

# US Ignite Smart City Funding Strategies

On September 20, 2018, US Ignite hosted a Smart City Funding Strategies workshop with the city of Philadelphia and other municipal, university, industry, and non-profit partners. The workshop highlighted different options available to communities for large-scale smart city initiatives, and offered municipal leaders a chance to share information on their successful campaigns to pursue: federal and state grants, municipal advertising models, regional funding collaborations, private sector partnerships, and bond financing.

## BACKGROUND

The smart city movement – the desire to create more connected communities with the ability to use data and intelligent processing to drive efficiencies, spur growth, and improve quality of life – is leading municipalities to consider new types of community projects with significant financial requirements attached.

Despite the known resource limitations of local governments, [IDC projects](#) that US cities alone will spend upwards of \$23 billion in 2018 on smart city initiatives, with global spending expected to rise from more than \$81 billion this year to \$158 billion by 2022.

On the one hand, cities have a number of tried and true funding models to support new municipal infrastructure investments. On the other hand, these traditional models weren't built for many of the smart city projects communities are contemplating today.

As a result of new demands, municipal leaders are developing strategies that adapt existing financing mechanisms by finding creative ways to reduce government costs and raise new revenue for smart city projects. Not only do communities need to support initial pilot deployments, but they also need to bridge the gap between one-time investments and sustainable funding models that allow their smart city programs to grow and thrive.

This playbook examines five different approaches to smart city funding, building evidence for success through the experiences of local governments in: Philadelphia, Pennsylvania; Columbus, Ohio; Chapel Hill, North Carolina; Dallas, Texas; and Westminster, Maryland. It includes case studies from each city, as well as practical recommendations and resources for communities looking to pursue their own strategies for smart city development.

## GRANT FUNDING – COLUMBUS, OHIO

There are a wide range of cities that have received Department of Transportation (DOT) funding, including Denver, which received \$6 million for a connected vehicle program, and Pittsburgh, which collected almost \$11 million for a smart lighting and real-time traffic management system. The largest DOT smart transportation grant to date, however, was awarded to the city of Columbus, Ohio through the DOT's Smart City Challenge in 2016. Columbus earned \$40 million in federal funding plus an additional \$10 million from Paul G. Allen Philanthropies, and aligned private and public sector investments of \$90 million to support the city's smart transportation plans.

There are many lessons to be learned from the Columbus experience. In particular, the size of the DOT award magnifies both the success of the Columbus proposal strategy as well as the challenges that have emerged since the grant was awarded.

### WHAT IT TAKES TO WIN

One of the hallmarks of the Columbus proposal to the DOT was its pairing of technology applications to specific goals for improving quality of life. Smart Columbus is anchored in Mayor Andrew J. Ginther's belief that "mobility is the great equalizer of the 21st century." The Columbus proposal reflected that tenet by demonstrating cause-and-effect relationships between new mobility initiatives and desired social outcomes.

For example, officials suggested infant mortality rates are higher in certain neighborhoods in part because of difficulties with Medicaid-funded transport. Mothers can end up waiting hours to get picked up when traveling for a prenatal appointment, with the added difficulty that sometimes there's no transportation accommodation for older siblings. That makes it more likely for mothers to skip out on necessary appointments, which can then have a cascading negative effect on prenatal and infant health. If the city could fix the transportation issue with better access to ride hailing services, however, officials argued in their DOT proposal that they could improve survival rates in a baby's first year.

