which the Commission agreed with the associations that wireless contractors are not "public utilities" under the Public Utility Code.[1]

CLG is also representing the statewide municipal associations before the Pennsylvania Supreme Court in the case of *City of Lancaster v. PPL,* a case of first impression that addresses the issue of the type and amount of right-of-way fees that may be assessed on utilities. Our attorneys are also very active in the National Association of Telecommunications Officers and Advisors ("NATOA"), which is the national organization

[1] The Cohen Law Group is currently representing the statewide municipal associations in the appeal of the PUC's decision before the Commonwealth Court.

representing local governments in telecommunications matters. The principal of our firm, Dan Cohen, was elected to the Board of NATOA in 2017.

CLG is uniquely qualified to represent the City of Pittsburgh in strategic consulting with respect to cable and telecommunications matters. CLG not only specializes exclusively in cable and telecommunications matters on behalf of local governments, but we know the City of Pittsburgh's cable franchise agreements (and side agreements) backward and forward. In 2009-10, CLG had the privilege of representing the City in negotiations for an initial cable franchise agreement with Verizon and a franchise renewal agreement with Comcast. While the negotiations were hard-fought, the resulting franchise agreements became national models in terms of the financial, cable, and broadband benefits to the City. If offered the opportunity to represent the City in this new round of franchise renewals with these cable operators, we would build on the prior agreements to address new technologies and a new set of City needs within a more competitive digital environment.

As the examples below illustrate, we offer demonstrated experience and qualifications in negotiating cable franchise agreements:

City of Pittsburgh, PA: CLG represented the City in cable franchise negotiations with Verizon and with Comcast in 2009-10. The two agreements are generating approximately $60 million in value to the City over a 10-year period. The benefits include, but are not limited to, the following:

- Maximum franchise fees to the City through a definition of "gross revenues" that includes 22 (Comcast) and 19 (Verizon) separate revenue sources;
- Two institutional networks (I-Nets)—one from Verizon and one from Comcast—that provide private high-speed broadband networks connecting the City's public safety and related facilities. Other than New York City, Pittsburgh is the only other city in the United States in which Verizon agreed to provide a free I-Net.
- Financial support from both cable operators projected to provide an estimated $7.16 million for the City's Cable Bureau and PCTV.

- A commitment by Verizon to build out the entire City with fiber within 6 years or be subject to monetary fines.

- Comprehensive and enforceable customer service standards

City of White Plains, NY: CLG assisted the City in cable franchise negotiations with Cablevision (now Altice USA) in 2017. The final franchise package included, but is not limited to, the following: increased franchise fees to the City; franchise fee bundled services protection; $1.9 million in financial support for the City's public, educational, and governmental (PEG) channels; an increase in the number of PEG channel fiber return lines; a franchise fee audit settlement of $400,000; and an additional technology grant for the City.

Charles County, MD: CLG is currently representing Charles County, MD in cable franchise renewal with Comcast. Among other objectives, the County is negotiating with the Comcast franchise team to obtain the following: the retention and expansion of an I-Net to connect 89 County facilities; a significant Comcast build-out of unserved or underserved areas of the County; and financial support for the County's three PEG channels in the amount of $7.53 million.

City of Yonkers, NY: In 2016-17, our law firm conducted a franchise fee audit of Altice U.S.A., formerly Cablevision, on behalf of the City of Yonkers. The audit resulted in a finding of underpayments in the total amount of $663,896.62. CLG is currently assisting the City of Yonkers in cable franchise renewal with Verizon. The key issues in the negotiation are: increase in franchise fee revenue and accountability; right-of-way protections for the City; PEG channel technical enhancements; significant financial support for the City's PEG channels; complimentary cable/internet services to City facilities; and competitive equity between the City's two cable operators. We are negotiating with the Verizon franchise team that most likely will be assigned to the City of Pittsburgh.

North Hills Council of Governments: In 2007-09, CLG assisted 15 municipalities in the Pittsburgh area in negotiations with Verizon for an initial cable franchise and with

Comcast for a franchise renewal agreement. The negotiations resulted in significant financial and other cable-related benefits for the participating municipalities.

City of Scranton, PA: In 2015, CLG represented the City of Scranton in cable franchise renewal negotiations with Comcast. The final agreement (and side agreement) includes increased franchise fee revenue to the City; a state-of-the-art requirement that Comcast continually upgrade its system to conform to advances in technology; significant PEG and Technology grants; complimentary cable and internet services to municipal and school facilities; comprehensive customer service standards; and monetary fines (liquidated damages) for violations of the agreement.

Great Neck/North Shore Cable Commission, NY: In May 2018, CLG was engaged by 15 municipalities on Long Island NY to negotiate cable franchise renewal agreements with Verizon and Cablevision (now Altice USA). CLG is in the process of working with the Commission to set priorities for negotiations with these cable operators.

1.4.2. CTC Experience

CTC is a 35-year-old, woman-owned business. Headquartered in Kensington, Maryland, we serve clients nationwide.

Cable and PEG Expertise

CTC has supported public sector clients nationwide with cable franchise negotiations for more than two decades, including conducting PEG needs assessments and community surveys; performing cable system testing and inspection; preparing cost estimates for PEG and Institutional Network (I-Net) requirements; and overseeing cable system and operator performance monitoring. CTC has also assisted some local governments with the intake, processing, management, and resolution of cable television complaints from residents.

CTC is independent of any relationships with cable television providers and other communications carriers; as a result, CTC is able to give our clients independent and unbiased advice and recommend the appropriate plans and technologies to meet identified needs.

CTC's engineers have directly supported numerous franchise negotiations, advising our clients' legal counsel on a wide range of technical matters impacting negotiations and franchise agreement language.

CTC President Joanne Hovis, an attorney who has provided network business model analysis and recommendations for some of the largest public broadband networks in the country, is a nationally recognized authority on the broadband market and community broadband topics—and on the evolving role of government in the provision of communications services to the public. She has advised our clients in many states on strategic approaches to cable franchise renewal negotiations.

In the area of cutting-edge market research and cable franchise needs analysis, CTC has assisted communities nationwide, including.

Cities:

- Baltimore
- Boston
- Brunswick, Ohio
- Cincinnati
- Cleveland
- Detroit
- Fairfax, Virginia
- Hollywood, Florida
- Los Angeles
- Milwaukee
- Northbrook, Illinois
- Paris, Illinois
- Pittsburgh
- San Jose
- Seattle/King County, Washington
- Skokie, Illinois
- Washington, D.C.
- Wilmington, Delaware

Maryland counties:

- Anne Arundel County

- Carroll County
- Montgomery County
- Prince George's County
- Virginia counties:
- Arlington County
- Fairfax County
- Loudoun County
- Prince William County
- Spotsylvania County

CTC also works with a number of consortia and intergovernmental groups that oversee cable television for multi-jurisdictional areas.

In **Montgomery County, Maryland,** for example, CTC has provided engineering and strategic support to the Cable Office during multiple cable TV franchise renewal processes. CTC has provided ongoing technical oversight of the Comcast, RCN, and Verizon cable systems there, including regular tests and field inspections. CTC also oversaw the twice-yearly FCC proof of performance tests. In terms of the Comcast renewal, we tested and inspected the Comcast cable system to develop data and recommendations in support of the County's franchise agreement renewal process.

CTC has worked with **Prince George's County, Maryland,** on cable issues since 1997. CTC provided planning and technical advice for the County I-Net, assisted in developing the I-Net governance, planned and designed the Inter-County Broadband Network (ICBN), acted as the County's lead technical consultant for the cable negotiations with Comcast and Verizon, provided engineering for the cellular tower coordination process, managed the County's cable customer complaint calls, and planned and implemented the expansion of the County's secure video conferencing system.

I-Net and Government Fiber Expertise

CTC offers extensive experience and expertise in all aspects of fiber network planning and implementation—from strategic and business planning to feasibility studies, needs assessment, engineering, and construction oversight. CTC has developed broadband business strategies—including market surveys, business plans, engineering

analyses, and financial pro formas—for public sector clients nationwide, including the cities of Atlanta, Palo Alto, Raleigh, San Francisco, and Seattle.

Many of the CTC engagements have focused on low-risk non-profit and public sector strategies to expand existing broadband infrastructure to serve internal government functions (I-Net), close the digital divide, promote economic development, enhance the availability of high-bandwidth services to local businesses, and increase broadband competition.

CTC specializes in helping local governments and municipal utilities develop phased approaches for implementing fiber networks to meet their needs; CTC is particularly experienced with helping to develop strategies for risk sharing among multiple partners, including, in some cases, for-profit service providers that utilize publicly owned assets. CTC's goal in these engagements is to develop strategies in which the service provider partner shares the risk of expanding a network to serve the public sector's broader needs. In these engagements, too, CTC is vigilant about protecting our public sector clients' interests and managing their risk with respect to partner financing and operations.

As the examples below illustrate, CTC offers demonstrated experience and qualifications in the areas of network strategic planning, financial analysis, and business planning. These are just a few of the hundreds of client projects CTC has successfully completed over the past 35 years.

City of Albuquerque, New Mexico: CTC developed a strategy for connecting the City's key stakeholders and locations with a network that will have the most impact on its economic development and digital inclusion goals. CTC surveyed candidate network routes and developed a system-level design and pricing estimates for the construction and operation of fiber infrastructure. This strategic design maximized potential economic development, minimized budgeting risks, and positioned the City for future network expansion.

Arlington County, Virginia: CTC currently is designing and managing the construction of ConnectArlington, the last-mile fiber network that will connect approximately 80 of the County's government buildings, schools, and public safety facilities. CTC staff members, including an on-site project manager, are overseeing every aspect of the project, from network mapping to construction supervision and acceptance.

CTC has also developed the business plan and strategy for the County's dark fiber leasing initiative and is currently preparing an RFP for the County's use in selecting a fiber broker. This third-party broker innovation is the first of its kind among public entities in the United States.

Additionally, CTC staff are providing critical input into the design and testing for other phases of the County's self-managed fiber construction project, which will ultimately have close to 60 miles of backbone fiber.

City of Atlanta: CTC currently is advising the City on strategic and tactical approaches it can take to plan, build, and operate its own fiber network to cost-effectively serve its internal needs, promote private sector broadband investment, and enable competition in the City's residential and business broadband markets.

City of Bloomington, Indiana: CTC is supporting the City's efforts to develop ubiquitous, Gigabit-class broadband. CTC collaborated with City staff and other stakeholders to facilitate a public symposium and related communications materials on the value of next-generation infrastructure. CTC also performed in-depth analysis of the local broadband market, and fostered engagement with a range of public and private stakeholders. CTC's analysts and engineers also assessed the City's existing assets, prepared a competitive assessment of broadband services, benchmarked the City's broadband availability, and developed high-level engineering and cost estimates. Additionally, the CTC team developed and administered an RFI to gauge public-sector interest in partnering with the City to achieve its broadband goals.

District of Columbia: CTC performed a business case and technology analysis for DC-Net, a fiber optic telecommunications network that provides voice and data services

for the District of Columbia government. The network consists of resilient, interconnected fiber optic rings that will eventually connect more than 400 government buildings in the District, including Police Department, Emergency Management Agency, and Fire Department radio towers. CTC's independent assessment analyzed public safety, government, and educational uses of the network. The project tasks included asset mapping and network description; cost comparison to leased/managed services; functional and technical comparison between dark fiber and alternatives; leveraging the ability to resell to other entities; identifying support mechanisms; and determining recommended business practices.

National Capital Region (NCR) Interoperability Program: CTC provided the concept, engineering design, and project management for the National Capital Region Interconnection Network—a 120-mile public safety network interconnecting 19 fiber-optic based government networks in the greater Washington, D.C. region. This network was conceived as a backbone for interoperable communications that could take advantage of existing fiber infrastructures the governments already controlled.

City of Raleigh: CTC developed a roadmap for meeting the City's future networking needs. CTC engineers performed a technical assessment of the City's network plans, developed a strategy for fiber construction, and provided detailed guidance on middle-mile network operations. CTC business analysts assessed the City's current network financial models, refined those projections, and created a sustainable business model that will enable the city to capitalize on excess fiber to create revenue and other community benefits.

1.5. References

1.5.1. SWP References

The following are SWP references. The description of the project associated with each reference is included above. We invite you to contact these references about the quality and timeliness of SWP work. Other references are available upon request:

City of Columbus
Sam Orth
Director, Department of Technology/Chief Information Officer
1111 E Broad St.
Columbus, OH 43205
(614)645-2550
hsorth@columbus.gov

City of Nashville
Keith Durbin
Chief Information Officer
700 2nd Ave S., Suite 301
Nashville, TN 37219-6300
(615)714-7418
Keith.Durbin@nashville.gov

Clark County, NV
Jacqueline Holloway
Director of Business Licensing
500 S. Grand Central Pkwy.
Las Vegas, NV 89155
(702)455-4252
jqrh@clarkcountynv.gov

1.5.2. CLG References

The following are the references of the Cohen Law Group. The description of the project associated with each reference is included above. We invite you to contact these references about the quality and timeliness of CLG's work. Many additional references are available on request.

City of Pittsburgh
Howard A. Stern
Former CIO, City of Pittsburgh
Carlow University
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Pittsburgh, PA 15213

(412) 578-8828
hastern@carlow.edu

City of White Plains, NY
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Former Corporation Counsel
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(914) 260-6213
mcurti@harrisbeach.com

North Hills Council of Governments
Wayne R. Roller
Executive Director
North Hills Council of Governments
300 Wetzel Road
Glenshaw, PA 15116
(412) 487-5230
wroller@northhillscog.org

1.5.3. CTC References

We invite you to contact the following references about the quality, independence, and timeliness of CTC's work. Many additional references are available on request.

City of Boston
Mr. Mike Lynch
Director
Office of Broadband and Cable

mike.lynch@cityofboston.gov
(617) 908-8142

District of Columbia
Ms. Gail Karish
Best & Krieger law firm
Gail.Karish@bbklaw.com
(909) 466-4916

Montgomery County, MD
Ms. Mitsuko R. Herrera
Montgomery Program Director
Department of Technology Services
Montgomery County, MD
Mitsuko.Herrera@montgomerycountymd.gov
(240) 777-2928

Section B: Qualifications of the Project Team

Our experienced team and noted subcontractors are committed to providing a comprehensive and holistic approach as outlined in the RFP. We are focused on the challenges and unique solutions to identify and assess what will become a pivotal infrastructure component that collects and transports data to drive smart city efficiencies and services.

Our group approach to client management works effectively to allow the client access to core team competencies from regulatory, legal, engineering, network development and project coordination. The project manager will be the single point of contact with the City and broadband clients; ready and able to assign necessary functions to team subject matter experts. Each project will be tracked through weekly status updates to mitigate assignment delays. In the event of a team member departure, the project coordinator will assign suitable subject matter experts to the project.

2.1. SWP Team

Together this team brings over 200 years of combined experience developing telecommunications plans for cities and counties nationally. By contracting with us, the City will be partnering with one of the best wireless and broadband teams in the country, ready to commit to your project.

2.1.1. Dave George – Project Role: Project Manager

PROJECT ROLE	***YEARS OF SERVICE***	***TIME (%) ALLOCATION***
PROJECT MANAGER	20+ years	80%
Role Description: Responsible for ensuring the timely preparation and presentation to staff of all project deliverables. George will work with other team members to provide broadband plan recommendations to City. He will take the lead to both evaluate as well as value City assets relative to current marketplace needs with all broadband service providers. He will perform all sites walks, weekly meetings, monthly project reports and coordinate necessary program management functions as required by the client.		

