GRANT AGREEMENT

In consideration of the mutual promises contained in this Agreement, the ANN ARBOR–YPSILANTI LOCAL DEVELOPMENT FINANCE AUTHORITY, 301 E. Huron Street, Ann Arbor, Michigan 48104 (hereinafter "Grantor"), and the CITY OF ANN ARBOR, 301 E. Huron Street, Ann Arbor, Michigan 48104 (hereinafter "Grantee"), agree as follows this 26th day of March, 2020:

1.   <u>Background</u>. Grantor, in support and furtherance of its objectives of implementing Smart City technologies and enabling the creation and expansion of technology companies and employment within its jurisdiction, intends to make grants to designated recipients to further these objectives, and Grantee has applied for such a grant to install conduit, fiber, and related tech infrastructure within Grantor's Technology Park (a copy of Grantee's application is attached as Exhibit A). Grantee intends to use the grant funds to contract with third parties to fulfill its obligations below. Grantor approves this application and awards Grantee up to $5,000,000 but no less than $3,500,000, to pay "Approved Project Costs" as defined herein. "Approved Project Costs" are any and all costs that Grantee incurs in furtherance of the project for which Grantor's appointed Project Manager has given advanced, written approval. This Agreement further sets forth the obligations of the parties regarding said project and Grant.

2.   <u>Obligations of Grantee</u>.

    a.   Grantee shall timely submit to Grantor's Project Manager all Grantee contracts that it intends to enter with a third party, and that it intends to claim as Approved Project Costs under this Agreement. Grantee shall not execute such contract(s) unless and until Grantor's Project Manager gives written approval that such contract's costs constitute Approved Project Costs under this Agreement. All contracts that the Grantee intends to claim as an "Approved

Project Cost" shall include the following language on the signature page: "This Agreement constitutes an Approved Project Cost pursuant to the Grant Agreement between the City of Ann Arbor and the Ann Arbor-Ypsilanti Local Development Finance Authority ("LDFA"), dated March 26, 2020", and shall be signed by the Project Manager if so approved.

b.   Grantee will provide preliminary design and engineering for the project within one year from the date of this Agreement.

c.   After approval by Grantor of preliminary design and engineering, the project will be completed by Grantee within the next two to three years pursuant to a schedule mutually agreed upon by the parties.

d.   Grantee will provide such periodic reports regarding the progress of its design, engineering, and construction work as may be reasonably required by Grantor.

e.   Grantee shall: (1) initially pay all Approved Project Costs, presently estimated to be approximately $1,000,000 for the design and engineering phase, with a total cost of between $3,500,000 and $5,000,000; (2) request reimbursement for such Approved Project Cost payments from Grantor after such initial payment; (3) be the owner of the facilities constructed pursuant to the project; and (4) ensure that all grant funds are accounted for separately in a separate City Fund entitled: "General Capital Fund: Tech Park Fiber Project."

3.   Obligations of Grantor

a.   Grantor hereby appoints the LDFA Treasurer as the Project Manager for purposes of this Agreement and authorizes him/her to bind Grantor to pay all Approved Project Costs from the grant funds. The LDFA Treasurer may change during the term of this Agreement and whomever holds that position shall act as the Project Manager during such time. Such Project

Manager shall timely review all of the contracts and costs that Grantee submits to be approved as Approved Project Costs.

b.   Grantor will provide timely review of the design and construction of the project.

c.   Grantor shall reimburse Grantee for all Approved Project Costs within 30 days of Grantee incurring any portion of such cost and submitting the cost for reimbursement to Grantor. Grantor acknowledges that as long as the cost was incurred as an Approved Project Cost, Grantor must timely reimburse Grantee.

4.   <u>Insurance and Indemnification</u>. Grantee will obtain liability insurance in an amount satisfactory to Grantor covering Grantee's activities in regard to the project and naming Grantor as an additional insured, and, to the extent not limited by applicable law, will indemnify and hold Grantor harmless from liability for any damage to person or property resulting from Grantee's actions in regard to the project. Any contractor engaged by Grantee in regard to the project shall be required by Grantee to obtain comparable insurance and to similarly indemnify Grantor.

5.   <u>Notices</u>. Any notices or other communications by Grantee to Grantor shall be sent to: the current LDFA Treasurer at that person's current address. Any notices or other communications by Grantor to Grantee shall be sent to: the City of Ann Arbor, ATTN: Chief Financial Officer, 301 East Huron Street, Ann Arbor, MI 48104.

6.   <u>Venue and Choice of Law</u>. Any litigation arising from this Agreement shall be brought in the Washtenaw County Circuit Court, and shall be governed by the law of Michigan.

7.   <u>Amendments</u>. Any amendment to this Agreement shall be in writing and signed by the parties authorized representatives.

8.   Authority. Any individual executing this Agreement in behalf of a party warrants that he or she has been duly authorized to do so.

9.   Electronic Transactions.   Grantor and Grantee agree that signatures on this Agreement may be delivered electronically in lieu of an original signature and agree to treat electronic signatures as original signatures that bind them to this Agreement. This Agreement may be executed and delivered by facsimile and upon such delivery, the facsimile signature will be deemed to have the same effect as if the original signature had been delivered to the other party.

10.   The individuals executing this Agreement represent and warrant that they have authority to so sign and to bind their respective party.