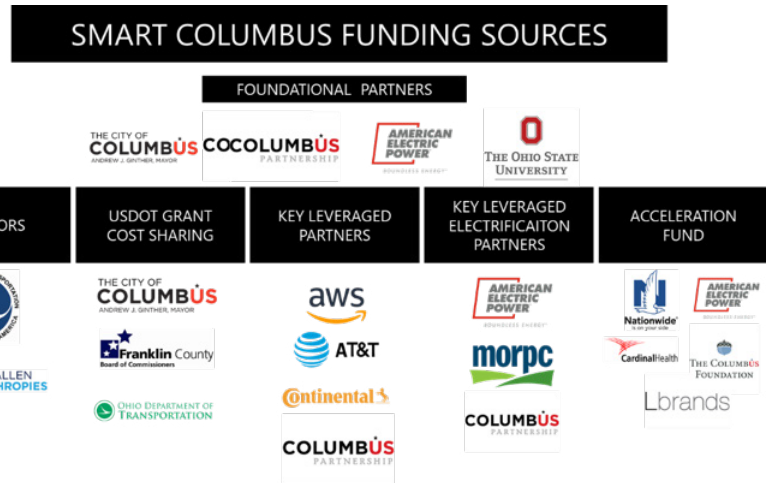
In addition to these quality of life improvement goals, Columbus also brought together the greatest diversity of partners willing to match funds against federal government money. City partners committed \$90 million in investments (much of it in the form of new projects that would grow central Ohio's mobility industry expertise rather than outright cash) to coincide with the DOT award, and those commitments spanned the public, private, and academic sectors. That diversity demonstrated that Columbus had a high level of engagement throughout the city to implement new transportation strategies.

Finally, Columbus showed in its proposal that the scale of the potential impact from winning the DOT grant could be significant. Currently, the city has one of the country's leading rates of single-occupancy vehicle commutes, with 83% of citizens traveling to work alone in a car. That unfortunate statistic gives Columbus a great deal of room for improvement, and it also gives the DOT the opportunity to have a major positive effect on a citywide transportation system.

## MAKING THE DOLLARS WORK

Winning grant money is a challenge on its own, but using that funding to implement change can be equally daunting, and the results of implementation can impact a city's ability to attract new money in the future.

In the two years since Columbus won the DOT challenge grant, it's honed several strategies that are showing signs of success. One is the extension of a public-private partnership the city had in place before the DOT competition. The Columbus Partnership is a non-profit organization dedicated to improving economic vitality in the region, and it includes CEOs from local businesses and institutions. The Partnership has leveraged the Smart City Challenge win to rally investment in an Acceleration Fund, which is a tabulation of aligned smart city investments. Since the federal grant was awarded, the Partnership has increased matching funds in the region from \$90 million to over \$500 million in cash and in-kind support, with a goal of reaching \$1 billion by 2020.



Columbus has also found success by creating a program of microgrants to encourage local businesses to support the region's overall transportation strategy. Called the Ignite Action Fund, this program uses microgrants to create urgency around meeting the city's specific grant-inspired goals. For example, Columbus can offer a microgrant to help a business create smart mobility benefits or electric vehicle purchase incentives for employees.

From a behavioral perspective, Columbus has created yet another strategy that leverages both its regional business partnerships and the Ignite Action Fund. Officials have recruited companies as Acceleration Partners, with those companies then pledging to help influence their own employees toward more sustainable transportation behaviors. Partners track commuting data, work to educate their employees about transportation options, and provide incentives – like free bus passes or electric vehicle chargers – for change.

As the Columbus effort around the DOT challenge grant matures, the city is also intent on demonstrating to the community how it's using the award money to improve quality of life. The city has opened a Smart Columbus Experience Center to show off projects that are in process, like their autonomous shuttle pilot, and to highlight ways that mobility in the region can evolve and improve in the future. The city is also launching an online site, where it will post updates and specific information documenting program progress.



## CHALLENGES REMAIN

Although Columbus has a number of successes it can point to since winning the federal transportation grant, it has also discovered some unexpected challenges along the way. Staffing was an issue early on as the team suddenly had to figure out how to deploy human resources to implement the transportation program they'd proposed.

There was also great anticipation when Columbus won the grant and an expectation that the city would be able to produce results quickly. However, Smart Columbus is pursuing a complex program and is specifically following a systems engineering approach as prescribed by the DOT. This approach dictates that proposed programs be researched and evaluated through resident and stakeholder engagement. While the strategy is calculated to lead to better, more informed program designs, the process is time consuming, and projects regularly require two or more years of planning before deployment.