Experience: As Regional Director, George leads the ongoing efforts to grow the public private partnerships that lead to successful and creative solutions that tie together our client communities' assets with customers' identified needs.

Most recently, George served as a business unit leader of a Fortune 500 telecommunications company in Ohio. He was responsible for all aspects of the business in his market including P&L responsibility, residential and commercial revenue growth, and network design and implementation.

George began his career as a Combat Engineer Officer in the United States Army. After leaving active duty, he and his family relocated to Ohio.

George graduated from Georgia Institute of Technology with a BS in Mechanical Engineering. In his personal time, George stays busy with his wife and three children coaching soccer, assisting in school projects, and playing trivia games. George also trains and competes in triathlons.

2.1.2. Jonathan Monfort – Project Role: Engineering

PROJECT ROLE	*YEARS OF SERVICE*	*TIME (%) ALLOCATION*
ENGINEERING	25 years	40%
Role Description: Responsible for ensuring coordination of engineering assets during the project duration. Works with and supports other team members to provide comprehensive recommendations to the City. Monfort will take the operational lead to ensure timely completion of all program activities related to the scope of the project.		

Experience: Monfort serves as SWP Vice President, Engineering and Program Management and is a seasoned telecommunications professional with more than 25 years in wireless site development and logistics, and quality management practices.

Monfort has led teams in all disciplines of real estate development in the wireless industry including acquisition, entitlements, design, construction, integration and supply chain. Monfort has worked in diverse markets including CA, HI, OH, NY, NJ, MA, CT and internationally in Brazil.

Monfort received a Bachelor of Science in Mechanical Engineering from California Polytechnic State University at San Luis Obispo, and a Master's Degree in business management from the University of Southern California. He holds a California Real Estate License and PMP Certificate. He currently resides in Huntington Beach, CA.

2.1.3. Anthony Perez– Project Role: Regulatory and Contracts

PROJECT ROLE	*YEARS OF SERVICE*	*TIME (%) ALLOCATION*
REGULATORY AND CONTRACTS	20 years	30%
Role Description: Responsible for managing and finalizing the agreements for all asset use, including pole attachment and conduit access agreements. Perez will also assist with any future consulting work requiring regulatory knowledge or contract negotiation.		

Experience: As Director of Business Development, Perez is responsible for business development, expansion and implementation of the SWP broadband program for its clients and customers within the region and is project manager for Clark County. Perez is a licensed attorney and started his career in government, working with the Kansas League of Municipalities, the State of Kansas, and served as an Assistant City Attorney for the City of Wichita, Kansas. During his 15 years in the wireless industry, Perez has managed all aspects of wireless projects in major markets such as Los Angeles, Houston, Las Vegas, Chicago, Orlando, Honolulu and many other smaller markets. Perez has provided his clients with successful launches of service, direction in business development, organizational and project improvements and processes, and overall program management. He has a deep understanding of the entire wireless industry gained from his experience working for major carriers, tower companies, turnkey vendors, and OEM's.

Perez's unique blend of municipal government roots and wireless experience coupled with a legal education allows him to provide solutions and services that help governments monetize their assets while also protecting their interest. Perez received his Juris Doctor degree from the University of Kansas School of Law and his B.A. in Political Science (with and emphasis in Public Administration) from the University of Kansas. Anthony currently lives in Lawrence, Kansas with his two daughters.

2.1.4. Sean M. Broderick, CCIM – Project Role: Project Coordinator

PROJECT ROLE	*YEARS OF SERVICE*	*TIME (%) ALLOCATION*
PROJECT COORDINATOR	25 years	30%
Role Description: Responsible for ensuring the timely preparation and presentation, with the project manager, to city of all project deliverables. Broderick will work with project manager and other team members to provide comprehensive plan recommendations to city. Broderick will take lead to ensure both timely delivery and receipt of all meeting reports, deliverables and program management functions for the project.		

Experience: Broderick serves as Regional Director at SWP and current project coordinator for Charleston, SC and Clark County, NV. Previously he was a wireless project manager for a regional tower company focused on infrastructure asset investment, development and lending. He has been directly involved with national wireless tower companies and Mobile Network Operators in wireless land development, site acquisitions, investment acquisitions and property dispositions. Pursuant to his experience as a wireless project manager in all facets of CRE and wireless telecommunications development, many clients utilize his experience with complex legal and financial issues to manage distressed "work out" situations with underutilized assets. As a Certified Commercial Investment Member (CCIM) with 25 years of commercial real estate experience, he has provided his clients with successful direction in business development, strategic marketing, organizational leadership, project management, and competitive asset positioning in over $300M in transactions.

He has also developed numerous strategic wireless deployment installations throughout California and Nevada for private investors and public companies (Sprint, T-Mobile and AT&T Wireless), being fully responsible for site selection, business development, technical and application knowledge, customer service, and project management through entitlement and construction completion.

Broderick is a graduate of Rice University with a B.A. in mathematical economics, minor in art history and managerial studies, as well as a recipient of the GTE All-Academic

Team. After graduation, he spent two years in the minor leagues with the New York Yankees farm system.

2.1.5. Terry J. Holmes – Project Role: Project Lead, Network Solutions

PROJECT ROLE	*YEARS OF SERVICE*	*TIME (%) ALLOCATION*
NETWORK SOLUTIONS	40 years	20%
Role Description: Responsible for analysis of broadband networks, regulatory oversight, asset management strategies, public-private partnership models and long-term telecommunications planning that incorporates digital inclusion, small cell expansion and alternative wireless landscapes (including das models and integration) required by the RFP.		

Experience: Holmes serves as the VP, Network Solutions for SWP and wholesale network development lead for FTTP project proposals with Macquarie Capital, Fujitsu Networks, General Dynamics Information Technology and Nokia Fiber Networks. Holmes transitioned from Connected Nation (“CN”; sister company of SWP) where he served as Manager of Engineering and Technical Services providing engineering and technical support for the entire multi-state CN portfolio as it relates to broadband mapping, broadband adoption analysis, field-based infrastructure performance validations and broadband deployment strategies.

Prior to this role, he was engaged by Sprint as a contract negotiator and spectrum broker, having gained this valuable experience while employed as the Sr-VP of American Telecasting, Inc., (which was a publicly traded company and the nation’s largest licensed, fixed wireless MMDS company prior to the Sprint acquisition). He is nationally recognized for leading advanced wireless technology field trials that involved Microsoft, AT&T, WorldCom, Nokia, Newbridge Networks, Pioneer and others that were instrumental in the early development of wireless broadband. He co-authored and presented the FCC with proposed rules changes in the MMDS/ITFS industry resulting in regulatory rulemakings that transitioned the 2.5 GHz band from analog to digital, one-way transmissions to two-way, two-way fixed transmissions to mobile and a complete channel band change providing a significant increase of useable spectrum that eventually allowed Sprint, Clearwire (et al) to launch their national WiMAX and 4G VoLTE networks.

Holmes previously franchised, built and managed cable television systems nationwide that were recognized for implementing advanced technology features. Holmes co-founded the Michiana (MI & IN) chapter for the Society of Cable Television Engineers and was elected to two terms as a Director of the Indiana Cable Television Association.

Holmes proudly served his country with the U.S. Army Special Forces as an electronic warfare specialist.

2.1.6. Matt Steadman – Project Role: Executive Sponsor

PROJECT ROLE	*YEARS OF SERVICE*	*TIME (%) ALLOCATION*
EXECUTIVE SPONSOR	20 years	10%
Role Description: Steadman will ensure corporate priority and project success through his personal contribution and timely and efficient management of the project team and will lead the analysis and subsequent development of recommendations arising out the current project and any future opportunities.		

Experience: Steadman serves as President for SWP. In this role, he is responsible for the design and implementation of strategic program development which aligns public/private asset development with carrier programming objectives. He works actively with SWP's engineering, legal and operations teams to ensure that municipal opportunities are optimally positioned for commercial access and utilization. His role ensures that our client interests are maximized by exploring all viable commercial opportunities, coordinating with potential third-party service providers, and balancing customer interest with public policy and regulatory concerns.

Steadman began his career in the Wireless Services industry by managing large network deployments for a variety of wireless service providers. He has managed a wide array of deployment services including; site acquisition, construction management, and regulatory services at various management levels throughout the country. He has worked for all major wireless service providers, all major tower companies and a wide variety of municipal organizations during his career.

Steadman's career in network planning and wireless infrastructure development began as a Communications Officer in the United States Marine Corps. In addition to a JD,

he graduated magna cum laude with a BA from Temple University with a duel major. He currently resides in Las Vegas, NV.

2.2. CLG Team

2.2.1. Dan Cohen, Founder and Partner – Project Role: Franchise Agreement Review & Negotiations

PROJECT ROLE	*YEARS OF SERVICE*	*TIME (%) ALLOCATION*
FRANCHISE AGREEMENT REVIEW & NEGOTIATIONS	20+ years	50%
Role Description: Responsible for reviewing all franchise agreements with the City, ensuring the timely review, preparation and presentation of all agreement negotiations with staff. He will take the lead to evaluate city franchise values relative to current marketplace assessments and report to staff as needed. Cohen will work with other team members to provide broadband plan recommendations to the city.		

Experience: Dan Cohen is the firm's founder and Partner at CLG. For the past 20 years, he has assisted local governments nationwide in cable, telecommunications, wireless, and broadband issues. In 2017, Mr. Cohen was elected to the Board of Directors of the National Association of Telecommunications Officers and Advisors (NATOA), the organization that represents, assists, and advocates for local governments in these areas before the Congress, the FCC, State Legislatures, and the courts. Mr. Cohen has written articles on cable franchise and wireless regulation matters that have been published in *Public Management Magazine, Government Procurement Magazine, Pennsylvania Township News, Pennsylvania Borough News,* the *Pennsylvania Municipal Reporter*. He is also a frequent speaker at municipal conferences.

In addition to providing professional counsel to municipalities on cable and telecommunications matters, Mr. Cohen served as an elected municipal official for 12 years. He served on the Pittsburgh City Council from 1990 to 2002. Mr. Cohen served as Chair of City Council's Cable Television Committee for 10 years and on the Mayor's Telecommunications Committee. Mr. Cohen led Pittsburgh's efforts to regulate cable rates. Those efforts resulted in a refund ordered by the FCC for all City of Pittsburgh cable customers. In 2009-10, Mr. Cohen negotiated the cable franchise agreements with Verizon

and with Comcast for the City of Pittsburgh. He graduated from Yale University and Stanford Law School.

2.2.2. Phil Fraga, Partner – Project Role: Franchise Agreement Review & Negotiations

PROJECT ROLE	*YEARS OF SERVICE*	*TIME (%) ALLOCATION*
FRANCHISE AGREEMENT REVIEW & NEGOTIATIONS	20+ years	50%
Role Description: Responsible for reviewing all franchise agreements with the City, ensuring the timely review, preparation and presentation of all agreement negotiations with staff. He will take the lead to evaluate city franchise values relative to current marketplace assessments and report to staff as needed. Fraga will work with other team members to provide broadband plan recommendations to the city.		

Experience: Attorney Phil Fraga, Partner, brings significant private sector experience to his role in serving as outside counsel to municipalities. Mr. Fraga served as Assistant General Counsel to a major cable company and was General Counsel to two telecommunications companies prior to joining the firm in 2006. Since joining CLG, he has negotiated hundreds of cable franchise agreements on behalf of local governments. He has also negotiated numerous right-of-way agreements, wireless lease agreements, pole attachment agreements, and indefeasible right-of-use (IRU) agreements with telecommunications providers for local governments.

Mr. Fraga's industry experience and his understanding of the operations of cable and telecommunications providers have proven invaluable for our clients as they negotiate with these providers. Mr. Fraga knows the franchise directors for both Verizon and Comcast very well and has a great deal of experience negotiating with them. He has undergraduate degrees from Bethany College (finance) and Carlow College (accounting), an MBA from the University of Steubenville, and a law degree from the Duquesne University School of Law.

2.2.3. Stacy Browdie, Partner – Project Role: Franchise Agreement Review & Negotiations

PROJECT ROLE	*YEARS OF SERVICE*	*TIME (%) ALLOCATION*

FRANCHISE AGREEMENT REVIEW & NEGOTIATIONS	25+ years	50%
Role Description: Responsible for reviewing all franchise agreements with the City, ensuring the timely review, preparation and presentation of all agreement negotiations with staff. She will take the lead to evaluate city franchise values relative to current marketplace assessments and report to staff as needed. Browdie will work with other team members to provide broadband plan recommendations to the city.		

Experience: Attorney Stacy Browdie, Partner, has worked with municipalities and counties in cable franchise and telecommunications matters for over 16 years. She has significant experience in negotiating cable franchise agreements, performing franchise fee audits, and assisting with right-of-way management matters. Ms. Browdie has also worked with many PEG channel administrators in drafting rules and procedures for the operation of their access channels.

In addition to her legal word, Ms. Browdie also oversees the business management of the firm in conjunction with the firm's Office Manager. Ms. Browdie graduated from the University of Pennsylvania and from the University of Pittsburgh School of Law.

2.2.4. Mike Roberts, Associate – Project Role: Franchise Agreement Review & Negotiations

PROJECT ROLE	*YEARS OF SERVICE*	*TIME (%) ALLOCATION*
FRANCHISE AGREEMENT REVIEW & NEGOTIATIONS	3 years	50%
Role Description: Responsible for reviewing all franchise agreements with the City, ensuring the timely review, preparation and presentation of all agreement negotiations with staff. Roberts will work with other team members to provide broadband plan recommendations to the city.		

Experience: Attorney Mike Roberts, Associate, has worked with CLG for over three years. He concentrates his work on cable franchise renewals, cable franchise fee audits, and wireless facilities regulation. With respect to franchise fee audits, Mr. Roberts typically finds underpayments on behalf of cable operators and obtains retroactive payments for our clients. In the area of wireless facilities regulation, he has worked with numerous municipalities in developing fee structures for assessment of fees on wireless carriers and contractors and in drafting regulations for wireless facilities siting.

Mr. Roberts graduated from the University of Pittsburgh and the University of Pittsburgh Law School, where he was Features Editor for JURIST, a legal news and research service. While he was in law school, Mr. Roberts worked as a law clerk at our law firm.

2.3. CTC Team

2.3.1. Cheryl Johnson, Senior Project Analyst – Project Role: PEG Needs Assessment Project Manager

PROJECT ROLE	*YEARS OF SERVICE*	*TIME (%) ALLOCATION*
PEG NEEDS ASSESSMENT PROJECT MANAGER	30+ years	50%
Role Description: Responsible for day-to-day efforts on the PEG needs assessment.		

Experience: Johnson has more than 30 years of experience in working in the field of cable and broadcast television, as well as in local government cable television regulation and local programming operations. She has been conducting community needs assessments for clients since 1996, as well as during her employment in local government jurisdictions.

On behalf of CTC, Cheryl will head up day-to-day efforts on the PEG needs assessment. She has conducted community and PEG needs assessments and compliance reviews for communities such as Fairfax County, VA; Mt. Zion, IL; Baltimore, MD; Paris, IL; Sullivan, IL; Seattle and King County, WA; and many others. Cheryl served as a consultant to the City of Chicago Legal Department on legislative and other cable TV matters.