ANN ARBOR–YPSILANTI LOCAL DEVELOPMENT FINANCE AUTHORITY

By: Stephen Rapundalo

Its: Chair

Date: March 26, 2020

CITY OF ANN ARBOR

Christopher Taylor   03/31/2020

CHRISTOPHER TAYLOR, MAYOR

Jacqueline Beaudry   04/01/2020

JACQUELINE BEAUDRY, CITY CLERK

Tom Crawford   03/31/2020

TOM CRAWFORD, INTERIM CITY ADMINISTRATOR

Approved as to substance

Tom Shewchuk   03/30/2020

TOM SHEWCHUK, INFORMATION TECHNOLOGY

Approved as to form and content

Stephen K. Postema   03/31/2020

STEPHEN POSTEMA, CITY ATTORNEY

EXHIBIT A – GRANTEE'S GRANT APPLICATION

PROJECT NAME: Technology Park Fiber & Conduit

PROJECT REQUESTOR: City of Ann Arbor

PROBLEM THAT'S BEING SOLVED: The City of Ann Arbor's downtown is a vibrant area and the center of the city's economic activity. As commercial and residential interest in the downtown area grows, there is ever-increasing stress on infrastructure to efficiently manage the influx of people, traffic and energy consumption. Ann Arbor is not alone in this trend; the U.N predicts that the majority of population growth in the U.S. between 2010 and 2030 will occur in smaller cities.[1] An emergent area of national interest and economic development is "Smart City" initiatives – intelligent, connected technology solutions that enable cities to provide services more efficiently, consume less resources more sustainably, and connect people more effectively to both their government and the rest of the world.[2] Smart City solutions include such things as vehicle to infrastructure communication, intelligent traffic management, improved pedestrian safety, efficient parking, and the equitable access to mobility options.

Research entities and businesses are already trying to solve this fabric of needs and Ann Arbor is recognized as one of a few locations nationally that have some of the critical assets necessary to compete and develop solutions. The City, UM (UMTRI), and State have already invested in infrastructure in the region to bolster research and development. With the city's existing innovative environment, the City is well positioned to be a preferred test-bed for new companies to explore and innovate ideas and products that solve mobility challenges with Smart City infrastructure.

Since the research and commercialization of ideas relies on acquiring data and communicating it rapidly and reliably, a robust high-speed, high-capacity broadband infrastructure can further add to the advantages of Ann Arbor being a preferred test-bed for innovation. However, with limited exception the City's existing downtown fiber and conduit infrastructure is already at capacity and cannot support additional use. Additional deployment is necessary to have a more universal and useful downtown communication system capable of leveraging opportunities associated with Smart Cities.

BACKGROUND: Cities invest in infrastructure to improve the quality of life of residents, enable commerce, and deliver government services efficiently & effectively. Traditionally, city infrastructure investments are large dollar investments providing broad service delivery, such as road and water treatment/delivery systems. However, as the information age and technological improvements have swept across many industries, they're now being applied to the services and challenges of cities. Companies and cities implementing ideas in this area are called Smart Cities.

Below is a graphic of how Smart City initiatives can impact a community and foster innovation in a wide-variety of areas in the community.
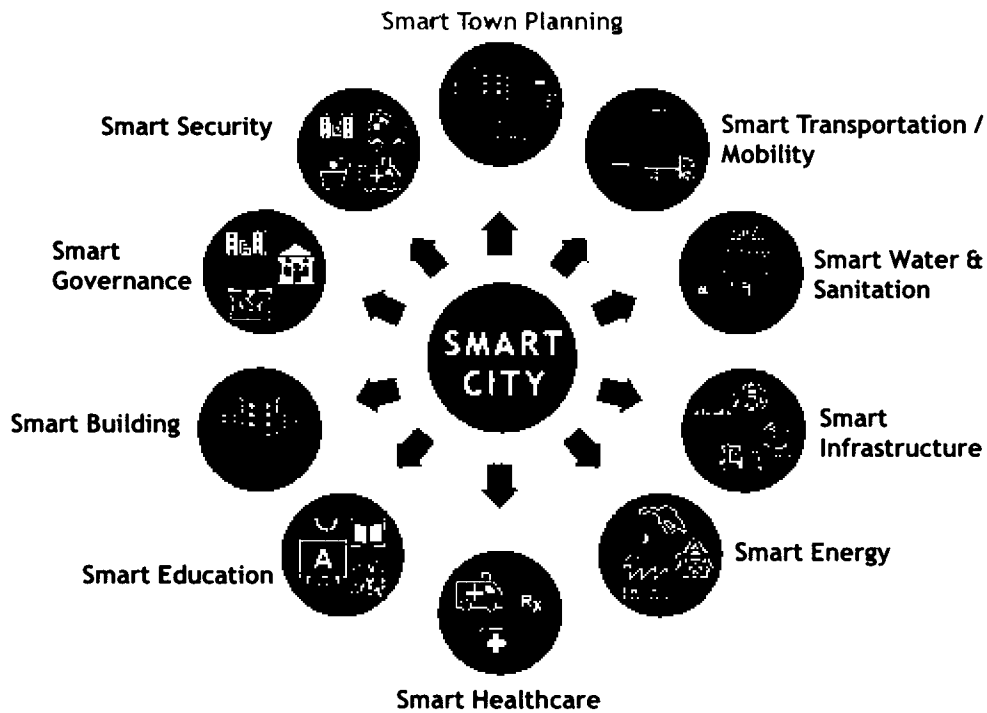
Source: *Rolta India Limited*

Although there isn't a universally accepted definition of a Smart City, the advancement of technology fundamentally incorporates data collection, storage, transmission, analysis, as well as the management of the electricity associated with each of these processes. Many advancements have been made in each of these areas over recent decades.