In addition, as the DOT and Paul G. Allen Philanthropies grants and Acceleration Fund projects all have differing objectives, Columbus has spent significant time and effort to articulate a unified Smart Columbus vision that meets a multitude of requirements.

With the vision defined, there is also an issue around choosing deployment partners. Individual grant projects must be put out for public bid, which means the city can't accept offers of partner support without going through the bid process.

The challenges for Columbus have proven manageable, but the lessons learned along the way suggest best practices that other communities can adopt in their own smart city efforts.

## RECOMMENDATIONS

- Connect project proposals to citizen benefit – The more direct the tie between a proposed initiative and the potential for civic improvement, the better.
- Cultivate a wide variety of partners – Among other benefits, partners contribute matching funds, which can be a critical component of a successful grant proposal.
- Use incentives to drive fundraising – The promise of a reward can give resource contributors the necessary push to move forward efficiently and effectively.
- Plan for staffing ahead of project implementation – Be ready to mobilize human resources to get a quick start on new initiatives.
- Identify quick wins – If a project has a long timeline, it's helpful to define near-term milestones that can be celebrated publicly in order to keep citizens enthusiastic and engaged while work continues behind the scenes.

## GRANT FUNDING – CITY OF PHILADELPHIA STREETS DEPARTMENT

The Philadelphia Streets Department, which manages both transportation and sanitation services for the city, has identified state and federal grants as a key source of funding for its city initiatives with over 130 different projects in 9 years. These initiatives include: Transit First, which works to improve public transportation options; Vision Zero, which aims to reduce traffic-related deaths; and a zero-waste program with the waste department to manage the city's

waste by turning trash into energy. With these expanded efforts, the department has significantly increased its awards to \$20 million or more annually from 10 different competitive state and federal grant programs over the past 4 years.

The department has a team of two grants writers who focus on grant applications, and three planners who work on grant management once the grants are awarded.

## IDENTIFYING GRANTS

The Streets Department team in Philadelphia actively tracks federal grants on the grants.gov website using email alerts, while seeking out supplemental information from association newsletters where federal opportunities are announced. Among the grants that the department frequently considers are ones from the following federal programs:

- [Better Utilizing Investments to Leverage Development](#) (BUILD – formerly TIGER)
- [Transportation Alternatives Program](#) (TAP)
- [Highway Safety Improvement Program](#) (HSIP)
- [Congestion Mitigation and Air Quality Improvement](#) (CMAQ)

Additional grant sources include the [Multimodal Transportation Fund](#) (MTF), the [Automated Red Light Enforcement](#) (ARLE) program, and the [Southeastern Pennsylvania Transportation Authority](#) (SEPTA).

## SUCCESSFUL STRATEGIES FOR SECURING GRANTS

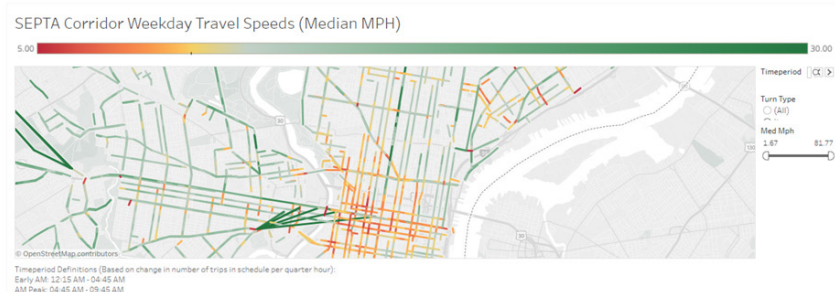
A key driver of Philadelphia's success with grant funding can be attributed to its close coordination with department grant writers across the city as well as private sector partners. This is helpful not only for increasing the appeal of grant proposals, but also for ensuring there isn't unnecessary competition for funding dollars.

As another method for strengthening its applications, the team uses geographic information system (GIS) data as evidence of funding need. This includes data from LIDAR systems, SEPTA transit, bike share and vehicle counts, and speed studies. Data supporting traffic congestion claims or speed concerns, for example, can be powerful evidence when applying for funds to support infrastructure upgrades.