She has served as a Communications Administrator, a Public Information Officer, or a Special Projects Manager for numerous communities and consortia, such as St. Paul, MN; Mount Prospect, IL; Bensenville, IL; and the NORDCAT Consortium. Cheryl was also the Executive Director of the National Association of Telecommunications Officers and Advisors (NATOA), a nationwide trade association for elected and public officials overseeing communications.

2.3.2. Joanne Hovis, President and Director of Business Consulting – Project Role: Strategic Guidance

PROJECT ROLE	*YEARS OF SERVICE*	*TIME (%) ALLOCATION*
STRATEGIC GUIDANCE	30+ years	10%
Role Description: Provides strategic guidance and executive support throughout the project duration.		

Experience: Hovis directs the firm's consulting work in a variety of areas including network business planning; market analysis; financial modeling, policy and strategy; and management consulting. Joanne advises public sector clients regarding how to build strategy and opportunity for public–private partnerships in broadband.

An attorney with a background in communications and commercial litigation, Joanne is also the CEO of the Coalition for Local Internet Choice (CLIC), and former President of the National Association of Telecommunications Officers and Advisors (NATOA). She serves as a member of the Board of Directors of the Fiber to the Home Council and the Benton Foundation.

2.3.3. Andrew Afflerbach, Ph.D., P.E., Director of Engineering – Project Role: Engineering Design and Review

PROJECT ROLE	*YEARS OF SERVICE*	*TIME (%) ALLOCATION*
ENGINEERING DESIGN AND REVIEW	30+ years	20%
Role Description: Engineering review and assessment during Community Needs and I-Net Assessment.		

Experience: Dr. Afflerbach will take an active role in reviewing the technical needs and issues for this project. He specializes in system-level planning, design, and implementation of wide-area and local-area telecommunications networks for government clients nationwide. Based on his extensive experience with high-capacity networks, Dr. Afflerbach brings a clear understanding of the capabilities and limitations of broadband services to bear on the analysis of candidate architectures, vendor proposals, network needs assessments, and market research.

2.3.4. Tom Asp, MBA, Pincipal Engineer and Analyst – Project Role: I-Net Needs Assessment Project Manager

PROJECT ROLE	*YEARS OF SERVICE*	*TIME (%) ALLOCATION*
I-NET NEEDS ASSESSMENT PROJECT MANAGER	30+ years	20%
Role Description: Lead role in the I-Net needs assessment including technical and financial analysis.		

Experience: Asp will lead all financial analysis tasks. He has more than 25 years of nationwide experience as an engineer and analyst in communications and public power systems. Asp has developed financial statements and prepared quantitative business plan analyses for municipal and utility clients nationwide.

2.3.5. Marc Schulhof, Senior Analyst and Technical Writer – Project Role: Project Support

PROJECT ROLE	*YEARS OF SERVICE*	*TIME (%) ALLOCATION*
PROJECT SUPPORT	20+ years	30%
Role Description: Project support for all written deliverables.		

Experience: Schulhof has more than 20 years of experience in technical writing, financial journalism, and corporate communications. Marc previously was the worldwide editor-in-chief of CIO program websites at IBM, a global editor at PricewaterhouseCoopers Consulting, and an associate editor at Kiplinger's Personal Finance.

2.3.6. Eric Wirth, Principal Engineer – Project Role: Communications Engineering Design and Review

PROJECT ROLE	*YEARS OF SERVICE*	*TIME (%) ALLOCATION*
COMMUNICATIONS ENGINEERING DESIGN AND REVIEW	10+ years	40%
Role Description: Lead role in the engineering design and review during I-Net Assessment and Business Analysis.		

Experience: Wirth has more than 10 years of communications engineering experience; he specializes in evaluating broadband (video, voice, and data) telecommunications networks, analyzing emerging broadband technologies, and designing broadband networks for institutional uses. In addition, Eric has developed fiber network designs and cost estimates for CTC clients including the cities of Atlanta, Boulder, Madison, and Palo Alto. He has an engineering degree from the University of Virginia.

Section C: Project Approach and Plan

3.1. Project Goals and Approach

The SWP team, in conjunction with CLG and CTC, working with City staff and local stakeholders, will develop a long-term, holistic telecommunications strategy for the City (Figure 1). This program will incorporate the monetization of publicly owned assets, use of competitive franchise and master use agreements, and a City-wide streamlined asset management process for all viable telecommunications assets. Together, these initiatives will allow the city to significantly enhance overall connectivity, manage smart city

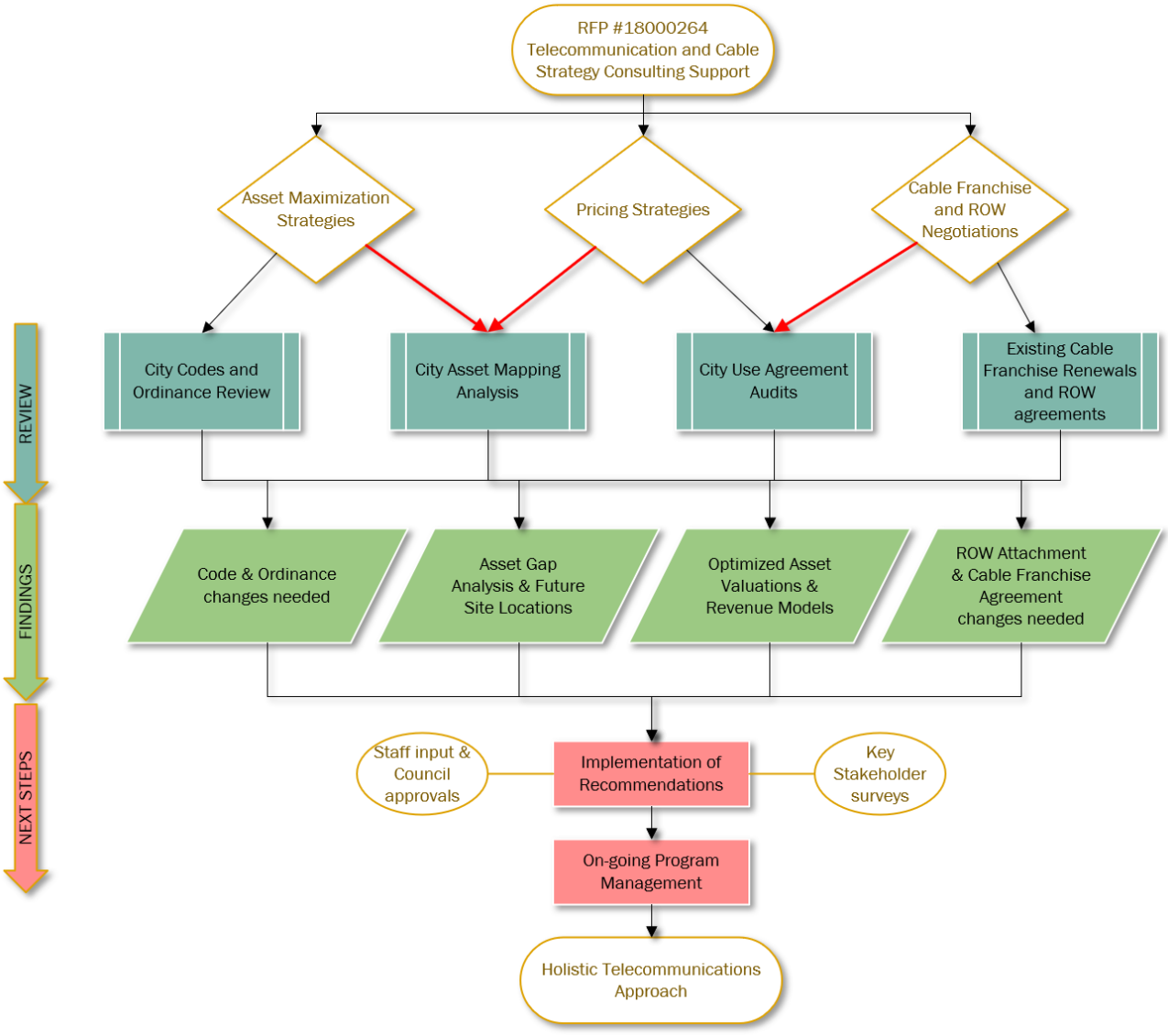


Figure 1 | Holistic Telecommunications Approach

programs, and lower its cost burden. This comprehensive approach will provide a telecommunications framework that will promote the advancement of 5G and IoT technologies, while maximizing the city's own ability to close the digital divide through re-investment in future technology initiatives.

3.1.1. Overview

A. *Develop a strategy to assess the value of existing telecommunication tower assets and future sites which may be desirable for telecommunication assets.*

Utilizing our highly experienced team, strategies and relationships, our goal is to help the City refine its broadband vision through a sequence of strategies. Our team will analyze, prepare, plan and execute a comprehensive strategy and collaborative process (graphically in Figure 2 and outlined in Table 5) to meet the City's broadband vision to generate broadband investment in City assets, address the digital divide and generate new revenue streams to further fund the deployment of smart initiatives needed to meet the connectivity infrastructure demands of a growing City population.

B. *Identify strategy to price best locations for new telecommunication assets such as City-owned land, facilities, and right-of-way property.*

Sometimes broadband needs are self-evident, and pricing is straight forward, but in most cases, the City will need a more complete picture. Our team will help the City combine current broadband asset assessments, provider deployment investigations and constituent coverage surveys to weigh current capabilities with future needs and pricing. We can help with a permit and ROW authorization strategy to help providers understand the steps needed to deploy equipment and infrastructure in different areas of the City. The best results may occur with a bifurcated pricing strategy in high-density and underserved areas of the City. In addition, we can help with online applications that clearly state response intervals, provide clarity for providers and promote speed to market. We can further help establish "dig-once" and conduit policies requiring conduit installation when street work is being done by private parties. We can also help provide master lease agreements for broadband assets, so providers can deploy networks more quickly and cities can capture market rents in the process.

C. *Use innovative strategies to leverage telecommunications investments for public purpose*

When the City makes its assets available for broadband use, the goal is to reduce costs, streamline deployment and encourage investment. Our team has created a comprehensive strategy that will accomplish this and much more:

- Establish an inventory of public assets that providers may use to offset deployment costs and enhance time to market, which may include conduit, fiber, vertical assets like poles and street lights, public structures, real estate, or power facilities.
- Evaluate existing **telecommunications tower and cable franchise agreements** in the right-of-way (ROW) and negotiate market rents commensurate with national averages.
- Create a strong set of investment-friendly policies to monetize assets in a fair and equitable manner.
- Encourage service providers to make essential asset choices on City assets, based upon entitlement clarity, available assets and business-friendly policies.
- Provide a trusted **single point of contact** for City asset marketing, application in-take and **pre-screening** services for streamlining departmental approval with all broadband siting applications on City assets (without tying up valuable resources).
- Provide industry professionals with a cloud-based **broadband asset mapping platform** for available City-owned assets to identify gaps in carrier coverage and capacity needed to deliver future broadband expansion. The platform can also be utilized for fiber development and IoT initiatives.
- Provide overall policy guidance consistent with **federal, state and local industry standards** (City will have the availability of SWP regulatory personnel currently appointed to the FCC BDAC committee for future inquiries at any time).

- Provide a success-based program that includes value added oversite on all pre-construction and post-construction site walks to verify consistency with approved, permitted drawings.

- Ensure **direct compliance** of modernized telecom policies from Building Permit to Certificate of Occupancy and provide ongoing **inspections** of all broadband infrastructure within the City for existing private or public right-of-way assets.

D. *Cable Franchise Negotiation Preparation and Negotiation*

i. Cable Franchise and Broadband Needs Ascertainment

Federal law requires that the City, in preparation for cable franchise renewal, "identify the [City's] future cable-related community needs and interests." 47 U.S.C. §546(a)(1). In order to identify such needs, CTC will perform a PEG and Digital Inclusion Needs Assessment and an I-Net Needs Assessment in order to develop a comprehensive picture of the City's needs to inform the renewal negotiations. This ascertainment process will focus on the needs identified by the City in its RFP, including but not limited to, digital inclusion for those residents on the other side of the digital divide, broadband services to targeted populations, and critical connectivity for City technology departments.

ii. PEG and Digital Inclusion Needs Assessment

The current cable franchise agreements with Verizon and Comcast include dedicated channel space for the City's public, educational and government access ("PEG") channels. In addition, the agreements each include significant financial support from the cable operators for the PEG channels. Recent developments over the term of the City's current franchise agreements, including increased competition and cable "cord cutting," have created a much more challenging environment in which to negotiate PEG financial support. In order to enter PEG channel negotiations with as much information as possible and, consequently, in as strong a position as possible, CTC will perform a PEG Needs Assessment to fully substantiate the City's PEG channel needs.

iii. I-Net Needs Assessment

One of the most valuable benefits to the City under the current cable franchise agreements is the provision of dedicated private high-speed institutional networks (I-Nets)

to the City free of charge. Each network initially connected 23 City facilities, largely public buildings. The I-Nets are worth millions of dollars to the City in broadband connectivity and are crucial components of the City's public safety infrastructure. Since the City's last franchise negotiations, it has become exceedingly difficult to obtain such networks from cable providers. Since Verizon entered the cable business, our firm is unaware of a single I-Net renewal being provided by any cable operator. As such, our focus with respect to the City's I-Nets is to place the City in the strongest possible position to retain and expand its I-Nets for the lowest possible cost.

In order to place the City in the strongest possible negotiating position, CTC will perform an I-Net Needs Assessment. The I-Net Needs Assessment will compile and analyze the full range of public sector needs for connectivity that can be met through an I-Net under the City's franchise agreement. The I-Net Needs Assessment will also show the alternative strategies that are at the City's disposal to meet its connectivity needs.

3.2. Negotiation

Following the ascertainment process detailed above and armed with the support of the PEG Needs Assessment Report and I-Net Needs Assessment Report, the City will be prepared to enter franchise renewal negotiations in the strongest possible position. This strength will be crucial, as our recent experience suggestions that the cable franchise renewal negotiations will be significantly more difficult than the City's last negotiations with the cable operators. The increase in cable competition since the last negotiations will result in a dual focus on both preserving the City's current benefits and procuring future benefits through the renewal franchise agreements.

3.2.1. Project Flowchart

This team represents public entities to develop broadband strategies that cultivate collaboration with service providers, including mobile network operators who are investing in broadband and creating the 5G future. In short, we equip jurisdictions with the strategy, data, processes, and analysis to generate broadband investment, address digital inequities, create new revenue streams, drive economic development and prepare clients for IoT smart city initiatives. The flowchart in Figure 2 represents an outline of our Project

Summary and how the broadband plan integrates with the implementation and program management processes as well as the core proficiencies of its Strategic Partners.

We have the unique experience and knowledge to integrate all the critical components of network design, planning, leasing and management experience suitable to leverage City assets for this engagement and help the City problem-solve initiatives represented in the RFP.

Figure 2 | Sample Workflow

Together, our collaboration can leverage our experience, strategic partners and mapping platform to categorize City assets, modernize broadband ordinances, streamline the wireless siting application process, implement the deployment of fiber, LED Streetlights and IoT initiatives, manage and lease City assets, and integrate a connectivity engagement for the benefit of enhanced connectivity, public safety, education, healthcare, services and transportation; all of which will drive smart resiliency.

3.3. Project Plan

3.3.1. Draft Project Plan

Our team can quickly prepare a preliminary project plan for City's evaluation, detailing the Broadband Plan scopes of work. During the initial meetings, the operations team will coordinate with City staff to confirm timing of the project plan with updated

meeting schedules, data and documentation timelines. The scope of work for the implementation phase and on-going program management process will be incorporated as needed and directed by City staff.