In relation to the transmission of data, the private sector continues to advance innovations and services for cities. The larger private companies install their own wired and wireless systems to control their quality of service and then sell excess capacity for profit. These business models help fund the development of private innovations. However, these systems are not integrated with the assets of cities, remain private systems, and can be costly if modifications are needed. Cities, which are accustomed to installing infrastructure that's shared publically, serve an important role in reducing the average cost of the basic infrastructure because one investment is shared across multiple users. Private sector and public sector systems work together to address different purposes. Since Smart City technologies require reliable and cost effective transmission of data, cities are increasingly seeking ways to investment in and support the data highways integrated with their existing assets in their communities.

The City of Ann Arbor and Ypsilanti are located within a region that has strong competitive advantages related to several areas of Smart City innovation. The primary area is mobility. The University of Michigan has already invested in M City (the infrastructure for early stage testing of automated vehicle testing), the State has already invested substantial funds in the American Center for Mobility (the infrastructure for higher-level testing of automated vehicles), and the City has invested in a fiber optic ring that is capable of bringing a base level of connectivity to most areas of the City. Each of these infrastructure investments have value in themselves but when combined they contribute to a regional cluster of assets that attract and encourage companies to locate and grow here.

2

The region also has a sizeable talent pool of workers with software, electrical, mechanical, and automotive engineering skills. This is evidenced by the major automotive companies having a research and development presence locally. When these talents are combined with the innovation residing in the University of Michigan, this area is very competitive for companies to locate and development new technologies.

However, if the above resources are combined with a wired, dense, and active downtown Ann Arbor, the added infrastructure creates an ideal test-bed for innovation and development. The city already has some installed conduit and fiber in the downtown area which could be leveraged, but with little exception the system is full and cannot handle additional needs. The installation of a robust conduit and fiber system in downtown Ann Arbor will leverage existing infrastructure investments and make it easier for companies to innovate and test in the SmartZone.

DESCRIPTION OF EXISTING CITY INFRASTRUCTURE: The City of Ann Arbor's conduit and fiber system has been installed over decades with it initially being deployed when roadbeds were opened up for significant repairs (as opposed to resurfacing efforts which do not pierce the road's foundation). The conduit and fiber was installed to connect the City's traffic control system and related sensors back to a data center. The initial conduit installations involved 1 inch conduits with multimode fiber. As additional capacity was needed and the City experienced difficulties with working with 1-inch conduit, installations increased to 2-inch and in some cases 3-inch conduit. This point-to-point connected system remains in place and primarily supports the traffic control system operations.

Separately, the City had a network installed by Comcast which was called the I-Net (institutional network). A number of communities around the country negotiated the installation of I-Nets along with their cable franchise agreements in order to have fiber optic connections between their public access, government and educational facilities. The City of Ann Arbor did this as well and utilized this backbone for its primary operations for approximately 15 years.

After a couple of decades of experience installing and managing its own fiber optic network and realizing the cost and control benefits, the City determined (at the time the I-Net agreement expired) it would be better served investing in its' own fiber optics network and thereby created the A2 I-Net. In doing so the City invested $3.5 million to connect all the City operations and provided a connection to the Ann Arbor Area Transportation Authority (AAATA), the Downtown Development Authority (DDA), Ann Arbor District Libraries (AADL), Merit Networks, and the University of Michigan. The A2 I-Net was strategically designed utilizing a ring topology so users of the fiber can take advantage of redundancy, resiliency and failover that did not exist with the previous network. The main fiber ring loosely traverses the east and west sides of the city and has a bi-sector down the middle. This design allows close proximity for much of the city for future connectivity.

The city has entered into Fiber and Conduit Use Agreements with third parties for access to the A2 I-Net. (The city is not an Internet Service Provider, or ISP, and does not provide these services.) These agreements allow third parties to utilize the city's dark fiber, and the third party is required to "light" the fiber. For security reasons, because the ring supports the city's operations, a map of the ring is not publically offered.

As of 2018, approximately 55% of the ring is in underground conduit and the rest is aerial and located on above ground poles. As funding becomes available, the City is working to locate the rest of the network into underground conduit because of the increased reliability and reduced maintenance. Where new installation of conduit was performed with the A2 I-Net implementation, a 3 inch conduit was utilized. All fiber strands terminate at the two city data centers to accommodate future plug-and-play connectivity.

A few wireless networks for city operations are also installed based on this infrastructure. Like other wireless systems, they require a fiber infrastructure for the backbone of the system.

As indicated previously the downtown conduit does not have capacity for additional use and is inadequate for the future deployment of Smart City technologies. The installation of a dense conduit system in the downtown that is connected to the City's A2 I-Net creates a powerful asset that can be utilized by the City and leveraged by companies and researchers, in conjunction with the regional assets described above, for product and service innovations and efficiencies.

For municipal purposes, it's important to note that Ann Arbor has already invested in a business intelligence or "Big Data" platform. This investment demonstrates the direction and commitment of the City to utilize data to drive solutions to local problems and leverage Smart City technology developments.

BRIEF DESCRIPTION OF PROPOSED PROJECT: This project requests funding to install conduit, fiber, and related tech infrastructure (solely within the technology park district) to support the implementation of Smart City technologies and enable the creation and expansion of technology companies and employment. (See attachment I for a map from the SmartZone TIF & Development Agreement which illustrates the boundaries of the certified technology park).

NEAR-TERM & LONG-TERM USES:

Ann Arbor Connected Vehicle Test Environment (AACVTE) [Source of info. is UMTRI]
Connected vehicle technology shows great promise in transforming the way consumers travel. Thanks to wireless technology, connected vehicles ranging from cars to trucks and buses to pedestrians could one day be able to communicate important safety and mobility information to one another and the infrastructure in order to prevent injuries, ease traffic congestion, improve the environment, and save lives.
In 2012, UMTRI and the U.S. DOT launched the Safety Pilot Model Deployment (SPMD), a $30 million research project to assess the effectiveness of connected vehicle safety technology at reducing crashes. The project spanned three years and incorporated over 2,800 vehicles and 73 lane-miles of instrumented roadway. The Safety Pilot study was a tremendous success, thanks in large part to the community of volunteers from Ann Arbor and the surrounding area.