Angie Dixon, Director of Planning in the Office of Transportation, Infrastructure, & Sustainability (oTIS), also notes that funding agencies themselves are a valuable resource during the application process. Dixon's team attends the informational webinars those agencies regularly host, and says agency representatives are available to answer proposal questions.

Critically, Dixon recommends that cities take time with their proposals to define how a project is designed to benefit citizens. This includes translating any language that may be overly technical, and making sure that a grant application is written with the reader in mind.

## DATA DASHBOARDS



## CHALLENGES WITH GRANT FUNDING

There are several challenges that the grants team within the Philadelphia's Streets Department has encountered in the grant proposal process. First, Dixon points out that it can be a tough task to fit a city's needs to the specific requirements of a new grant opportunity. Her team tries to frame its requests to the scope of targeted grant programs, but acknowledges that they could better assess the city's funding needs to make the team more responsive to new grant opportunities.

Another challenge Dixon identifies is the length of time it takes to receive information about decisions on applications that have been submitted. The time from the initial announcement to funding receipt is likely to be protracted, lasting many months or even years.

Identifying matching funds is another complicated issue. Some grants require that matching funds come only from the applicant or have limits to in-kind support. In searching for internal funds, Dixon says her team has had to engage in financial conversations with other departments' capital and operations budgets teams. Sometimes partnering with other city departments is the only way to raise the necessary money for a grant opportunity.

## RECOMMENDATIONS:

- Use resources provided by the grant institutions – Webinars and supplementary information are frequently announced alongside new grant opportunities.
- Use data to strengthen proposals – Data will allow you to understand and identify issues, and will add credibility to a funding request.
- Be prepared to be flexible – Grant awards don't always match the funding requested, so an ability to scale up or down is valuable.
- Use funding to support equitable access to city services and support – Think about the outcome of the project and ensure that it benefits communities with limited or no access currently.
- Partner with other departments for additional funding – Partner funds allow you to bid for projects with a wider scope.
- Limit the number of grants you pursue – Focus on quality output and protect your capacity to raise matching funds.

## MUNICIPAL ADVERTISING – PHILADELPHIA

In addition to applying for federal and state grant funding, the city of Philadelphia has turned to a municipal advertising model to help fund some of its near-term smart city initiatives. Advertising is used on everything from transit shelters to trash cans to shared bikes and their docking stations. In one of its more complex implementations, the city has now begun a project to stand up smart kiosks that provide services while featuring advertising as a revenue-generator.

The smart kiosks fall under Philadelphia's LinkPHL program. Similar to LinkNYC in New York, the Philadelphia deployment will use these kiosks to deliver free gigabit WiFi connectivity and to display information about local services and events on large kiosk screens. Philadelphia plans to install 100 Link kiosks in total, with 80 in greater Center City, and 20 in commercial corridors outside the downtown area. The city has signed a 20-year contract with corporate partner Intersection, which owns and operates the kiosks.

## WHY ADVERTISING WORKS

One of the major challenges for cities in recent years has been figuring out how to fund connectivity infrastructure. Network construction is labor-intensive and expensive, and the financial requirements involved in maintaining a high-speed network have proven overwhelming in the past. Advertising is one solution to the municipal connectivity problem.

According to Philadelphia Director of Special Projects Matthew Fisher, getting more broadband infrastructure in place is a major driver for the LinkPHL deployment. In particular, the city is working to bring gigabit WiFi to underserved neighborhoods, and it's using that mission to help determine where kiosks are sited. The goal is to create corridors of connectivity. Not only will these corridors provide citizens with free Internet access, but they'll also lay a foundation for additional, inclusive smart city services in the future.

The kiosks offer other resources as well. Users can look up details on local transit and weather, make free phone calls, dial 911 for emergency help, find key information like the location of the nearest homeless shelter, and charge their devices with the embedded charging ports. These services are all funded by associated kiosk advertising.