3.3.2. Project Initiation

Table 1 | SOW Summary

Task Item	*Summary Description*	*Responsible Party*	*Timeline*
Task #1 – Broadband Plan	• Asset Identification (City-wide) – Analyze current City asset metadata, delineated (at minimum) by type, location, construction and supervision, in a digital format compatible with the SWP asset mapping platform for import and review. • Mapping Analysis – Review publicly available wireless and wireline coverage data, overlay this data with imported City asset data and perform a gap analysis for review. Generate a gap analysis layer for discovery of potential City assets that may be desirable as future telecommunications assets and identify locational opportunities for future City development of broadband infrastructure.	SWP SWP	Task #1 Timeline 10 weeks
Task #2 – Policy, Ordinance, and Best Practices Review and Recommendations	• Policy and Ordinance Review – Analyze and identify existing City codes and ordinances utilized for previously approved attachment fee and franchise agreements. • Design Standards Review – SWP recently completed the analysis and identification of existing City design	SWP SWP	

SWP Completed Work for RFP# 17-0042

	standards and guidelines to be utilized for future broadband applications. • Best Practices Review – Analyze and identify existing City best practices utilized for previously approved broadband applications. • Recommendations – Identify inconsistencies within the existing City codes and ordinances that require modernization for future broadband application permitting approvals, including (but not limited to) redistricting plans and zoning changes for high-density and underserved areas, small cell and macro cell applications, ROW encroachment permits, small cell and macro cell attachment fee agreements (master license agreements and site license agreements), cable and fiber franchise agreements and renewals, and 'dig once' policies and procedures. • Recommendations – Identify inconsistencies within the existing City best practices that require modification for future broadband application permitting approvals, including (but not limited to) telecommunications application workflow and intake processing, departmental approval hierarchy, wireless and wireline departmental supervision, federal/state regulatory timeline compliance, and asset maximization strategies and	SWP SWP SWP	Task #2 Timeline 12 weeks (Concurrent with Task #1)

	financial modeling for future smart city applications.		
Task #3 – Cable Franchise Negotiation Preparations and Negotiations	• Negotiation Preparations – Attend and facilitate meetings with staff to review, survey and analyze specific existing City cable franchise agreements. • Community Needs Assessment • I-Net Assessment and Business Analysis • Negotiations – Negotiate, draft and finalize renewal agreements (and/or extensions) with each franchisee. Ensure public outreach, public meetings and best practices during project phase	CLG CTC CTC CLG	Task #3 Timeline Verizon Negotiations Complete September 2019 Comcast Negotiations Complete September 2020
Task #4 – Implementation	• Implementation of Findings and Recommendations – During the contract engagement, SWP will assist staff with existing backlog of small cell applications, market identified City assets to the broadband providers, attend design walks, update policy guidance with staff recommendations and prepare departmental procedures for small cell and fiber leasing and management.	SWP	Task #4 Timeline 20 weeks (Concurrent with Tasks #3 & #4)

Task #5 – Program Management	• Program Management – This process is an on-going, performance-based professional services arrangement with the City. It provides a single point of contact to manage the complexities of city-scale operations for broadband asset leasing and management services. Because our approach is vendor agnostic, the collaboration helps maximize the value of City assets and shifts many logistical broadband responsibilities to our team in exchange for a revenue share from new broadband leases on City assets. See Section 0 for pricing options that includes a no-upfront cost option to the City.	SWP	Task #5 Timeline Commences Immediately, Ongoing

A. *Task #1 – Broadband Plan Details*

As a technology and broadband asset aggregator, the SWP Asset Platform will utilize the latest in cloud-based, mapping technology to survey, inventory, and market the current available broadband-valued department assets: light/traffic/electric poles, water tanks, public-owned telecommunication towers, public-owned buildings/land, existing fiber and conduit. This data will be used during broadband planning analysis and coverage study to identify connectivity gaps for delivery of broadband services and the latest smart city technologies on City assets. Additionally, asset owner data, technical specifications, location details, installation dates, and other pertinent metadata, would be collected and uploaded as part of a centralized database to market and facilitate smart city initiatives throughout the engagement. Marketing these data points may become increasingly critical towards development and sustainability of an asset “marketplace” where providers contract with the City to offer the latest Smart City sensors and IoT technology.

A typical wireless small cell deployment, with access points connected via fiber optic distribution cable, are selected by the broadband providers based on the availability of suitable mounting structures, in close proximity to fiber and power, with the goal of delivering a uniform signal level throughout the service corridor. In Figure 3, the SWP mapping platform, for example, outlines the available City Assets (streetlights, sign posts, buildings, water towers, fiber runs, patch locations, street furniture, mounting structures, etc.). The broadband providers have secure access to the platform to search, design and lease their wireless and fiber locations efficiently online. With the inclusion of a fiber network in the platform, the providers have a “one-stop shop” approach to wireless and wired network design and implementation. The platform saves time by centralizing the infrastructure search, identification, planning and selection, as well as offering integrated tools like Street view by Google. Broadband providers can quickly upload their search rings to locate available City assets and perform a comprehensive technical and visual review of these assets from their computer, as well as uploading proprietary search rings in a secure platform for rapid broadband deployment options within the City.

However, the amalgamation of data doesn't just benefit the broadband providers. The Platform is also pivotal for ancillary departmental benefits within the City, as shown in Figure 4. For example, with the combination of all departmental assets into a third-party repository, the data is not subject to public information requests from constituents. In another example, one of our clients utilized the Platform to combine fiber assets from multiple departments to cross reference other departmental data to avoid unintentional duplication of maintenance and construction responsibilities. Implementation of the platform can also be used during a competitive bidding process for broadband construction projects, in which potential subcontractors can access City infrastructure data through a secure login and competitors will not be able to view site plan 'mock-ups' and calculations.

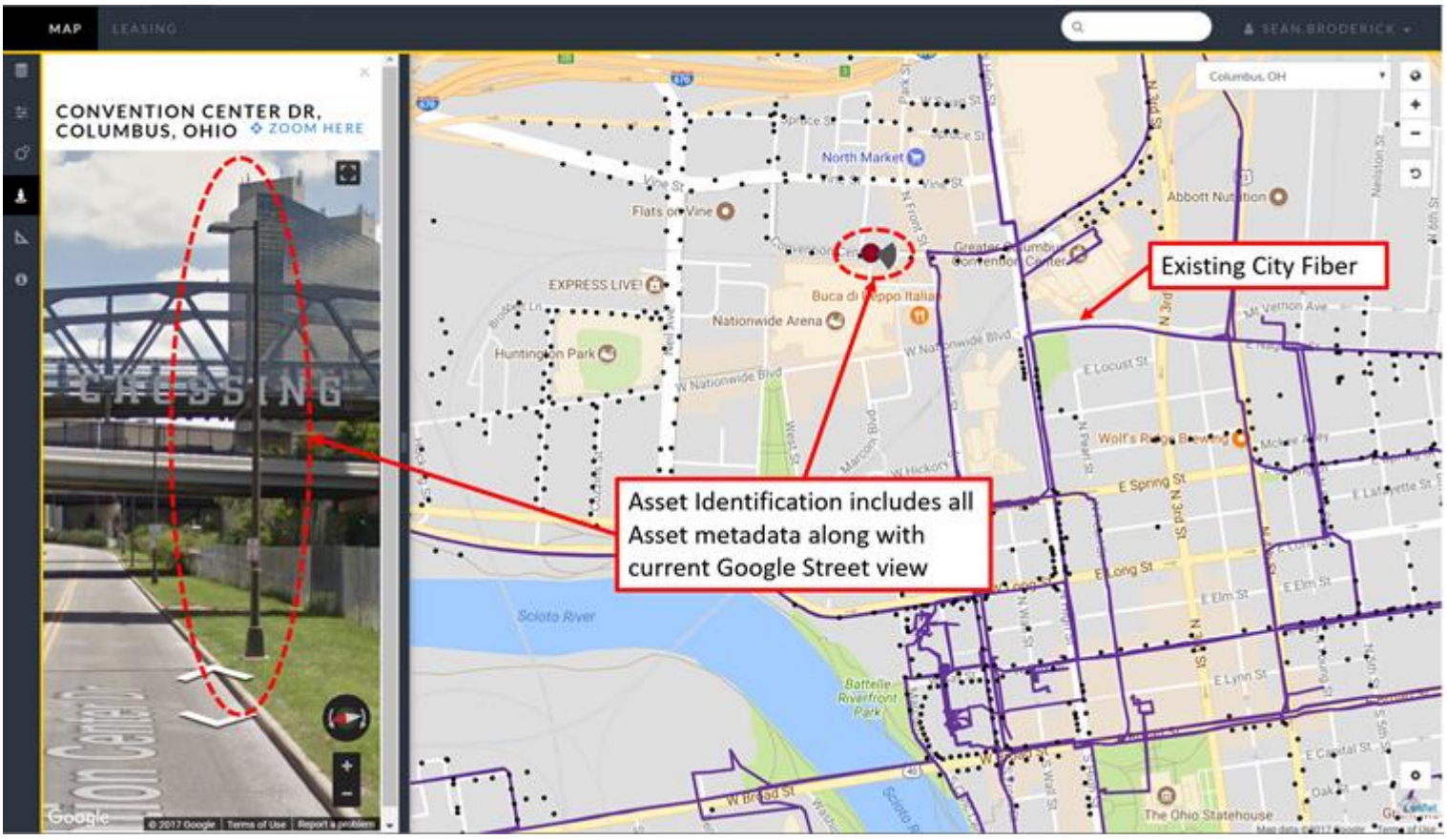


Figure 3 | Mapping view with Street view

Many cities, like Pittsburgh, now recognize the need to organize and design their existing vertical assets and fiber inventories into a comprehensive “Smart City” infrastructure plan. Evidence of our success and ability to achieve strategic planning efficiencies can be traced back to the many awards of our team and of the communities we serve. Notably, in 2015, the Mayor for one of our clients publicly thanked[2] SWP for helping the city win the Intelligent Community of the Year award for its “Smart City” network design integration. This client was also recognized with a first-place ranking in the 2016 Smart City Challenge[3], sponsored by the US Department of Transportation.

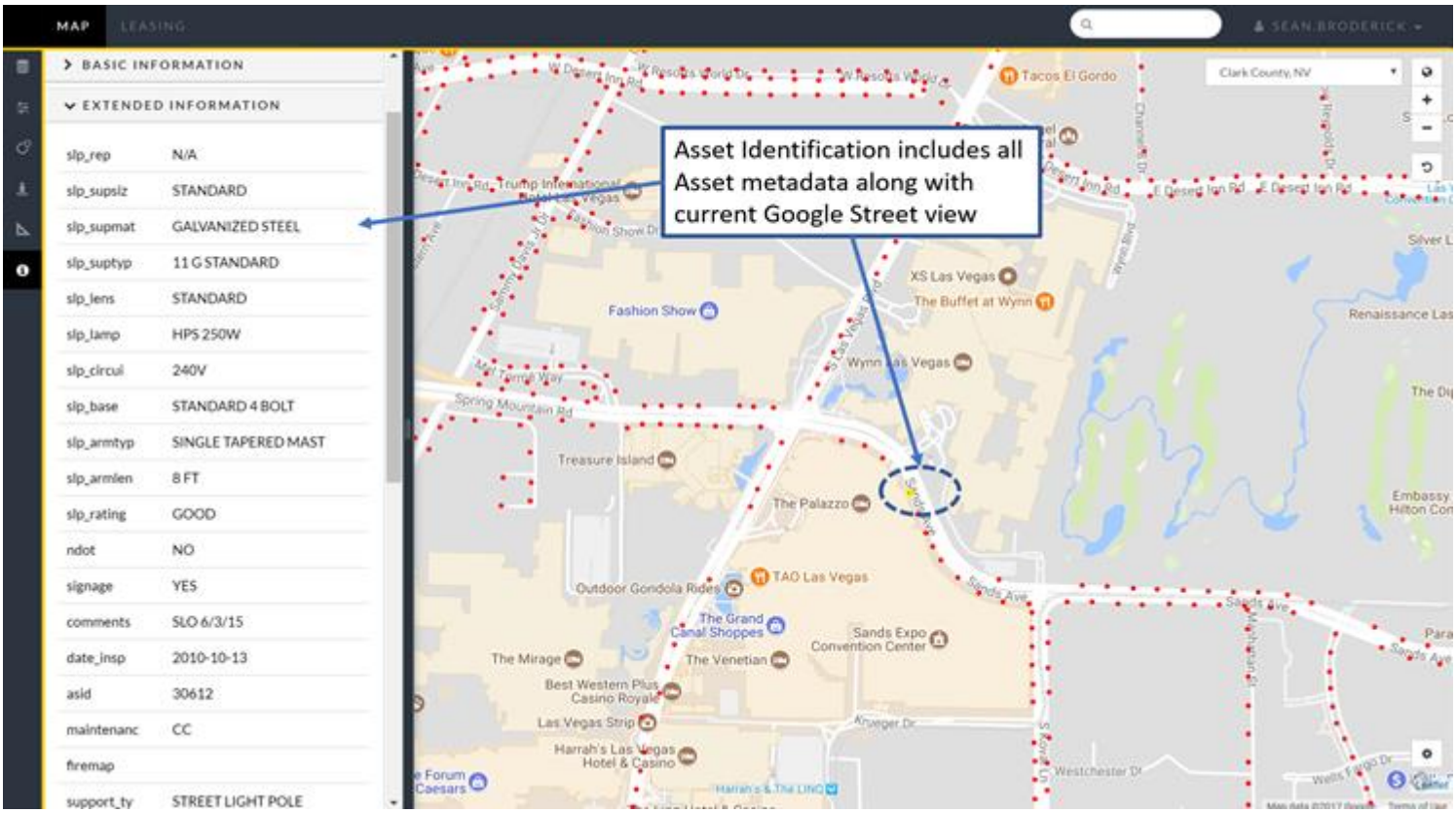


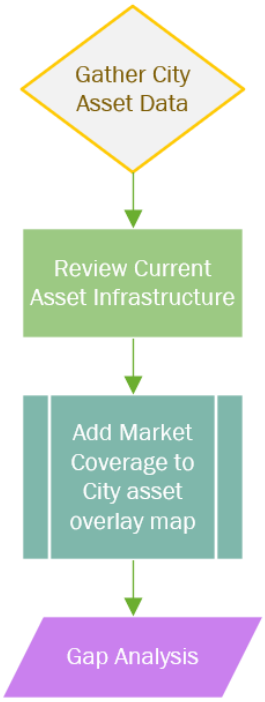
Figure 4 | Mapping view with metadata detail

[2] ICFvideo, *The Intelligent Community of 2015: Columbus, Ohio, USA*, June 2016, https://youtu.be/zsRtz6tiwZE.

[3] USDOT, *U.S. Department of Transportation Announces Columbus as Winner of Unprecedented $40 Million Smart City Challenge*, June 2016, https://www.transportation.gov/briefing-room/us-department-transportation-announces-columbus-winner-unprecedented-40-million-smart.