Building on the success of SPMD, UMTRI and its partners are expanding the existing infrastructure footprint from northeast Ann Arbor to the entire 27-square miles of the City of Ann Arbor. Additional vehicles will be deployed at the rate of 1,500 per year. This new deployment is called the Ann Arbor Connected Vehicle Test Environment (AACVTE).

When completed, the AACVTE will be the world's largest operational, real-world deployment of connected vehicles and connected infrastructure. Led by UMTRI, and its partners, the AACVTE will build on the existing Ann Arbor, Michigan model deployment, and will include an upgraded and expanded environment, making it the standard for a nation-wide implementation. AACVTE is a stepping-stone to achieving the U.S. DOT's vision for a national deployment of connected vehicles and infrastructure.

The goals of the program are:

1. Transition from a model deployment to an early operational deployment.
2. Continue to operate a robust, high quality environment for the benefit and use of all stakeholders.
3. Transition from a federally funded program to an economically sustainable environment.

Total investment in this program to-date is over $45 million, including partners.

In June 2018 the World Economic Forum (in partnership with Deloitte) announced a collaboration with Detroit, Ann Arbor, and Windsor, CN to pilot the principles of a seamless integrated mobility system to improve the lives of the region's citizens. The integrated system would promote more interoperability between modes of transportation in order to avoid a proliferation of potentially uncoordinated or conflicting investments, assets, standards, rules, and technologies. A white paper, Designing a Seamless Integrated Mobility System (SIMSystem)[3], has been published describing vision and potential use of this effort.

When the selection of the above cities was announced in 2018, Ann Arbor's Mayor Christopher M. Taylor said, "Ann Arbor is an ideal environment to test key principles of SIMSystem. The City includes a diverse set of transportation modes, a highly progressive community, one of the top research universities in the world, and a heritage of transportation innovation." This quote encapsulates some of the competitive advantages Ann Arbor already has which can be leveraged with the deployment of public fiber support the technological and business innovations needed to achieve the goal of seamless integrated mobility systems.

Examples of Other Potential Uses:

- A pilot project in Pittsburgh used artificial intelligence, sensors, and cameras at each traffic light to move traffic more efficiently—reducing travel times by 25% and idling time by 40% in the testing area.
- Idling in traffic also contributes to GHG emissions, but a smart parking initiative in San Francisco, CA used smart meters and parking sensors to improve parking availability—GHG emissions in the pilot areas dropped by 30%
- Connected busses at Santa Clara Valley Transportation Authority (SCVTA) offer wireless to riders and tracking vehicle locations
- In 2015, the US Department of Transportation launched a Smart City Challenge. While Ann Arbor was not an awarded participant, the challenge reflects the significance and importance of Smart Cities[4], which highlights the need for a robust data infrastructure.

Other Expressions of Interest:

Also attached are letters expressing interest and descriptions of how various entities could use a dense, robust fiber infrastructure in the downtown.
- Letter from University of Michigan (UMTRI) – research and deployment of new smart city technologies (attachment II).
- Letter from City of Ann Arbor – Immediate use: water meter reading & parking management. Many potential future uses (attachment III).
- Letter from May Mobility – supports operation of connected and automated vehicles (attachment IV).
- Letter from Derq – improve road safety (attachment V).
- Letter from Ann Arbor SPARK – contribution to high-tech, innovative ecosystem (attachment VI).

Below is a pictorial showing how investment in this infrastructure leverages other community assets and supports the Living Labor (or test-bed) for new innovations.
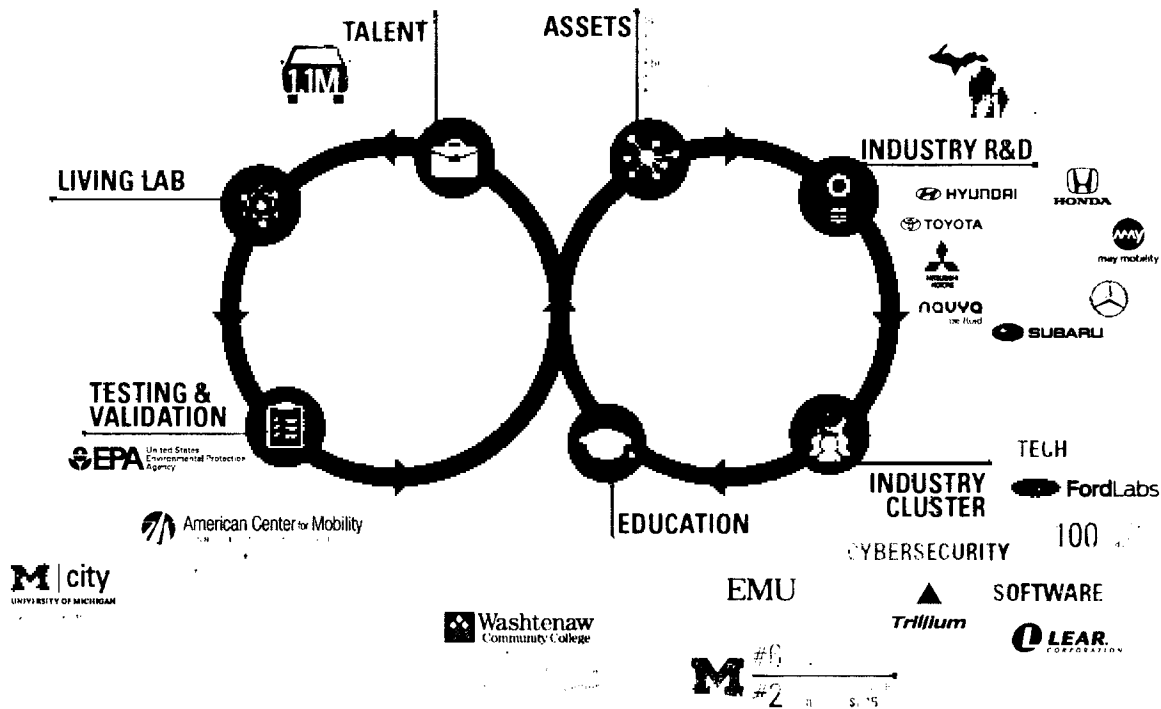
Source: Ann Arbor SPARK