## THE PRICE OF FREE

As attractive as the advertising model is at first glance, Fisher makes clear that "there's a price to pay for free money." In the case of LinkPHL, he notes several issues of importance; challenges that other cities should consider before deciding on similar initiatives.

First, Philly's streets are already crowded with street furniture, including newspaper distribution boxes, street poles, trashcans, and more. Finding space for new kiosks that don't add to the clutter isn't easy. Second, there are issues around the content of advertisements, both from the perspective of maintaining first amendment rights and stakeholder buy-in. Third, the kiosks require maintenance, and that has to be factored into the financial equation. And fourth, concerns over data privacy have to be effectively and continuously addressed.

In Philadelphia, Fisher says that the only data the new kiosks will collect on users is their zip code and an anonymous mobile advertising identifier. The contract with Intersection stipulates that there will be no personally identifiable information (PII) shared, but there are still concerns about data collection, storage, and usage. Data privacy is such a significant concern that the possibility of federal or state regulations also comes into play. If new oversight laws are passed in the future, that could diminish the revenue opportunities available from smart kiosks, creating financial risk in the business model.

Officials in Philadelphia have started a municipal advertising working group specifically designed to address the issues they're facing with new ad models. As much as anything else, the problems with LinkPHL come from public perception about what the program is trying to do. For example, what is seen by one person as a way to increase access to city resources, is seen by another as negatively impacting the urban landscape.

### Link Key Features

- 1 Free 24/7 public Gigabit Wi-Fi
- 2 Integrated lighting
- 3 Digital display for advertising and public service announcements in non-landmark, commercial districts
- 4 Android tablet with touch screen display, directional speaker and microphone, headphone jack
- 5 Tactile keypad and Braille lettering, dedicated 911 button, rapid mobile device charging
- 6 Durable, graffiti resistant aluminum construction
- 7 Decreased footprint to reduce sidewalk clutter



The advertising working group in Philadelphia is committed to engaging with the public in an effort to make sure citizen concerns are addressed. The group is also coordinating on vendor management procedures, policies around access to the public right-of-way, technical considerations for new Internet-connected installations of hardware, and other best practices.

## RECOMMENDATIONS

- Determine if new municipal advertising models are right for your city – Considerations should include local laws around municipal rights of way, and a city’s broader approach to data privacy.
- Dive into the details before any deployment – Understand all of the costs (financial and otherwise) and how to get the most benefit through new services.
- Create flexible vendor agreements – Given the many unknowns around new municipal advertising models, build in contingency clauses with vendors to address issues like the possibility of data privacy laws, advertising locations, and more.
- Share information across city departments – A municipal advertising working group is a useful vehicle for sharing strategies and lessons learned.

## CONSORTIUM APPROACH – THE NORTH CAROLINA NEXT GENERATION NETWORK

The North Carolina Next Generation Network (NCNGN) was formed to harness the economic benefits that come with high-speed broadband connectivity. The body consists of six municipalities – Cary, Chapel Hill, Carrboro, Durham, Raleigh, and Winston-Salem – and four university partners – Duke University, NC State University, UNC Chapel Hill, and Wake Forest University/Wake Forest Baptist Medical Center. These organizations are supported by local Chambers of Commerce and individual local businesses.

This NCNGN consortium started with the aim to encourage private sector providers to deliver ultra-fast bandwidth at highly affordable prices. Through a joint bid process, the group ultimately signed a deal with AT&T, which is delivering gigabit speeds in the region today. That effort has led to further competition from additional ISPs, and to smart city initiatives that continue to build on the foundation of gigabit broadband now available.



Winston-Salem

NC STATE UNIVERSITY



THE UNIVERSITY  
of NORTH CAROLINA  
at CHAPEL HILL



Duke  
UNIVERSITY



## SUCCESSFUL STRATEGIES AND BIG BENEFITS

To entice investment from the private sector, NCNGN did three things. It created an inventory of assets across participating regions (municipal facilities and other owned property), developed a joint Request for Proposals (RFP) to make the scale of the gigabit deployment project attractive, and drafted an agreement to streamline right-of-way access and permitting processes. These incentives not only made a broadband deal attractive to AT&T, but they also led to additional benefits for the participating communities.