During the term of an engagement with the City, our team will complete the following task details outlined in Table 2 and finalize the analysis for a final report to the City – the Broadband Plan:

Table 2 | Broadband Plan Details

Task #1 - Broadband Plan	
Task #1 – Details 	***1.1 – Identify & Inventory City Assets*** • Notice to Proceed (“NTP”) and Assign Subject Matter Expert(s) (“SME”) to task. • Conduct preliminary meetings with City staff to provide checklist of necessary information needed for review and outline comprehensive scope of work. • Gather necessary documentation - GIS data collection for existing City assets in acceptable digital format[4] (Identification and delineation of fiber, conduit, traffic signals, dynamic signs, closed circuit camera towers and traffic management centers within City-wide asset data set). • Collaborate with staff to verify assessment of collected ROW assets and cross reference types of City infrastructure assets needed to accommodate industry needs – note comments and findings. ***1.2 – Broadband Provider Survey*** • Preliminary meetings with staff, broadband providers, tower companies, utility infrastructure providers (as needed) and key wireless infrastructure stakeholders. • Evaluation of publicly accessible wireless coverage data[5] for public and private signal survey throughout the City-wide asset area (including ROW tower locations, fiber and conduit, management centers and traffic signals, as needed). • Evaluation of publicly accessible provider wireless radio frequency data. • Integration of wireless coverage data findings into mapping analysis platform for review with key City staff.

[4] To the extent that the existing data is available in an appropriate digital format, the response timeline (Figure 5) will not be affected. If the data requires manual integration, then the response timeline and pricing will be adjusted and implemented into the scope of services using the ancillary services rate sheet in Table 8.

[5] To the extent that the Project Manager can collect and integrate proprietary wireless coverage data from the providers during the response timeline, the information will include, at minimum, all relevant wireless coverage data available from publicly available sources.

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Provide staff with universal access to the online information for review, evaluation and consensus for asset overlay functions to produce final maps (to be publicly provided in the report).
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<tr><td></td><td>1.3 – Gap Analysis</td></tr>
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Integration of wireless and wireline asset data into optimization models for RF engineering review and evaluation.
Collaborate with key stakeholders to review gap analysis findings and address additional wireless coverage needs within the asset core and City-wide.
Collaborate with staff to generate available asset siting map overlays (to be provided in a report and used for marketing of available assets in implementation and program management functions).
Attend and facilitate project management meetings with all involved parties and provide documentation, correspondence, scheduling, and coordination on deliverables. Prepare and distribute meeting documentation as needed and assimilate findings for completed final recommendations in the report.

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<table>
<tr><th>Concurrent Timeline</th><th>Total Cost</th></tr>
<tr><td>~ 12 weeks</td><td>$91,069</td></tr>
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B. *Task #2 – Policy, Ordinance, and Best Practices Review and Recommendations*

As small cell applications flood city, county and state planning departments, most public entities grapple with the need to update their wireless siting intake process given increased wireless demands and new regulatory “shot clock” requirements in locations where end-users expect ubiquitous coverage. While our engineers coordinate the implementation of the City’s asset inventory into specific analyses to support broadband delivery and smart city strategies, our legal personnel will review existing City ordinances, codes, and agreements. After review, our personnel will note inconsistencies in its findings and make recommendations for streamlining the broadband application and permitting process.

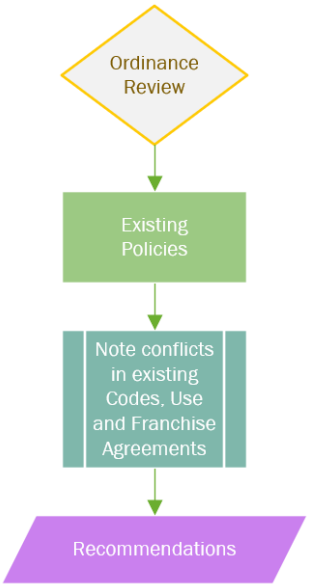
Based upon our experience and client engagements, below is a short list of industry documentation, plans, agreements, codes, and ordinance information that our team is acutely knowledgeable, experienced and prepared to review for the City:

- Broadband Applications and processes;
- Master License agreements and Site License agreements;
- ROW Agreements;
- Rooftop & Pole Attachment agreements;
- LED Streetlight replacement materials, models and agreements;
- State and Federal telecom guidelines;
- State Small Cell legislation tracking information;
- Equipment Assessment surveys and checklists for annual inspections;
- Dark fiber IRU's
- Multi-party NDAs
- Design Guidelines, Concealment and Architectural Standards;
- Departmental application workflows and checklists;
- Departmental hierarchal Review processes;
- Departmental "Best Practices" policies;
- Our team has reviewed and developed broadband infrastructure expansion plans, while noting the integration of updated concealment designs, security protocols, DAS infrastructure model recommendations and public-private partnership funding models; and,
- Our team has attended national FCC hearings and committee meetings on broadband advisory guidance and participated in broadband infrastructure panels at NLC and NATOA conference events. We are adept at navigating project meetings with City staff, stakeholders and related 3rd-parties to complete project documentation, correspondence, scheduling, and coordination of deliverables.

During the term of the engagement, our team will complete the following task details listed in Table 3 and finalize ordinance recommendations into a report for City:

Table 3 | Ordinance Details

Task #2 – Policy, Ordinance, and Best Practices Review and Recommendations	
Task #2 – Details	***2.1 – Policy, Ordinance, and Best Practices Review***
	• Assign SME to task. • Gather necessary documentation.



- Preliminary meetings with City staff to provide checklist of necessary documentation needed for review. Gather necessary documentation from key personnel.
- Review existing ordinances, codes, zoning requirements, plans, wireless use and franchise agreements, ROW agreements, equipment assessments and ancillary documentation for inconsistencies
- Engage staff with review of existing departmental approvals, procedures and practices and note potential inconsistencies.
- Collaborate with staff to provide necessary market rent and administrative fee structures, IoT technologies, Wi-Fi access points, and policy guidance for comprehensive asset development and integration into a best practices and quality control survey – note comments and findings.
- Note findings for final recommendations in the master report and updated policy guidance for implementation and program management functions.

2.2 – Policy, Ordinance, and Best Practices Recommendations

- Identify inconsistencies within the existing City codes and ordinances that require modernization for future broadband application permitting approvals, including (but not limited to) redistricting plans and zoning changes for high-density and underserved areas, small cell and macro cell applications, ROW encroachment permits, small cell and macro cell attachment fee agreements (master license agreements and site license agreements), cable and fiber franchise agreements and renewals, and ‘dig once’ policies and procedures.
- Identify inconsistencies within the existing City best practices that require modification for future broadband application permitting approvals, including (but not limited to) telecommunications application workflow and intake processing, departmental approval hierarchy, wireless and wireline departmental supervision, federal/state regulatory timeline compliance, and asset maximization strategies and financial modeling for future smart city applications.

Concurrent Timeline	***Total Cost***
~ 20 weeks	$89,121

C. *Task #3 – Negotiation Preparation and Negotiation*

i. Part 1 - Use a multi-step approach to the cable franchise renegotiation

a. Project Initiation and Priority Setting

We will hit the ground running on this project as we do not need to review the existing franchise agreements with Verizon and Comcast. We are intimately familiar with the franchise agreements (and the confidential I-Net side agreements), because we negotiated them. We also negotiated and are completely familiar with the PEG Channel Administrator Service Agreement between the City and its current public access channel administrator, PCTV. We are also familiar with two key applicable ordinances of the City—the Cable Communications Ordinance at Chapter 425 of the City Code and the Telecommunications Systems in the Rights-of-Way (ROW) Ordinance at Chapter 427 of the City Code. We will, however, request and review the City's ROW User Agreements and wireless lease agreements (for both towers and antennae).

We will then arrange an initial kickoff meeting of CLG, SWP, and CTC with officials of the Law Department, the Innovation and Performance Department, the Public Works Department, and the Mobility and Infrastructure Department, and the Department of Management and Budget. First and foremost, we will solicit the needs and concerns of the officials regarding the City's future cable and broadband needs. We will address and discuss the two key components of this project: 1) developing a strategy for valuating and pricing the City's existing and new telecommunications assets; and 2) preparing for and negotiating franchise renewal agreements with Verizon and Comcast that is both nationally competitive and meets the City's future cable and broadband needs.

We will also advise the officials regarding their legal rights under federal and state law, including the substantive areas in which the City has legal authority over the cable and telecommunications providers and those areas in which its legal authority is limited. We will also outline the potential financial, cable and broadband-related benefits available to the City. We will conclude this phase by developing a project chart that will confirm project goals, outline key tasks, confirm City vs. consultant responsibilities, and establish a projected project timeline. Finally, we will set priorities for valuing the City's telecommunications assets and the upcoming for negotiations with Verizon and Comcast.

b. Cable Franchise and Broadband Needs Ascertainment

Section 626 of the federal Cable Act requires that the City, in preparation for cable franchise renewal, "identify the [City's] future cable-related community needs and interests." 47 U.S.C. §546 (a)(1). The process by which the City identifies, measures, and documents its needs is known as the "ascertainment process." Conducting the ascertainment process not only satisfies the requirements of federal law, but it also is essential to developing the ammunition necessary to negotiate from a position of strength with the cable operators regarding the City's most valuable assets prescribed by the cable franchise agreement.

In addition, the ascertainment review will address important needs of the City as outlined in the RFP for this project, including digital inclusion for those residents on the other side of the digital divide, broadband services to targeted populations, and critical connectivity for City technology departments. For these reasons, we propose two ascertainment needs assessments: 1) a PEG and digital inclusion needs assessment; and 2) an I-Net needs assessment. Both of these assessments will be conducted by CTC.

c. PEG and Digital Inclusion Needs Assessment

The current cable franchise agreements with Verizon and Comcast include dedicated channel space from the cable operators for the City's public, educational, and governmental access ("PEG") channels.[6] The agreements also include significant financial support from both cable operators for those channels. Specifically, the Verizon agreement includes an Annual PEG Grant, a Cable Bureau Grant, and a Fixed PEG Grant. The Comcast agreement includes an Annual PEG Grant and a Fixed PEG Grant.[7] The revenue projected to be generated over the 10-year franchise term at the time of the execution of these franchise agreements was $7.16 million. This funding is used for City Channel Pittsburgh and the City's current public access administrator, PCTV.

[6] Both the Verizon and Comcast franchise agreements include two dedicated Government channels, 1 dedicated Public Access channel, 1 reserved Educational channel, and 1 reserved PEG channel.
[7] Note that the cable operators may pass through all PEG financial support to cable subscribers as a separate line item on their bills.

Several important developments over the 10 years since the execution of the current franchise agreements have created a more challenging environment in which to negotiate PEG financial support. These include increased competition, the cable "cord cutting" phenomenon due to rising cable rates and video streaming, and the acceleration of wireless broadband service as an alternative to cable modem internet service. As such, it is critical that the City perform a PEG Needs Assessment in order to fully substantiate its needs for its upcoming franchise renewal negotiations.

The cable TV franchising process is also limited to certain areas and has traditionally not provided opportunity for cities to negotiate for broadband-related benefits for the community. That said, digital inclusion efforts represent the current generation of the work that PEG administrators have performed for years, endeavoring to provide affordable, attainable access to technology for members of the community who have not had the opportunity to benefit from that technology. For that reason, we propose to develop a needs assessment not only for the City's PEG channel needs, but also for its digital divide/broadband inclusion needs, with an eye toward negotiations with the cable operators in which franchise-related payments would support digital literacy and inclusion efforts.

We therefore propose to undertake the following tasks, drawing on our experience performing independent PEG needs assessments to support cable franchise renewal processes for public sector clients nationwide, as well as our experience with developing innovative digital inclusion strategies:

d. Conduct On-Site Strategy Session

To initiate the project, the CTC Project Manager will meet with selected City representatives. During the session, CTC and the City's project team will:

- Discuss and establish project goals and objectives;
- Discuss the community's PEG-related needs and interests known to City representatives;
- Discuss the issue of which organization(s) will be named the City's future public access administrator(s);

- Discuss the community's digital inclusion and broadband access needs and interests that might be addressed through the cable franchise agreement;
- Review project timeline, deliverables, and target dates; and,
- Transfer relevant documents and data.

ii. Part 2 - Conduct Community Needs Assessment

CTC will conduct a community needs assessment to solicit input from City departments, public access community producers, residents, businesses, non-profit institutions, and other relevant stakeholders regarding future PEG, cable-related, and digital access/inclusion needs and interests. In order to make this needs assessment process as useful and cost-effective as possible, we propose to conduct some of the interviews and discussions during the same trip as the Strategy Session in Task 1. Our needs assessment will include the following sub-tasks:

a. Conduct Group Interviews with City Representatives

We will conduct up to four in-person group interviews with City administrators or elected officials and key staff from departments/agencies. These interviews will be conducted at a site designated and coordinated by the City. The City will identify the participants and will coordinate the invitations and confirmations of attendance. CTC will also conduct a site visit of the City Channel Pittsburgh studios, facilities, and equipment.

b. Conduct Group Interviews with Community Stakeholders

CTC will work with the City to prepare a diverse list of people and organizations to interview to help establish the City's PEG and digital access/inclusion needs. We will conduct up to five group interviews with key stakeholders identified and invited to participate by the City. The City will be responsible for scheduling and coordinating the interview site. The interview site must be easily accessible and have adequate parking and transportation available. The participating stakeholder groups could include:

- Public schools;
- Higher education;
- Libraries;
- Chamber of Commerce and key local businesses;
- Medical (hospitals and major clinics);

- PEG channel producers and users; and,
- Digital inclusion/education non-profits and advocacy groups.

c. Conduct Public Input Forums

We will conduct up to two public input forums to assist the City in obtaining feedback and input from residents regarding future PEG, cable television, and digital inclusion/access needs and interests. The City will be responsible for providing adequate notice and inviting the public to participate. The public forums will be held in an appropriate public meeting place scheduled and coordinated by the City. The meeting site must be easily accessible and have adequate parking and transportation available.

d. Evaluate PEG Facilities and Equipment

A critical part of the needs assessment is to examine and evaluate the technical operations, facilities and equipment, including production and post-production equipment, that are being utilized by City Channel Pittsburgh and PCTV. Our evaluation will include, but not be limited to, the technological state of the video, audio, and production equipment that is currently being used, an examination of the channels' signal distribution formats (standard definition or high definition), the available equipment for both "live" and "curated" programming, and the need for "refresh" equipment replacements over the next several years.

e. Prepare Written Report

We will provide the City with a written report of our findings and the results of the needs assessment, including the interviews, public forums, and evaluation of the City's PEG facilities and equipment. It will include an equipment and facilities list to address the City's future PEG needs. The report will also include our specific recommendations and the amount of funding from the cable operators necessary to meet the City's PEG channel needs and to take steps toward addressing the City's digital divide/broadband inclusion needs. Once the draft report has been reviewed and approved by the City, we will revise as necessary and provide a final report in electronic format.

iii. Part 3 - I-Net Needs Assessment

One of the most valuable benefits to the City from the current franchises with Verizon and Comcast is the provision of dedicated private high-speed institutional networks (I-Nets)—one from Verizon and one from Comcast—to the City free of charge. Pittsburgh is the only city in the United States other than New York City to which Verizon agreed to provide a free I-Net. Each of the I-Nets initially connected 23 City facilities, primarily but not exclusively for public safety buildings. These I-Nets are worth millions of dollars to the City in broadband connectivity.

Today, nearly 10 years later, it has been deeply challenging everywhere in the country to negotiate renewed I-Nets from either Comcast or Verizon. To our knowledge, there has not been a new dark fiber I-Net negotiated in any city in the past decade, and virtually no I-Net renewals since the time period when Verizon entered the cable business.