Because this asset could be utilized by both the public and private sector, there aren't any readily identifiable parties harmed by this investment.

COMPETITIVE ENVIRONMENT: There are hundreds of other cities that have or are in the process of investing in fiber infrastructure. In Peter Young's "Broadband Infrastructure to Enable Smart Cities: Emerging Strategies and Partnership Models"[2], some notable examples include Kansas City KS/MO, Chattanooga, TN, Holland, MI, and Westminster, MD. As lessons learned from these examples have been analyzed, it's clear that the future economic growth is reliant upon connected technology to address the challenges cities have with congestion, equity, economic development, etc. The cities that invest in the backbone infrastructure like fiber optic networks will have the greatest opportunity to improve the lives of their residents, provide cost effective services, and offer economically good places for businesses to operate.

The strategies used to fund and deploy this infrastructure varies based on the unique attributes of a community. The business models vary from government financed and owned, privately financed and owned, and combined of public & private. For example, Kansas City's network was installed by Google and completely privately funded. It has seen success in accelerating its tech sector and improving telecommunication access (though not to the initially anticipated level). Chattanooga has seen substantial growth in private sector jobs and economic growth which they attribute to their investment in fiber infrastructure, which was reliant upon federal and state funding. Westminster had a public/private partnership which shared the risk of investment for services.

This grant request would support a model of public/private partnership because the underlying infrastructure would be government owned and controlled but the technology services on top of that infrastructure would be privately innovated, financed, and tested, and deployed.

The Ann Arbor SmartZone is the right location for installation of Smart City infrastructure due to its other unique assets in the surrounding community that companies could leverage for development and testing. In addition, Ann Arbor would be able to deploy new technologies for the benefits of its residents, companies and visitors.

STRATEGIC ALIGNMENT: Goals 2 and 3 of the LDFA's strategic plan are to have a "High-Tech Company Friendly Infrastructure" and "High-Tech Company Creation and Growth", respectively (see attachment VII). The primary objectives which this project aligns with are:

1. _Encourage & support Smart City initiatives_ – Smart City initiatives utilize technology infrastructure to interface and leverage data and applications to deliver innovative, efficient, and networked services. The abundance of tech companies in the tech park area along with intensive infrastructure can be a playground for innovation and implementation of Smart City services. These new services will require tech companies and employees to innovate and implement new technologies, which this investment provides.

2. _Assist in establishment of reliable/affordable internet access_ – This project is limited to the technology park area which is the primary intensive business district of the community and includes 29,530 total jobs (according to the 2018 DDA annual downtown report). This project encourages reliable and affordable broadband access by being infrastructure multiple parties can access without installing duplicative infrastructure.

3. _Support company creation/growth/viability_ – Having this infrastructure in place is the foundation to facilitate connectivity between people, assets, and ideas. By having third parties access the infrastructure, companies are able to focus on product/service innovation since there's a low hurdle for testing and deployment.

COMPLEXITY: Installation of conduit, fiber, and related technology infrastructure is not overly complex with today's technology. However, the technology park district, as many downtowns, has a lot of infrastructure already installed and some of it is old. Constructing in this environment is not always simple, so pre-planning and having an appreciation that unforeseen challenges may arise are appropriate expectations to have.

URGENCY: Broadband services currently exist, but the urgency for a robust infrastructure is critical for the following reasons:

1. Smart City deployments are happening everywhere and the competition among where businesses reside and deploy is fierce. The City must be prepared to seize opportunities and a robust infrastructure will show we are serious about being an innovative environment.
2. There are numerous Smart City initiatives currently in progress that the City needs to continue to support and grow. The autonomous transportation research is one of these key areas.
3. Reducing the hurdles for company creation and sustainability will create a competitive advantage for the community in regards to attracting and assisting technology companies.

SUSTAINABILITY: Approval of this proposal would result in infrastructure that can be utilized for many years into the future beyond the existing life of the LDFA. As a city asset, the city would be responsible for the on-going maintenance and repair of the assets beyond the life of the LDFA.

ESTIMATED INVESTMENT: The tech park area has a lot of existing (non-tech) infrastructure already in place, which makes it difficult to accurately project the costs without design and engineering work. A preliminary estimate is $3.5 to $5 million. This estimate was obtained from one of the firms that the City utilized to install its own fiber ring around the city. Directional estimates for project phases are: design/planning & consulting ($1 million), construction ($3.8 million), testing ($50k), and project oversight ($150k). A more accurate estimate would be available after the design/planning is completed.

ESTIMATED TIMING: Preliminary design, engineering, and project management would likely take a year. This would be followed by roughly 2-3 years of construction. The construction timeframe could vary due to the intensity of the activity in the area and the number of community events that would have to be coordinated around.

One of the benefits of grant approval is that once the project was started, the timing of the build-out can be flexible based on the availability of funding from the SmartZone. This means that if higher priority projects arise, the timing of funding can be flexible if needed.