On the benefit side, NCNGN was able to negotiate to get AT&T to provide free gigabit-speed Internet to 100 community centers in support of the region's digital inclusion aims. AT&T is also working to provide free low-bandwidth Internet access to subsidized public housing areas.

For schools, NCNGN worked with AT&T to match broadband fees to specific bandwidth needs and utilization rates. Because the consortium had already catalogued all of its assets as part of the RFP process, NCNGN was also able to help minimize construction requirements, making it easier to connect schools to new fiber.

Once AT&T started deploying its new broadband network, NCNGN found that the activity created incentive for competitors to invest in the market. Google, Charter Communications, and Frontier all offer high-speed broadband in the area now, which helps to keep prices down.

And finally, now that several communities have gigabit Internet, NCNGN members are able to invest and participate in new projects geared toward improving local government efficiency and quality of life for citizens. Several communities have built open data portals and are working with residents to use them to solve housing and transportation issues. Some cities, including Chapel Hill and Cary, are working on new urban modeling and smart city initiatives like smart parking and the deployment of digital information boards. Communities in the Research Triangle region have developed a new Research Triangle Cleantech Cluster that works with startups, businesses, and university researchers to accelerate cleantech innovation. And NCNGN was selected by US Ignite as a Smart Gigabit Community (SGC), a selection that comes with technical support and funding for the development of next-generation gigabit applications.

## CHALLENGES ALONG THE WAY

Perhaps the biggest challenge in drafting the original NCNGN RFP was developing the asset inventory needed to attract a serious broadband provider. Creating an asset inventory across multiple communities requires collecting and sharing large amounts of sensitive data like the location of existing fiber, water conduits, and other infrastructure. For NCNGN's part, the consortium had members sign non-disclosure agreements (NDAs) which have been rigorously enforced.

Looking toward the future, another major challenge is emerging with regard to how North Carolina communities will be able to extend the benefits of the NCNGN fiber project to the expansion of wireless access. Regulations govern how North Carolina municipalities can negotiate with wireless carriers, limiting their ability to control rights of way and set leasing rates. That may make it more difficult for NC communities to leverage their assets the way members of the consortium did to drive fiber deployment.

## RECOMMENDATIONS

- Collaborate for scale – A large-scale project is likely to be more appealing to commercial partners than a small-scale deployment.
- Do the legwork necessary to entice investment – By bringing together a critical mass of anchor tenants for the network, a city can attract a wide range of broadband service providers to bid on a next-gen network deployment RFP.
- Enforce NDAs – NDA agreements are critical for sharing asset mapping data.
- Plan for projects beyond the pilot phase – Consistently think ahead to how a project can scale and develop in new directions.
- It's not the technology; it's what you do with it – Develop strategies to put new technologies to use in furthering economic development and improving quality of life.

## PUBLIC-PRIVATE PARTNERSHIP – DALLAS INNOVATION ALLIANCE

The Dallas Innovation Alliance (DIA) is a nonprofit public-private partnership created to support the design and execution of a multi-phased smart city strategy for Dallas. The organization advances a series of real-time smart city case studies that work to create buy-in for a long-term smart city plan and elevate Dallas as a leader in the smart city movement. The alliance brings together 30 partner organizations from the city of Dallas, academia, and the corporate and civic/nonprofit sectors. To date the group has implemented projects with a focus on infrastructure, mobility, and connected living.

One of the most significant innovation factors in the DIA's deployment model is its method of sidestepping traditional city procurement processes. The DIA signed an agreement passed by the Dallas City Council to provide its services as a consultant and facilitator for free. In exchange, DIA gained access to the city's public rights of way and the authority to act as a middleman with corporate partners.