In the intervening years, Comcast has also declined to renew or deploy dark fiber I-Nets, with only a few exceptions when it was willing to extend a dark fiber I-Net agreement for a short period of time. Comcast's strategy upon franchise renewals has been to sell managed services over fiber that was previously I-Net fiber to local governments, schools, and other public stakeholders. **The goal of this phase of the engagement will be to put the City into the strongest possible position to retain and expand its I-Nets for the lowest possible cost.**

The I-Net needs assessment, which will be conducted by CTC, will compile and analyze the full range of public sector needs for connectivity that can be met through an I-Net under the City's franchise agreement; this portion of the project will be a traditional I-Net needs assessment. This deliverable will reflect the dramatic expansion of the City's connectivity needs that has occurred in the years since the franchises were last negotiated—encompassing not just high-capacity links to public facilities, but connectivity for Smart City, Internet of Things (IoT), and other emerging civic applications.

In order to maximize the City's negotiating leverage in the franchise negotiations, however, the same needs assessment tasks will also lead to the development of a second deliverable: A technology and business strategy for deploying a City-owned alternative to

the dark fiber I-Net. We will illustrate how the City might build its own fiber network to serve the same institutions (and, potentially, other entities) that would be served by a dark fiber I-Net. This business plan will address the economics of a City-owned fiber network to replace the dark fiber I-Net, including both avoided costs and actual incurred costs (including debt service, if necessary). It will compare those costs to alternatives such as the managed services arrangement that Comcast and Verizon are expected to offer.

Our strategy will be to provide the City with a tool for demonstrating not only that its I-Net needs still exist and are growing—thus justifying an I-Net under its cable franchises—but also that it has alternative strategies at its disposal. This would give the City significant leverage in its franchise negotiations. This analysis will also illustrate how a City-owned alternative might fit into a broader strategic process of improving broadband more generally—by creating a backbone that supports future network expansion, potentially by private collaborators who use excess city owned fiber capacity to build the last mile.

a. Facilitate an on-site project kick-off and strategy workshop

As a preliminary step, we will conduct an on-site strategy session. Our project team will meet with City personnel and invited stakeholders to identify the City's current and future I-Net needs, discuss project goals and objectives, review relevant maps and documents, establish project parameters, and address the project team's primary questions and concerns. The strategy session will also enable us to understand the City's long-term vision and expected timeline. Finally, the strategy session will be an opportunity to present an overview of relevant case studies and best practices in public sector broadband—particularly related to middle-mile fiber deployment—and to discuss funding, financing, and partnership issues.

Specific agenda items will include:

1. Introduce team;
2. Identify project stakeholders
3. Review project schedule, key milestones, and deliverables:

- Provide a briefing on government backbone networks elsewhere in the United States, based on our experience with these projects and the existing and emerging business/financial models under which they operate
- Ascertain the potential range of users and related capacity requirements for the City's proposed fiber infrastructure, including:
    - City facilities
    - Schools
    - Libraries
    - Economic development targets
    - Parks and recreation
    - Public safety
    - Other institutional users
    - Internet service providers

4. Share maps, studies, documents, details on current leased services, and other relevant background material
5. Identify high-priority facilities for dark fiber connection (whether by I-Net or an alternative City-owned network)
6. Discuss available broadband data services at City facilities
7. Review existing infrastructure assets (buildings, conduit, fiber) and their value to a potential City-owned fiber network
8. Discuss potential City roles in network deployment and operations
9. Discuss potential revenue streams possible with fiber deployment (e.g., leasing excess dark fiber)

b. Stakeholder Outreach

Based on our experience conducting needs assessments for local governments nationwide, we believe that group interviews and one-on-one discussions with stakeholders will produce important insights for the City's analysis of broadband needs. While this approach is qualitative rather than quantitative, it allows for follow-up questions, in-depth discussion, and an exploration of nuanced needs and concerns related to the broadband market. We will conduct on-site interview meetings and teleconferences with representatives of the City's range of key stakeholders. We will develop the list of stakeholders with the City's guidance during the strategic workshop (Task 1).

We will then prepare questions for each interview and outreach session with a goal of understanding the stakeholders' broadband needs, constraints, and challenges. We will use the insights we develop to understand the City's broadband priorities and

opportunities, and to inform subsequent project tasks. Our outreach to City staff will have a specific focus: We will seek to identify their fiber broadband needs, and to develop an anecdotal inventory of opportunities and functions that fiber connectivity might support. This outreach will include, to the extent feasible, an attempt to identify the leased circuit costs that the City could reduce or eliminate through expanded City-owned fiber.

We anticipate conducting the in-person sessions over a period of a few days in the City in conjunction with our kick-off meeting. We suggest holding discussion groups in the afternoon and the evening. We will facilitate up to three discussion groups over two days. For all of these meetings, we request the assistance of the City in identifying the participants; determining who should be invited for a discussion group and who should be contacted for individual interviews; scheduling and confirming the meetings; and arranging a suitable location for the discussions.

c. Assess the City's fiber-enabling infrastructure and assets

As a foundational element of our analysis, we will assess the City's existing fiber-enabling infrastructure and facilities. We will conduct this assessment through a combination of desk and field surveys. We will also facilitate technical discussions with City staff about related issues, such as:

- Utility poles (number, locations, suitability for attachment, etc.)
- Underground passageways (availability of conduit, suitability for additional fiber, etc.)
- In-building wiring and secure cabinets/rooms (City locations, availability for housing network electronics, etc.)
- Existing fiber optics, including any existing connectivity (building entry, etc.)

We will review relevant maps, studies, documents, or data that the City can share with us. A CTC outside plant engineer will then conduct an extensive desk survey using the City's GIS maps, Google Earth imagery, and other relevant sources. To supplement the desk survey, a highly experienced CTC engineer will conduct up to two days of field verification and site surveys of representative City facilities, economic development targets, business areas, and residential neighborhoods. The engineer will assess physical infrastructure and conditions.

CTC's engineer will survey existing utility poles to determine their ability to support fiber attachments, and the estimated cost. CTC's engineer will note any potential barriers to construction or operations. The field survey will enable us to identify targets of opportunity for providing physical path redundancy to enhance communications survivability between sites.

iv. Task 4: Asset Valuation and Strategic Planning

To establish the value of the City's infrastructure, both for the potential City-owned network and for the potential for private use to expand broadband, we will develop a financial pro forma that illustrates the net present value (NPV) of the potential revenues that the assets might generate and the City's avoided costs, less the City's long-term operating and maintenance expenses. (Two other typical valuation methods—replacement cost and potential sales value—are not practical for these assets.)

Our analysis will focus on developing a market lease value for fiber and conduit—as well as space inside City buildings that could serve as points of presence in neighborhoods throughout the City. We will also consider the value of mounting assets that could support small cell wireless deployment. This latter category will include rooftops, building facades, light poles, street furniture, and other outdoor City assets.

As with any financial projections, we will make a series of reasonable assumptions about a range of cost and revenue factors, including:

- Operating expenses
- Staffing levels
- Maintenance contracts
- Ongoing equipment replenishments
- Services offered
- Market rates (current and future)
- Projected revenue for core services currently offered
- Projected revenue for potential future services

a. Develop potential technical solution, including system-level network design and cost estimate

Drawing on our field and desk surveys and the City's GIS maps, CTC's engineers will prepare a system-level design and cost estimate for deployment of a City-owned backbone (middle-mile) fiber network to connect:

- City facilities
- Schools and libraries
- Key economic development locations

In developing the backbone network design, our focus will be on creating a robust, cost-effective approach to serving the key locations identified by the City—and to create as much flexibility as possible for potential future expansion. To be clear, we will not be providing a blueprint-level network design. Rather, we will be providing an analysis of existing infrastructure, a conceptual design, high-level maps, candidate specifications, and a system-level overview of the potential infrastructure—which in turn will become a roadmap for financial analysis and business modeling, and for future decisions.

CTC will prepare cost estimates and supporting documentation for deployment, inclusive of anticipated construction labor, materials, engineering, permitting, quality control, and testing. We will provide estimates in the form of a cost range, with the lower-end estimates representing most likely costs, and the higher-end representing budgetary estimates; both will include suitable contingencies. We note that all of our work is conducted or overseen by licensed Professional Engineers, and that we will share all supporting data, spreadsheets, and assumptions.

Supporting documentation will include summary tables of key project metrics generated for cost estimation purposes, including estimated fiber plant mileage and anticipated percentages of aerial versus underground construction. Additionally, CTC will provide a narrative to explain key construction characteristics that impact the cost estimates. As is typical in this phase of a fiber construction project, the cost estimates will not be based on a detailed design, environmental assessment, or geotechnical analysis of soil composition. As a result, actual costs may vary due to unknown factors, including: 1) costs of private easements, 2) utility pole replacement and make ready costs, and 3)

subsurface hard rock. We will, of course, incorporate suitable assumptions to address these items based on our experience.

b. Develop business case and financial analysis for government fiber deployment

Incorporating costs based on the system-level design (Task 5), we will develop a business case for the candidate fiber backbone construction that illustrates the financial parameters of building fiber for internal City purposes that can also be leveraged for other applications in the future. The business case analysis will take into account the City's potential avoided costs (i.e., the cost of leased circuits that the new backbone would replace); potential revenue opportunities available by leasing excess dark fiber to public sector users (such as by leveraging the E-rate program); and the potential revenue that could be realized by leasing excess dark fiber to large employers, regional middle-mile providers, or partners. In this way, the business case will illustrate how a City-owned fiber backbone can not only replace the I-Net, but also become the foundational element of a larger broadband strategy.

This assessment, which will identify a breakeven period in terms of cumulative capital and operating costs, will include a self-construction scenario and various scenarios in which the City leases circuits to connect its facilities. For each scenario, we will analyze the impact of a range of assumptions on the models—including potential increases in leased circuit costs over time and the cost to upgrade circuits (e.g., 10 Mbps, 100 Mbps, 1 Gbps) as the City's demand for capacity increases. We will extend our analysis out to 20 years to illustrate the long-term implications of the City's decisions. We will clearly state and justify all assumptions and price sensitivities in our analysis. Figure 5 below illustrates a similar analysis we recently conducted for a public sector client that, like the City, is evaluating options for deploying a government-owned fiber network.

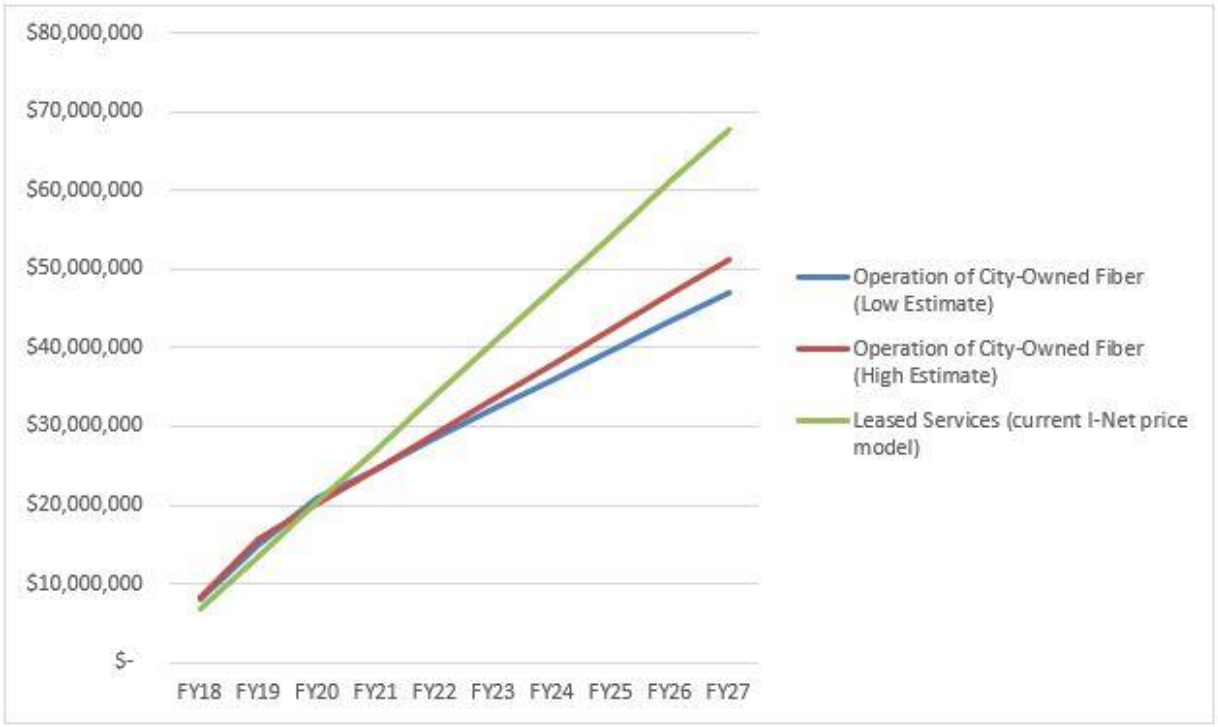


Figure 5 | Sample Analysis: Cumulative Cost of Government Fiber Operations Versus Leased Services

All assumptions and price sensitivities will be clearly stated and justified. The financial model will provide the City with order-of-magnitude estimates of the overall project cost and will support the implementation roadmap by providing inputs for potential business models and financing options. In addition to our narrative report, we will provide the City with a detailed Excel workbook that includes all underlying data and assumptions and can be manipulated to illustrate the impact of changing costs or revenue on the network's potential income statement.

c. Prepare a Written Report

Our final deliverables will be an I-Net needs assessment report and a complementary report that documents the business case for a City-owned fiber backbone. The reports will include the data, insights, and recommendations developed in the previous tasks. We will provide the City with electronic drafts of our reports, which will include concise narratives supported by tables, graphics, and maps as appropriate. We will incorporate feedback from reviewers and deliver electronic versions of the final reports.

d. Negotiation

After setting priorities for franchise renewal pursuant to Section 1 above, armed with the PEG Needs Assessment Report and I-Net Needs Assessment Report pursuant to Sections C.2 and C.3 above, and with the benefit of public comment pursuant to Section 3 above, the City will be fully prepared for franchise renewal negotiations with Verizon and Comcast. Based on our experience negotiating numerous franchise agreements with each of these cable operators, including many current negotiations, we anticipate that the upcoming negotiations for the City will be even more challenging than the last set of negotiations in 2009-10.

There are several reasons for this expectation. First, there is greater video competition today, not only with wired cable operators, but also with wireless carriers and video streaming services such as Netflix and Hulu. Both Comcast and Verizon have been losing cable subscribers through "cord cutting" and "cord shaving." When we negotiated the current Verizon franchise agreement, Verizon was just entering the cable television market and needed to obtain a franchise from the City to begin offering cable service. Now that Verizon is entrenched in the Pittsburgh cable market with a solid subscriber base, the company will take a more hardline approach to renewal negotiations. Comcast, on the other hand, was effectively a monopoly cable provider 10 years ago. Today, it is battling against significant wired and wireless competition.

Consequently, franchise renewal negotiations with the two cable operators will consist of equal parts preservation of current benefits and procurement of future benefits. CLG will be handling the negotiation phase in close collaboration with designated City staff. Together, we will execute a defined negotiation strategy consistent with federal, state, and local laws. CLG will also work closely with the Law Department to ensure that the City complies with all applicable laws and regulations.