FUNDING: The LDFA is the right entity to fund this proposal since technology related infrastructure is expressly anticipated within the Tax Increment Financing and Development Plan approved by the MEDC and City, the proposal furthers the strategic goals of the LDFA, and this infrastructure leverages other assets in the community.

The SmartZone presently projects ending the year with approximately $2.5 million in reserves. This excludes the FY2019 budgeted expenditure of $750k for strategic initiatives which are presently unallocated. When combined this totals approximately $3.25 million of available resources. However, the SmartZone needs to retain a portion of these funds for operations, a portion for Ypsilanti, and another portion for potential projects that may arise. Historically the SmartZone has had little need for an operating reserve and that need is not expected to change. If 10% of the TIF capture is assumed to be an adequate reserve ($400k), $144,250 is reserved for initiatives in Ypsilanti reflecting their FY2018 underrun, and an additional $500k is held for other potential initiatives, this would leave $2.2 million that could be allocated to this initiative from present resources while still leaving resources for other opportunities.

On an annual basis going forward, assuming the existing investment in services continues at levels consistent with growth in revenue, there would be approximately $400k per year available for strategic initiatives. If no other grant requests were approved and the $400k was allocated to this request, this project is projected to be fully funded in three to seven years, depending on the final cost of the project. However, as indicated previously if a higher priority grant is approved which requires the use of future revenues, the timing of this project can be scaled back appropriately as necessary.

RETURN ON INVESTMENT/METRICS: A specific impact on companies and employment can't be reasonably estimated, but approval of this proposal is expected to encourage companies to locate and start here. This infrastructure is supportive in achieving of the following Outcome Metrics monitored by SPARK, the LDFA, and the MEDC.

1. Number of companies graduating from the incubator and locating within Ann Arbor

2. Number of companies expanding employment
3. Number of new companies attracted to the community

Project Specific Metrics - A project specific metric would be the installation of the infrastructure within approved budget and planned timing. Since the amount of approved funding would have to be determined annually, the City would report to the Board on a quarterly basis the budget and timing performance for that portion of the project funded each year.

RELEVANT EXPERTISE: The City has demonstrated it can manage a project such as this as demonstrated by the fact it oversaw the design and construction of the City's fiber ring over the past two years. The city's project was approx. $3.5 million and was completed within two months of expectations and was approximately $200k under budget.

COMPLIANCE WITH LEGISLATION: In response to the Public Act 281 of 1986, Section 15(2)(f) requirement (Planned Construction), the approved Development Plan states, "Investment may be made to facilitate the expansion of the technology infrastructure, such as high-speed telecommunications throughout the Cities' public facilities as defined by Act 281, or expansion of the incubator facilities within the SmartZone LDFA District.

References

[1] Cox, Wendell, "UN Projects 2030 US Urban Area Populations", *New Geography* August 7, 2014, www.newgeography.com/content/004464-un-projects-2030-us-urban-area-populations

[2] Young, Peter, "Broadband Infrastructure to Enable Smart Cities: Emerging Strategies and Partnership Models",
https://repository.library.georgetown.edu/bitstream/handle/10822/1044668/Peter%20Young%20Capstone%20Thesis%20Final.pdf?sequence=1

[3] World Economic Forum in collaboration with Deloitte, "Designing a Seamless Integrated Mobility System (SIMSystem) A Manifesto for Transforming Passenger and Goods Mobility", January 2018,
http://www3.weforum.org/docs/Designing_SIMSystem_Manifesto_Transforming_Passenger_Goods_Mobility.pdf

[4] US Department of Transportation, "Smart City Challenge",
https://www.transportation.gov/sites/dot.gov/files/docs/Smart%20City%20Challenge%20Lessons%20Learned.pdf