The DIA then used that agreement to act on the city's behalf to establish smart city pilot projects. Those projects have required companies to donate their equipment and services at the outset with assurances from the city that it will cover project costs after the first year of deployment. With standard procurement processes set aside, the DIA was able to stand up a smart cities living lab in only 10 months, a significant speed-to-market improvement over traditional city-based projects.

The DIA's primary partner for the smart cities living lab has been AT&T, but the lab has encompassed nine separate initiatives including: information kiosks, smart nodes, network connectivity, smart irrigation, LED lighting, pedestrian tracking, parking, free Wi-Fi, and environmental sensors.



Moving beyond the living lab, the DIA has also announced a plan to work with AT&T and Toyota on creating a smart park. For this project, the DIA identified an area in need of rejuvenation in Dallas and is working with the architects of New York City's High Line "park in the sky" to bring together smart technology with traditional ideas of park design. The park will be in the West End Plaza neighborhood and will focus on mobility, closing the digital divide, and expanding access to infrastructure.

## WHAT'S WORKING IN DALLAS

Key to the DIA's success has been its ability to reduce bureaucratic hurdles for corporate partners and limit expenses for the city. The model of having companies deploy technology for free isn't sustainable, but in the short term, everyone is benefiting. Corporate partners are able to prove out their value, which gives them a chance to position themselves for future revenue. The city of Dallas, meanwhile, is getting the opportunity to try out new technologies and vendor relationships before making any long-term commitments.

As an added benefit, the pilot projects in Dallas are creating data that will help with future smart city planning, and specifically with optimizing resources for the best possible civic and corporate returns.

DIA co-founder Trey Bowles notes that maintaining a startup mentality throughout the pilot process has also been critical to success. At the heart of the DIA model is the understanding that there is no single solution to any project challenge. Deployment partners have to remain agile, willing to learn, adapt, and improve over time.

Bowles also points out that innovation has to cross all sectors in order for new smart cities to succeed. In the Dallas Innovation District, the DIA emphasizes its corporate innovation lab for private sector partners, civic innovation initiatives to drive community engagement and improve quality of life, and innovation among startup companies encouraged by the Dallas Entrepreneurs Center (DEC), which provides entrepreneurs with resources, mentorship, education, and workspace.

## LONG-TERM CHALLENGES

Corporate donations won't be enough to sustain Dallas' smart city initiatives over the long term. As the local government reaps the benefits of the DIA's efforts, it will have to start considering alternative funding options to pursue in the future. Bowles suggests that as municipal leaders explore opportunities with private equity firms, they should also start thinking through the implications of data ownership and monetization.

Bowles also acknowledges that Dallas has been extremely fortunate to have AT&T as a partner in its pilot programs. That partnership gained traction when the DIA was able to participate in a smart cities launch event at the White House. For other cities, attracting so much support from a high-profile partner like AT&T would likely be more difficult.

## RECOMMENDATIONS

- Create an organization that can do what the city itself cannot – Consider the hurdles to project implementation, and structure your organization to avoid them.
- Show don't tell – Use pilot projects to prove the value of smart city initiatives in order to get local government engaged and willing to invest money.
- Get startups involved – Startup communities can be a great draw for larger corporate partners, and can stimulate the local real estate market.

## BOND FUNDING- WESTMINSTER, MD

The city of Westminster is using an infrastructure bond financing model to build a fiber network aimed at improving local business and economic opportunities, and creating a foundation for the community as a smart city.

To plan for the network deployment, Westminster worked with the investment services company Wye River Group to develop an RFP for a general obligation bond. The terms stipulated that the bond would be backed by the tax collection authority of the municipality, with the city only making interest-based payments until the network construction was completed. In the RFP, the city proposed to subsidize payments initially through its general fund, which would then be paid back with revenue earned from leasing the fiber to service providers.

After putting the RFP out to bid, Westminster selected Sun Trust to manage its \$21 million general obligation bond. The city then chose independent contractor Ting to deploy the network and to act as both a wholesale and retail Internet provider. This approach was designed to ensure that Westminster can enable healthy development of Internet services without putting itself directly in competition with the private sector.