It is expected that some of the key benefits that the City will pursue with Verizon and Comcast are as follows. The key to receiving these benefits is to know the law and regulations relating to each benefit and to negotiate firmly to obtain them from each cable operator. While there will be many other issues to be addressed in the franchise renewal

negotiations and in consultation with the City, the following are expected to be the major issues:

- **Franchise Fee Revenue.** Under federal law, municipalities may assess a franchise fee of up to five percent (5%) of the cable company's "gross revenues" for cable services. The central subject of negotiation with the cable operators will be the specific revenue sources to be included in the definition of "gross revenues." CLG has developed a comprehensive list of revenue sources for both Verizon and Comcast. This list currently includes 25-30 revenue sources and is expanded regularly as cable operators add new fees and services.

- **Franchise Fee Accountability.** In addition to franchise fee revenue, it is also essential for the City to require franchise fee protection and accountability. These include detailed franchise fee verification reports with each payment, the right to conduct franchise fee audits with penalties for underpayments, and protections against franchise fee reduction due to bundled service packages (also referred to as the "triple play" of internet, television, and telephone services).

- **Institutional Networks and the Digital Divide.** As described in detail in Section C.3 above, the free I-Nets currently provided by both Verizon and Comcast are extremely valuable assets for the City—not only for the high-speed connectivity provided to current and future City facilities, but also for the potential of addressing emerging IoT applications and critical digital divide/digital inclusion issues. The I-Net Needs Assessment conducted by CTC will place the City in the strongest possible position to retain and expand its I-Nets for the lowest possible cost. It will be able to provide the City with a tool for demonstrating not only that its I-Net needs still exist and are growing—thus justifying an I-Net under its new cable franchises—but also that it has alternative strategies at its disposal. This will provide the City with leverage on this critical issue.

- **PEG Channel Enhancements.** The City currently manages three PEG channels (two Government channels and one Public Access channel). These PEG channels are an important community asset and advances in technology require that they be enhanced. In close consultation with the City, we will most likely negotiate key technical enhancements that are necessary for today's PEG community media center. These include, but are not limited to, high definition (HD) format, improved technical quality of the channels, programming titles on electronic program guides, rebranding funds if the channel is relocated, distribution of PEG signals to all cable customers, and a video-on-demand platform.

- **PEG Channel Financial Support.** We will also negotiate critical financial support from Verizon and Comcast for the PEG channels. The current Verizon agreement includes an Annual PEG Grant, a Cable Bureau Grant, and a Fixed PEG Grant and the current Comcast agreement includes an Annual PEG Grant and a Fixed PEG Grant. The revenue projected from these grants over the term of the franchises was $7.16 million. Armed with the PEG Needs Assessment Report prepared by CTC (see Section C.2.a.i above), we will be in the strongest position to negotiate the highest PEG grant during renewal negotiations.

- **Customer Service Standards.** In a franchise agreement, it is important to include comprehensive and enforceable standards. Examples include telephone answering time limits for customer service operators, refunds for service interruptions, time frames for home visits by technicians, rules for resolving customer billing disputes, privacy standards, and a prohibition against early application of late fees. Both cable operators will attempt to water down the standards in the current agreements and the City will resist.

- **Free or Reduced Services to Community Facilities.** The current franchise agreements provide free cable service to City, school, and public library facilities. The Comcast agreement also provides reduced rate high-speed

internet service to certain recreation centers and senior centers. This will be an important area of negotiation with both cable operators and an opportunity to provide cost effective service to targeted populations in the City.

- **Legal Protections of the Rights-of-Way.** Because the cable operators place wires and equipment in the public rights-of-way, it is critical that the franchise agreement include right-of-way protections for the City. These include, but are not limited to, safety standards, repair and restoration of property damage, tree trimming regulations, and emergency removal of equipment. This will be a particularly challenging issue with Verizon due to its legal position that it is a Title II company not subject to the City's right-of-way jurisdiction.

- **Reporting Requirements.** While there are reporting requirements in the current agreements, we will negotiate for improved reporting by both cable operators in consultation with the City. These will include reporting on customer service, such as unfulfilled new service requests and reasons for denied requests. We also recommend reports on franchise fee verification, customer complaints, and construction activity in the public rights-of-way.

- **Unilateral Termination by the Cable Operator.** Verizon will attempt to include a unilateral termination provision in which the cable operator can terminate the franchise in its complete discretion upon 60 days' written notice. It is expected that this type of provision will not be acceptable to the City.

- **Fair and Equitable Labor Relations.** Where possible, CLG will attempt to include provisions for fair labor relations in the new agreements. CLG has significant experience working with labor unions on multiple projects over the years. During the approval process for the current Verizon franchise agreement in 2009, Dan Cohen met with representatives of the Communications Workers of America (CWA) and the International

Brotherhood of Electrical Workers (IBEW). The meeting was beneficial and it is expected that a similar meeting may be advisable in this renewal.

- **Enforcement.** Once the cable operator agrees in a franchise agreement to provide certain benefits to the City, they must be able to enforce these obligations. This includes strict and practical enforcement tools to ensure each company's performance of its obligations under the new agreement. These tools may include, but are not limited to, monetary fines, a substantial performance bond, and the right to revoke the franchise in extreme circumstances.

Our attorneys will draft a proposed cable franchise agreement with both cable operators (or redline the cable operators' proposed agreements) so as to provide the City with all of the benefits and legal protections to which it is entitled under current law and current technology. The agreement will include the results of the Project Initiation and Strategy Development stages discussed above, as well as our judgment as to the legal provisions that would advance the City's interests and meet its future cable and broadband-related needs. We will then submit the agreement to the Law Department (and other Departments if requested) for informal review and comment. Any suggested changes will be incorporated into the draft and the proposed agreement will be presented to representatives of Verizon and Comcast.

The most important stage in the process is negotiating a franchise renewal agreement with representatives of each cable operator. As CLG has negotiated numerous agreements with Verizon and Comcast, we know each company's policies and its negotiating tactics. The working document for these negotiations will be the draft franchise agreement informally approved by the City. We will preserve the City's legal rights under the formal process of franchise renewal but negotiate under the informal process outlined in the federal Cable Act.

The negotiation process for each cable operator typically consists of face-to-face negotiation sessions with cable operator representatives, multiple conference call negotiations, status and strategy conferences with the client, refining our list of priorities,

multiple revisions of the proposed franchise agreement, redrafting specific franchise agreement provisions, editing the final draft of the agreement, and finalizing the agreement for consideration by City staff, the Mayor and City Council.

After a final agreement with each cable operator has been reached, CLG will report to the City on the substantive provisions of each deal. We will present the City with each final cable franchise agreement (and any side agreements) negotiated by the parties and recommended by CLG. We will also draft an executive summary of the major provisions of each final agreement. We will draft a resolution authorizing approval of the agreement for consideration by City Council. Finally, we will be as involved in the agreement approval process as the City wishes us to be. These include the activities outlined in the Outreach section above.

Table 4 | Franchise Review

<table>
<tr><th colspan="3">Task #3 – Negotiation Preparation and Negotiation</th></tr>
<tr><td rowspan="5">Task #3 – Details</td><td colspan="2">3.1 – Agreement Review</td></tr>
<tr><td colspan="2">• Assign CLG to task.
• Attend and facilitate meetings with staff to review, survey and analyze existing City cable franchise agreements.
• Community Needs Assessment
• I-Net Assessment and Business Analysis</td></tr>
<tr><td colspan="2">3.2 – Agreement Negotiations</td></tr>
<tr><td colspan="2">• Negotiate, draft and finalize renewal agreements (and/or extensions) with each franchisee.
• Ensure public outreach, public meetings and best practices during project phase
• Secure city approval of negotiated franchise agreement
• Finalize written reports on I-Net Assessment and Business Analysis</td></tr>
<tr><td>Concurrent Timeline</td><td>Total Estimated Cost</td></tr>
</table>

~ 20 months Franchise Negotiations (CLG)	$62,500[8]
Community Assessment/ I-NET Assessment/ Business Analysis (CTC)	NTE $45,000

Estimated Hours by Project Task – Franchise Negotiations		
Task	***Estimated Task Hours***	***Cost***
Project Initiation and Setting of Priorities	10	$2,500
Strategy Development and Ascertainment Process	30	$7,500
Negotiations with Both Cable Operators (100 hours per cable operator)	200	$47,500
Franchise Agreement Consideration by Mayor and City Council	20	$5,000

D. *Project Timeline*

Assuming a start date of November 1, 2018, Figure 6 shows the 1-year timeline (upper timeline) for the scopes of work anticipated for Tasks 1, 2, 3, and 4, all of which is incorporated into an overall program management timeline (marked as Task 5 on the bottom with details outlined herein). During the project kickoff meetings, the timeline and project plan will be updated to reflect adjusted scheduling as directed. Note that timetables will be dependent upon timely receipt of essential information from City staff, stakeholders and potential public customers.

[8] It is impossible to predict with accuracy the exact number of hours needed to negotiate franchise agreements with the two cable operators as the amount of time needed depends in large part on the level of good faith and responsiveness of the cable operators. Nevertheless, this is our best estimate at this time.

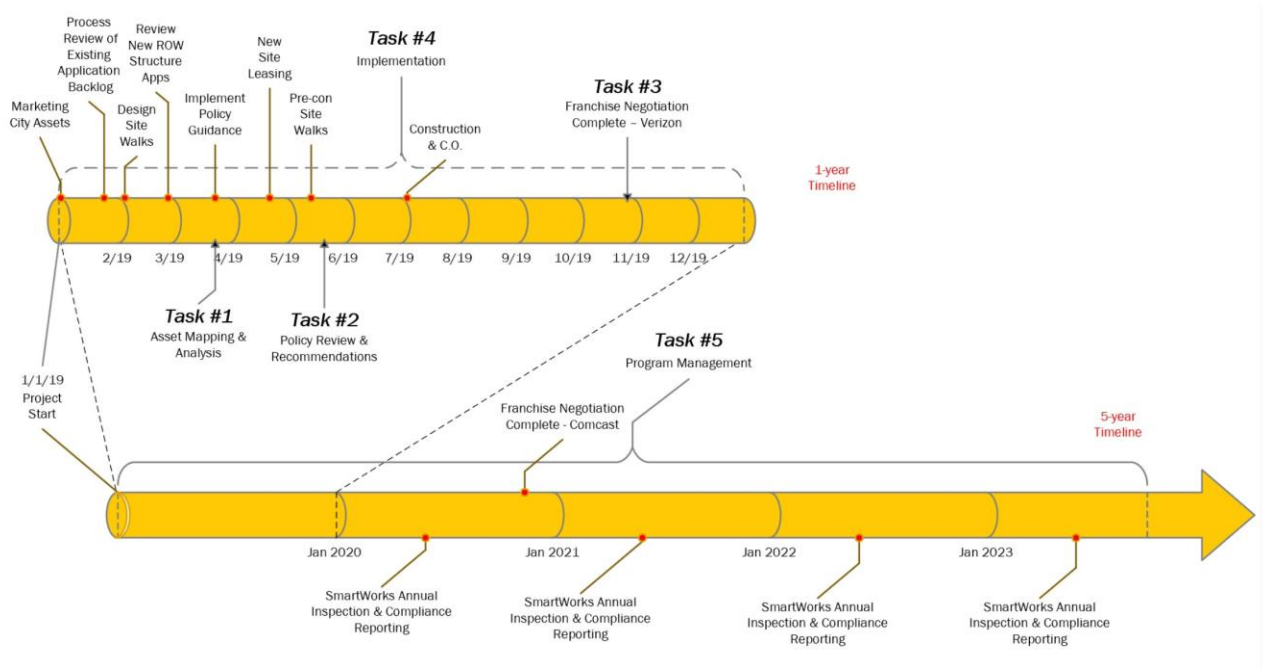


Figure 6 | Sample Timeline

3.3.3. Strategy Development

A. *Task #4 – Implementation of Findings and Recommendations*

Simultaneous with the services outlined above to complete the Broadband Plan and policy recommendations, the following outcomes will occur with the implementation phase during the engagement:

- During Task #1 review – Our team will review City's current telecom-related asset inventory to support broadband delivery, in which we will coordinate the provider coverage study findings and gap analysis **to include any mapping data into the SWP Platform for marketing City assets** to broadband providers and strategic partners for Broadband coverage needs, infrastructure development and smart city initiatives. Utilizing the gap analysis from Task #1 will help us quickly focus on market rent opportunities for City assets.

- During Tasks #2 and 3 review – Our team will coordinate with City staff to review existing use agreements, pole-attachment agreements, ROW or franchise

agreements, ordinances, zoning codes, aesthetic design standards and departmental best practices, in which we will recommend updated policy guidance for new wireless siting applications and fee structures. **We will deploy a single point of contact to utilize recommended guidance, review existing application backlog, market City assets, pre-screen applications and work with City staff to initiate updated lease requirements** for future Broadband coverage needs and smart city applications. Also, we will complete the following tasks:

Table 4 | Implementation Details

Task #4 – Implementation of Findings and Recommendations	
	4.1 - Implementation (overview)
Task #4 – Details	• Develop and implement a management and marketing strategy for City-owned assets determined to accommodate broadband provider needs and goals: • Coordinate, develop and implement with departmental staff a “One-Stop Shop” to marketing City assets to companies and entities interested in using City assets to expand broadband networks, wireless services and various IoT initiatives. • Implement backlog solution for existing site applications, pending requests for ROW or franchise agreements and location specific permit requests: • Evaluate existing application requests against predictive future design and ordinance change requirements. • Attend design site walks (if needed) and note findings against predictive future change requirements. • Coordinate specific design changes with carrier engineers and site acquisition points of contact. • Educate carrier representatives on pending process and design change standards to alleviate staff burden and prepare for program management integration. • Implement options to manage City sites for leasing, ownership, co-ownership and installation of new or replacement towers or structures and co-location of facilities: • Develop and implement services to include macro (cell), micro (small cell), DAS technologies and related connectivity technologies, including fiber optics, sensors, digital kiosks and other smart city applications that use City assets and PROWs and/or provide the opportunity to generate

additional revenue for City through program management integration.

- Provide framework for future broadband master planning to support next-generation technologies.
- Provide ongoing recommendations related to FCC rulings, federal and state laws and changes in applicable regulations:
- Track federal regulatory changes or potential changes through the FCC and the FCC Broadband Deployment Advisory Committee, the US Congress and other federal agencies, such as the NTSB and the US National Broadband Plan, including DOT "dig once" policies.
- Account for impacts of potential state and federal law changes, to include SHPO and NEPA changes, to support City's proactive responsiveness and to intelligently adjust program management and marketing of City assets as needed.
- Provide linkages to other cities and membership associations to add City's voice to pending regulatory and/or legislative efforts.

Concurrent Timeline	***Total Cost***
On-going consultation	Revenue Share Option to advance costs (see Table 7)

B. *Task #5 – Program Management Details*

The City has championed the Metro21 initiative[9] for "the sole purpose of driving innovation outside of what in many cases is the glacial pace within city governments". Our implementation and program management functions are the "nuts and bolts" that help drive this initiative within the City. Our team will help the City inventory its assets, modernize its wireless ordinance codes, design standards and departmental best

[9] Carnegie Mellon University. *Using Technology and Policy to Transform City Life*. August 2014. https://www.cmu.edu/metro21/

practices and effectively utilize its asset base for future Smart City initiatives. Unlocking existing City assets to generate smart city revenue requires implementation of recommended asset utilization and policy guidance as well as an additional on-going, specialized deployment plan – Task #5 (the "SWP Program Management" process).