Downtown Development Authority District

Attachment 1

City of Ann Arbor Planning Department   September 2000
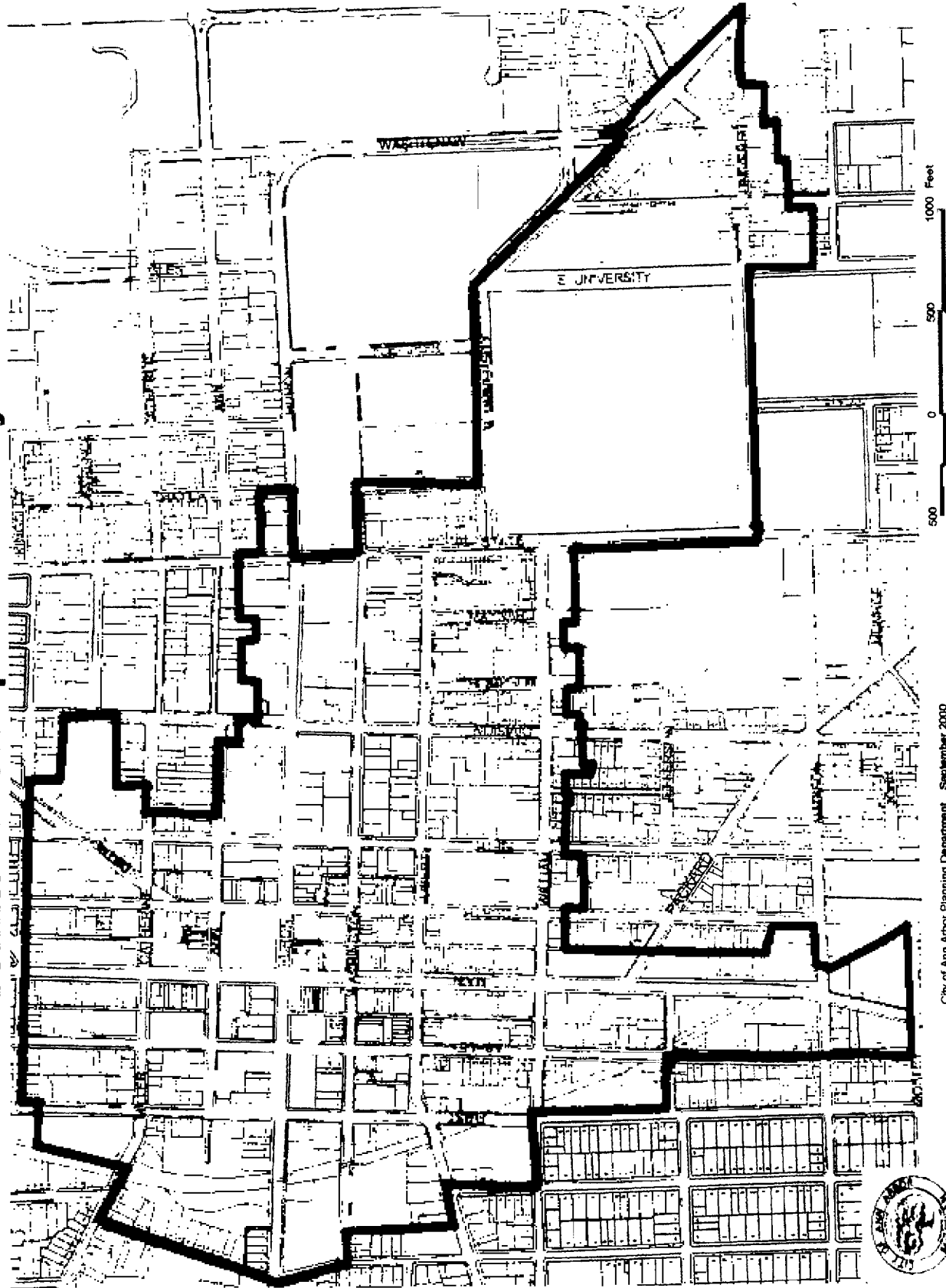
UMTRI | TRANSPORTATION RESEARCH INSTITUTE
UNIVERSITY OF MICHIGAN

November 28, 2018

Ann Arbor/Ypsilanti SmartZone
Attn: Tom Crawford

Re: Smart City Infrastructure Project

I've had the good fortune to work with the City of Ann Arbor since 2011 on the deployment of connected vehicle and infrastructure technology leveraging the City's existing fiber optic network. The presence of the existing fiber optic network was key to UMTRI receiving nearly $50M in funds from the U.S. Department of Transportation in over the last six years, and out maintenance of the connected environment continues to provide a testbed in which vehicle manufacturers and suppliers can test.

Future deployment of smart mobility technologies, in fact most smart city applications, will rely heavily on the presence of a solid communications infrastructure. Currently that infrastructure needs to be fiber optic cable, and even when 5G communication becomes available there will remain a heavy reliance on fiber for decades to come. The presence of an enhanced fiber optic network would allow for the deployment of a variety of applications that could better allow Ann Arbor in manage traffic to relieve congestion and improve throughput - examples being dynamic traffic signal phase and timing, transit vehicle signal prioritization, and emergency vehicle signal preemption.

Furthermore, the addition of fiber in downtown Ann Arbor would significantly enhance The University's ability to conduct research on, and deploy, other smart mobility and smart city applications. For example, we have been limited in our ability to deploy Dedicated Short Range Communication (DSRC) and associated applications in downtown Ann Arbor because there are very few locations in the heart of the city where we can tap into the existing fiber to backhaul data – something we have been able to do on other traffic corridors in the city where fiber is already present. We have even gone so far as to provide funds to install short extensions of fiber to key intersections to support our deployments.

The expansion of the fiber network in downtown Ann Arbor would considerably aid UMTRI's deployment efforts, and permit the deployment of other smart city applications that I personally believe would attract new business as well as help maintain existing businesses in the community.

Dr. James Sayer, Director
jimsayer@umich.edu
734.764.4159

CITY OF ANN ARBOR, MICHIGAN

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December 4, 2018

To: Ann Arbor/Ypsilanti SmartZone Board
Subject: City of Ann Arbor SMART City Initiatives

The City of Ann Arbor has actively been preparing to support and take advantage SMART City initiatives and technologies to improve delivery of services to our citizens and the community. As SMART opportunities present themselves we are replacing, upgrading, and partnering with the other public entities and private industry. Having a solid and robust fiber and conduit infrastructure is imperative to removing historic barriers to entry, promoting economic development, improving community services, and increasing the successful implementation of SMART initiatives.

The city is looking for opportunities to upgrade or replace our systems with SMART technology. We are currently interviewing finalists for a replacement of our next generation Water Utility Billing System. This system will contain SMART connected Meter Transmission Units (MTU) and Remote Terminal Units (RTU) devices. These devices will allow for remote monitoring and collection of data that will be fed to the city's business intelligence "Bid Data" platform. This data will be delivered back to city departments to facilitate intelligent decision making that will lead to improved customer satisfaction, services, and information.
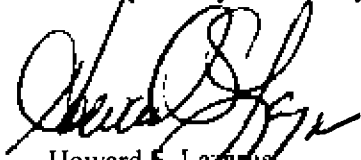
The Downtown Development Authority (DDA) currently has two of their parking garages connected via the city's new fiber optic network. The remaining garages still need to be connected because the infrastructure does not currently exist. Connecting all parking garages will allow for SMART parking applications and initiatives to be implemented.