## MATCHING FUNDING WITH FIBER

The ability of local governments to use bonds as financing instruments varies from state to state depending on the law. Westminster is treated as a sovereign entity within Maryland that can issue municipal debt without needing to request permission at the state level.

A P3 model was proposed for the Westminster fiber project and an RFI was issued with several specific requirements: revenue would have to cover debt service of the project; the deployment approach would be an open access model, eventually allowing retail competitors access to the fiber; and any partner would have to be willing to share both the risk and reward of the project. Next, the RFP incorporated feedback from the local stakeholders and industry before the final contract was awarded to Ting, a Toronto-based fiber Internet provider. This was the second deal that Ting had won in the US, and since then Westminster has become one of its fastest growing markets.

There are other bond options that Westminster considered beyond a general obligation bond, including state-backed infrastructure bonds, revenue bonds, and tax-exempt bonds. However, according to City Council President Dr. Robert Wack, there were problems with each of these alternatives. State-backed infrastructure bonds have never been used for fiber, and were deemed highly political, lengthy in process, and unlikely to get funding. Revenue bonds, meanwhile, are not backed by full faith-and-credit obligation for repayment, while tax-exempt bonds have conditions that would have constrained the kind of P3 Westminster was trying to create.

## A WORKING MODEL

The Westminster fiber project was planned to be constructed over six years and in four phases, the first two of which have now been completed. Pilot deployments are up and running in one neighborhood and one retirement community. Gigabit broadband uptake in those areas is strong so far, and Ting is taking early orders for service in additional regions as construction continues. Within a year of lighting each network segment, Ting is seeing a 20% take rate, meeting all the major construction, operational, and financial milestones set by the city and Ting internally. The city has so far drawn \$9.8 million from its loan and is on track in completing 50% of planned construction.

The nature of the bond model means that Westminster's debt doesn't come due all at once, and the city has a revenue plan that matches the debt service requirements. Payments are made incrementally, allowing the city to manage the project even as its scale grows.

## SUCCESS, BUT NOT WITHOUT DIFFICULTIES

When Westminster first released its fiber RFP, none of the respondents were interested in following the city's proposed deployment model. Westminster was determined to maintain ownership of the fiber network, and that proved to be a sticking point for many companies before Ting agreed to the approach.

Once work started on the deployment, Westminster also discovered other challenges. The staff lacked the necessary training to manage new operational tasks, which led to some early mistakes and lengthened timelines. The city is currently training three new full-time employees with fiber maintenance and repair skills.

On the financial side, Westminster has only had to pay interest payments on its debt so far. As the project nears the end of the construction phase, the city will soon have to start servicing its debt at a higher rate. This increase in payment is by design, but it's still a calculated risk before commercial revenue starts to accrue. And if service uptake starts to slow, that will impact debt repayment.

## RECOMMENDATIONS

- Think long-term – Consider the impact and durability of a major infrastructure project, as well as the multiplier effect it has to the economy and potential community initiatives.
- Assess risk tolerance ahead of time – An understanding of local risk tolerance is useful in identifying the best funding instrument.
- Plan revenue strategy to pay back debt – Preempt situations where there may be challenges in debt repayment and include them in the contract.
- Be clear on the model you want, and find a partner willing to work to that – Work with experts to develop a model that addresses your main pain points and the goals of your community.

## FURTHER RESOURCES

**Federal Funding Opportunities**, Searchable Database

<https://www.grants.gov/>

**Funding and Financing Strategies for Smart Cities**, Deloitte

<https://www2.deloitte.com/global/en/pages/public-sector/articles/smart-cities-funding-and-financing-strategies.html>

**DOT Challenge Finalist Applications**, Department of Transportation

<https://www.transportation.gov/smartcity/7-finalists-cities>

**Smart Columbus Playbook**, City of Columbus

<https://smart.columbus.gov/playbook/>

**Living Lab Case Study**, Dallas Innovation Alliance

<http://www.dallasinnovationalliance.com/living-lab-case-study/>