Factors needed for "speed to market"

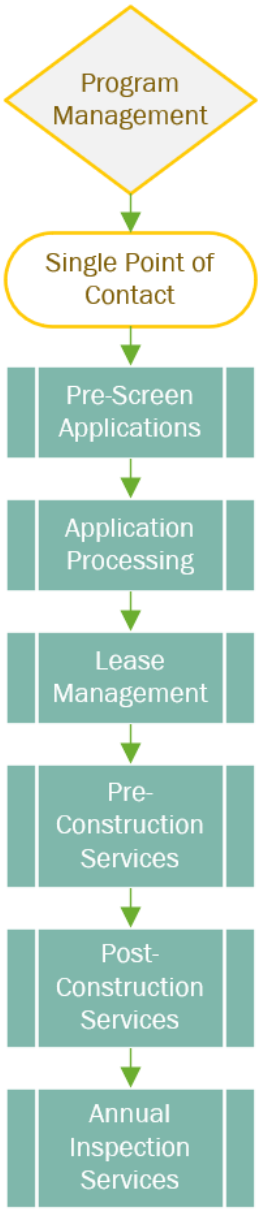
- The broadband providers ultimately want to cost-effectively deploy assets on as many locations as quickly as possible – the "speed to market". They need to govern two factors – location and time.
- They require real estate to place their installations and time to design, entitle, construct and activate their new technologies at those locations.
- To help identify multiple locations at once, the providers must pursue landlords with access to a wide range of functional assets like fiber, power, poles and property for new technology delivery, which is the ROW and public asset base of most jurisdictions.
- With the locations identified, the next factor is time. Here, they focus their efforts on public entities that appear to have their departmental "acts together", or those who have developed a streamlined wireless deployment process to meet their timing needs to get "on-air".

Our goal is to define, analyze, prepare, plan and execute a broadband strategy and collaborative approach to meet City's needs today and tomorrow. It is this collaborative partnership (the City, our team AND the wireless providers) that creates a "win-win-win" approach for streamlining carrier deployments on public assets, promoting "speed to market", broadband expansion and maximizing value for public assets. It is a comprehensive program to asset development for City-owned assets and the building blocks for a smart city framework.

After implementing recommendations from completed tasks, the following summary outlines specific tasks incorporated into our program management process:

Table 5 | Program Management Details

Task #5 – Program Management	
	5.1 - Single Point of Contact
Tasks #5 – Details	• Represent City's interest and provide single point of contact to wired and wireless service providers interested in applying for use of assets in City. • Market, educate and update industry on available City-owned broadband assets and wireless siting application in-take process through SWP Platform.



5.2 - Asset Marketing Platform

- Market existing City assets from asset analysis, coverage study and gap analysis.
- Regularly collect and validate provider and City fiber broadband and wireless coverage data for inclusion in the Platform.
- Provide City with a single, secure online location for identifying, tracking and visualizing all broadband, wireless sites and various IoT solution deployments.

5.3 - Mapping Platform services

- Provide City and Providers access to ongoing data and support services.
- Provide reporting to City staff of all Federal and State compliance timelines based upon submission facility type from implementation.
- Track all related permit documentation and provide monthly reconciliation on application in-take status.
- Provide City the ability to archive and verify all application exhibits, drawings, construction documents, schedules, licenses and permits.

5.4 - Application services

- Program Manager will meet with City Staff (on regularly scheduled basis) to review completed online siting applications for completeness, accuracy and fit within City design standards and best practices from findings.
- Program Manager will coordinate design walks, reviews and approvals of design requirements for City-owned assets with departmental staff and providers as needed for application processing.
- Program Manager will coordinate final review processing status with departments, follow recommended department process workflow and track Platform compliance timelines with City staff as needed for approvals.

5.5 - Leasing services

- Coordinate all Lease preparation documents with oversight on final exhibit review, permit confirmation, drawings and final version executions.
- Track, coordinate and confirm all commencement documentation in the Platform and ensure executables meet departmental approvals to proceed.

	• Provide financial support services related to the completion of wireless and related sites, including collection of ongoing lease payments and related fees, including monthly reconciliation and funding reports.
	5.6 - Pre-Construction services
	• Track, coordinate and verify with City staff and providers all site walks and pre-construction scheduling necessary to commence construction. • Track, coordinate and verify insurance, licensing and building permit processing with providers for departmental notices to proceed.
	5.7 - Construction services
	• Provide in-market construction oversight for City department personal. • Track, coordinate and verify all construction inspections. • Track, coordinate and verify all construction activities are consistent with licenses, permits & “as-built” drawings. • Track, coordinate and verify department ‘sign offs’ for certificate of occupancy.
	5.8 - Construction and Post-Construction services
	• Provide City the ability to archive all construction schedule documentation, related licenses, permits, drawings and closing packages for departmental retrieval on Platform. • Coordinate post-construction schedules for future inspection services.
	5.9 - Applicable Annual Inspection services
	• To the extent that annual inspection fees are allowable under existing ordinance code or adopted by Council, Consultant will **coordinate annual site inspections** to ensure that each existing permitted broadband site location meets existing zoning and ordinance codes consistent with its permitted use, to include RF emissions testing. • Consultant will track and record site inspection results, notify City of inconsistent additions or modifications, and recommend appropriate fees or remedies for unauthorized discrepancies. • Consultant will calculate, record and collect appropriate inspection fees or monetary remedies, applicable as additional compensation under the terms and conditions provided in the Agreement.

Concurrent Timeline	*Total Cost*
On-going consultation	Revenue Share Option to advance costs (see Table 7)

The comprehensive partnership approach to asset development allows the City to quickly implement a total turnkey solution for broadband planning and execution on a forward-looking basis. We are confident in our capabilities to provide the City with valuable expertise and experience that will help improve all smart city initiatives, as well as generate additional revenue to fund other City opportunities.

C. *Project Outreach*

Outreach to City staff, elected officials, and the community at large is a critical component of this project. SWP, CLG and CTC regard the outreach component not as a separate and segregated activity, but rather as an integral aspect of the project that will be woven into each and every phase. Outreach will be included in at least the following ways:

- Given our previous design guidelines work for the Art Commission, our team is familiar with staff and procedures to commence this initiative. To begin the Project, there will be a kickoff meeting of the project staff with staff of the Law Department, the Innovation and Performance Department, the Public Works Department, the Mobility and Infrastructure Department, and the Department of Management and Budget. At the meeting, we will solicit the needs and concerns of the officials regarding the City's future cable and broadband needs. We will also advise the officials regarding their legal rights and outline key tasks, confirm City v. consultant responsibilities, set priorities, and establish a projected project timeline.

- During Task 1, we will meet with City staff including the Departments referenced in the first bullet point above to advise the participants of the

City's legal rights and develop a strategy for identifying, valuating, and maximizing the City's telecommunications assets.

- During Task 3 as part of the PEG and Digital Inclusion Needs Assessment there will be meetings with City staff, meetings with key PEG and community stakeholders and two public input forums.

- Also, during Task 3 as part of the I-Net Needs Assessment there will be an on-site strategy session with City personnel and invited stakeholders as well as group interviews and one-on-one discussions with stakeholders to obtain insights for the analysis of the City's broadband needs.

- During Franchise Negotiations, there will be several outreach activities conducted. First, Section 626 of the Cable Act requires "public notice and comment" as part of cable franchise renewal. In consultation with City staff, we will decide whether to have one public hearing before City Council for both cable operators or a public hearing for each cable operator. Prior to the public hearing(s), we recommend that CLG meet with City Council (in two or three meetings so as not to violate the Sunshine Rule) to provide background on the cable franchise renewal process and the City's priorities. If requested, we will also work with the City's Public Information Office to prepare a press release prior to the public hearings.

- After Franchise Negotiations are completed and during the approval process for each new cable franchise agreement, there will be heightened outreach activities. These will include meetings with City staff, as well as meeting with the Mayor and City Council, to present the final packages and answer any questions. It may also include a meeting with the Allegheny County Labor Council. If requested, we will also work with the City's Public Information Office to prepare a press release prior outlining the key points in the final franchise packages with Verizon and Comcast.

Section D: Cost Proposal

4.1. Scope of Work Summary

Table 6 | Pricing Overview

Response Task(s) – Group	*Concurrent Timeline (hourly)*	*Total Cost*
Task #1 (Broadband Plan) – SWP	374	$91,069
Task #2 (Policy, Ordinance, and Best Practices Review and Recommendations) – SWP	366	$89,121
Task #3 (Negotiation Preparations and Negotiations) – CLG, CTC	CLG 260 estimated CTC 250	$62,500 est. $45,000
TOTAL:	***1250***	***$287,690***
Task #4 (Implementation of Findings and Recommendations) – SWP	On-going consultation	Revenue Share Option to advance costs (see Table **7**)
Task #5 (Program Management) – SWP	On-going consultation	Revenue Share Option to advance costs (see Table **7**)

4.2. Pricing Options

Like communities across the country, the City is seeking a clear path to becoming a smart city through broadband expansion. This requires identifying existing assets that MNOs can utilize for current and future technology initiatives, streamlining regulations to facilitate providers' "speed to market" and implementing a strategy for future technology growth and revenue generation. This can be accomplished through the scope of work summary (Table 1) with our team, but the pricing overview table (Table 6) only calculates those tasks that can be clearly defined by an hourly pricing schedule.

Our experience indicates that the on-going implementation and program management tasks functions (Task #4-5) require an average of seventy (70%) percent of one week's consulting time per small cell location to complete. Depending upon the number of small cell site applications submitted or in process at any given time, the forecast of these costs would be difficult to ascertain with an hourly pricing schedule.

Therefore, it behooves the City to offset those anticipated on-going costs with a revenue share based upon a percentage of future generated revenues.

Developing a comprehensive asset management approach (what we believe the City is ultimately seeking) includes this final "piece of the puzzle" being paid for through a revenue share model. SWP provides several revenue share options to pay for not only these on-going implementation and program management costs, but also a majority (if not all) of the initial SOW tasks. The following revenue share option is outlined for the City's evaluation and consideration:

- City elects to pay CLG and CTC the total cost for Task 3 as identified scope of work section of the Proposal and SWP incurs the Tasks 1, 2, 4, and 5 costs under a 65/35 revenue share (in favor of the City) model;[10] or,

Table 7 | Pricing Options

City Option Descriptions	***Total Upfront Fees[11]***	***Revenue Share***
Option 2 – City pays for Task 3 upfront and SWP pays for Task 1, 2, 4, & 5	CLG - $62,500 est. CTC - $45,000	65/35 (in favor of City[10])

With the chosen revenue share, SWP will advance the costs noted in exchange for providing the implementation and program management task functions. Our research shows that streamlining broadband policies incentivizes provider investment, but without effective management, deployment delays will impact other municipal projects and budgets.

As providers lease more assets, the volume of workflow increases. Cities that attempt to "go it alone" are stunned with the amount of time, oversight and resources

[10] Revenue Share (65/35) – The City elects pricing option and pays CLG and CTC for the costs to complete Task 3. In exchange for SWP incurring the costs of Tasks 1, 2, 4, and 5, SWP shall receive a maximum of thirty-five percent (35%) of the recurring gross payments generated from the leasing and management of City-owned assets with the City being paid sixty-five percent (65%) of recurring gross payments.

[11] Paid monthly upon approved invoicing and more definitively outlined in a Professional Services Agreement between the parties.

(even 50) small cell applications require. As the volume of applications accelerates, mandated timelines are missed, and permits are “deemed complete” vis-à-vis existing FCC regulations. Now the planning departments must approve non-compliant applications, not knowing how these sites in the ROW will impact other public works priorities. This creates a cascade of pre-construction delays and staff resource time to configure and manage effectively.

The SWP program management functions in Table 5 are services that we perform in lieu of payment through the revenue share model to streamline the entire process – from application to permitting, from deployment to construction and from certificate of occupancy to annual compliance reporting. By engaging with a subject matter expert paid through performance, our mutual priorities are aligned, and City staff resources are free to focus on overall department priorities.

4.3. Contingencies

4.3.1. State Law Changes

Currently, there are 20 states that have enacted legislation restricting attachment fees that municipalities can charge the wireless carriers for asset leasing in the public right-of-way. HB2564 in Pennsylvania was introduced in mid-July with a cap of $50/pole/yr. for all municipalities in the state. Numerous cities have opposed the legislation and it is uncertain if the bill will successfully pass through both chambers at this time.

If it is determined that future state or federal legislation prohibits the City from continuing with a revenue share engagement to represent its assets during the contract term, then City shall directly reimburse SWP for any unpaid balance of its actual, documented and City-approved costs not collected through the revenue share. Afterwards, the continuation of the contractional obligations between the parties will be more definitively outlined in the professional services agreement.

4.3.2. City-owned Asset Changes

If it is determined after engagement that the total number of City-owned assets decreases to an amount unable to sustain a revenue share engagement, then City shall

directly reimburse SWP for any unpaid balance of its actual, documented and City-approved costs not collected through the revenue share. Afterwards, the continuation of the contractional obligations between the parties will be more definitively outlined in the professional services agreement.

4.4. Additional Services

Knowing that our team will be dedicated and committed to the City's success, the City may request our expertise with additional services outside the scope proposed in the RFP, which may, as an example, include the following:

- Integration of manual asset data information into an appropriate digital format for inclusion into the SWP asset platform software, if needed and directed;
- Provide API functionality and/or cloud-based mapping application functionality with our asset platform to allow the simultaneous submission of broadband site applications and related documentation into existing City software, if needed and directed;
- Financial audit of existing City telecommunication lease agreements for compliance and modernization, if needed and directed;
- Provide physical inspections, testing, maintenance and/or management of any wireline (fiber) broadband infrastructure, if needed and directed; and,
- Provide information or expert testimony for public hearings or meetings unrelated to the program management scope of work identified, if needed and directed.

Utilizing the following rate sheet, the City will provide our team the required purchase order information needed for any ancillary services that are beyond the general scope of services outlined herein.

Table 8 | Additional Services Rate Sheet

SWP Staffing Category	*Hourly Standard Rate*
Executive Sponsor (CEO)	$300.00
Finance Manager (CFO)	$275.00
VP of Engineering (COO)	$275.00
Regulatory and Contracts (GC)	$265.00
Project Coordinator	$250.00
Network Solutions	$243.50
Project Manager	$243.50
Site Services Project Manager	$235.00
Site Services Engineer	$224.50
GIS Manager	$224.50
GIS Analyst	$182.50
Research / Admin	$145.00

CLG Staffing Category	*Hourly Standard Rate*
Partner Attorney	$250.00
Associate Attorney	$225.00

4.5. Subleasing vs. “Broker” Arrangement

Some public-private partnerships utilize a sublease arrangement for its ROW assets, in which a public entity leases its ROW assets to a private entity and they, in turn, sublease the assets to the broadband providers (collecting gross revenues and paying the jurisdiction its monthly net revenue share). Another arrangement may create a “broker”, or agent, relationship, in which the public entity contracts with the private entity “broker” to market and lease its assets in the ROW to the broadband providers. Once the lease is

finalized, the City pays the agent its revenue share and the extent of additional services has contractually ended.

SWP is agnostic as to City's preferred contractual arrangement, but we value our involvement with the City as more than just a "broker" of assets. To be clear, our client is the City and our collective customers are the broadband providers. The SWP program management process is more than just a marketing tool crafted to gain a percentage of City asset revenues. Our team of experts bring needed value and results to the City. Our team will perform the outlined tasks as part of a comprehensive partnership approach. A partnership eager to monetize City-owned assets, promote broadband expansion and advance smart city initiatives.