The city will continue to implement SMART technologies into our street lighting, water pipes, sewer pipes, telecommunications network, and other city infrastructure. This will provide the capabilities to perform remote control, monitoring and maintenance of city assets resulting in reduced manual labor and giving the city the ability to proactively identify infrastructure problems before they occur.

We pursue Public/Private partnerships where they make sense and in the best interest of the community. The city realizes we cannot provide all services to the entire community, and partnerships and collaboration is key to attracting and retaining people and businesses to the community.

The city recently implemented a new community-based fiber network and a business intelligence "Big Data" platform and feel we are in a good position to accommodate future SMART initiatives, but there are still gaps in our infrastructure that need to be filled. The effective use of "data" and business intelligence platforms is driving our data-driven society and is the foundation for the success of any business or SMART initiative moving forward. However, we need the fiber and conduit foundation in order to access data in a timely and reliable manner. Access to the data will attract businesses to develop applications and services and a robust infrastructure will eliminate barriers towards attracting and retaining businesses and people to the city.

Thank you very much for your consideration. Please feel free to contact me if you have any questions.

Howard S. Lazarus
City Administrator

may mobility

650 Avis Drive
Ann Arbor, MI 481018

November 29, 2018

To Whom It May Concern:

May Mobility is an Ann Arbor-based company that provides self-driving microtransit services making short-distance travel safe, convenient, and personal. By partnering with urban planners, property managers, developers and municipalities, we are building self-driving vehicles and mobility services that can transform the landscape of cities to be more green, vibrant, with extended livable spaces.

A high speed, fiber network is a necessary backbone of a smart city. Connected environments where autonomous vehicles like ours will be deployed depend upon seamless communication between vehicles and infrastructure. Currently, our shuttles are on the streets of Detroit, Michigan servicing a fixed route, transporting hundreds of people on their daily commute every week in a downtown environment.

We have plans to deploy in Grand Rapids, Michigan and Columbus, Ohio in the very near future. We are also in discussions for an Ann Arbor service. The availability of fiber optic infrastructure in Ann Arbor would play a key factor in the growth of connected and automated vehicle deployments. It will allow technologies like ours to operate at reduced costs and in safer environments due to improved communication infrastructures.

If you have any questions on this request or require any additional information, please contact me at steve.vozar@maymobility.com

Sincerely,

Steve Vozar
Chief Technology Officer

November 29, 2018

To Whom It May Concern:

My name is Will Foss, and I lead the North American business and global strategy for Derq (an Ann Arbor-based company). In my role, I am responsible for all US Business Development, projects, and operations of the company. Derq works with city officials, road authorities, and intelligent transportation systems (ITS) to save lives by deploying our artificial intelligence algorithms to predict and prevent car crashes. To do this, we ingest significant amounts of data from city-based infrastructure. The ability to use high-speed, fiber networks allows to more effectively transmit and process this data, and the availability of fiber infrastructure is a material consideration as we evaluate deployment locations. We believe the availability of fiber infrastructure in Ann Arbor would be extremely important to our business goals with the City.

Derq has had a strong and active presence with the State of Michigan and the Michigan Department of Transportation, including deployments in Downtown Detroit with the State and DOT. We see Ann Arbor as a natural deployment for us and are currently proposing an Ann Arbor-based program. The availability of and access to fiber will help us reduce our operating costs and improve the success of this road-safety initiative, ultimately reducing the number of crashes on Ann Arbor roads. We see additional benefit to our other partners in the ecosystem, as they can use the same network to run their own functionalities.

If you have any questions on this request or require any additional information, please contact me at +1 914-319-7899 or will@derq.com.

Sincerely,

Will Foss
Head of North America
Head of Global Strategy
Derq USA, Inc. and its affiliates
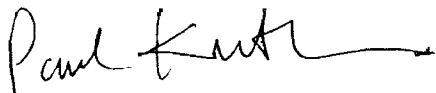will@derq.com | +1 914-319-7899

ANN ARBOR
SPARK

12/4/18

Tom Crawford

Regarding Smart Cities Infrastructure Proposal for Ann Arbor, MI

What makes a place stand out from the competition in a global market for business attraction is a strong ecosystem and community committed to ensuring continued business growth. Ann Arbor has a strong talent pool of tech workers, incubators and accelerators to help startups and entrepreneurs, and a growing list of investors taking a close look at businesses here. Continuing to invest in what researchers and innovators need, including infrastructure, is what Ann Arbor needs to have a healthy economy, long term.

Therefore, we fully support the development of high speed fiber infrastructure development in downtown Ann Arbor, MI to facilitate the growth of high tech companies in the Mobility industry.

Paul Krutko
President/CEO
Ann Arbor SPARK
paul@annarborusa.org

President
International Association of Science Parks and Areas of Innovation

MICHIGAN

First 15 Year Primary Focus
Ann Arbor/Ypsilanti LDFA SmartZone

15-Year Strategic Goals

Strategic Objectives

Connected High-Tech Ecosystem

- Create connections between high-tech stakeholders
- Foster tech culture & community
- Drive creation of sustainable ecosystem
- Connect with other SmartZones to enhance regional economy

High-Tech Company Friendly Infrastructure

- Assist in establishment of reliable fiber/internet access
- Encourage & support Smart City Initiatives
- Support affordable workspace
- Support efforts to establish regional transportation

High-Tech Company Creation and Growth

- Support company creation/growth/viability
- Foster start-up environment
- Entrepreneur education
- Encourage entrepreneurship

Promote Region

- Marketing plan to promote our entrepreneurial & innovative culture
- Collaborate with others to leverage community message
- Attract capital and talent to the region

Talent and Workforce Development

- Communicate employment needs of high-tech ecosystem
- Develop & support talent initiatives to meet high-tech community needs