CLOSING THE DIGITAL DIVIDE IN AMERICA

Incentivizing Equitable Infrastructure Investment In Municipal RFPs

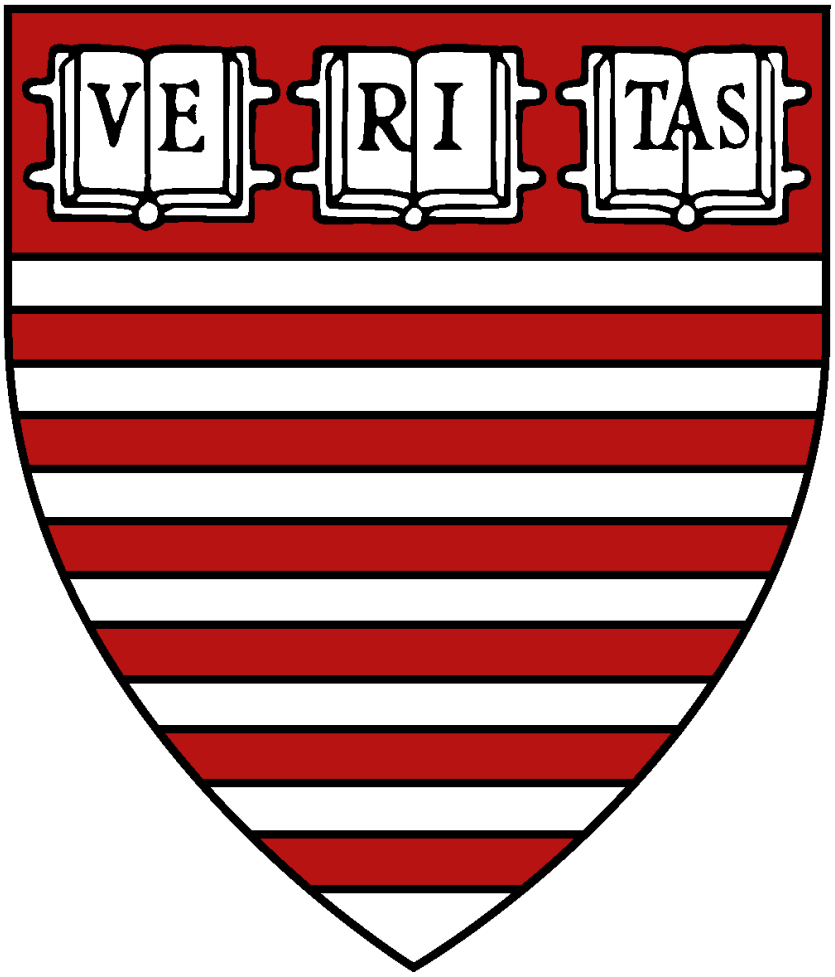

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TABLE OF CONTENTS

I. Executive Summary

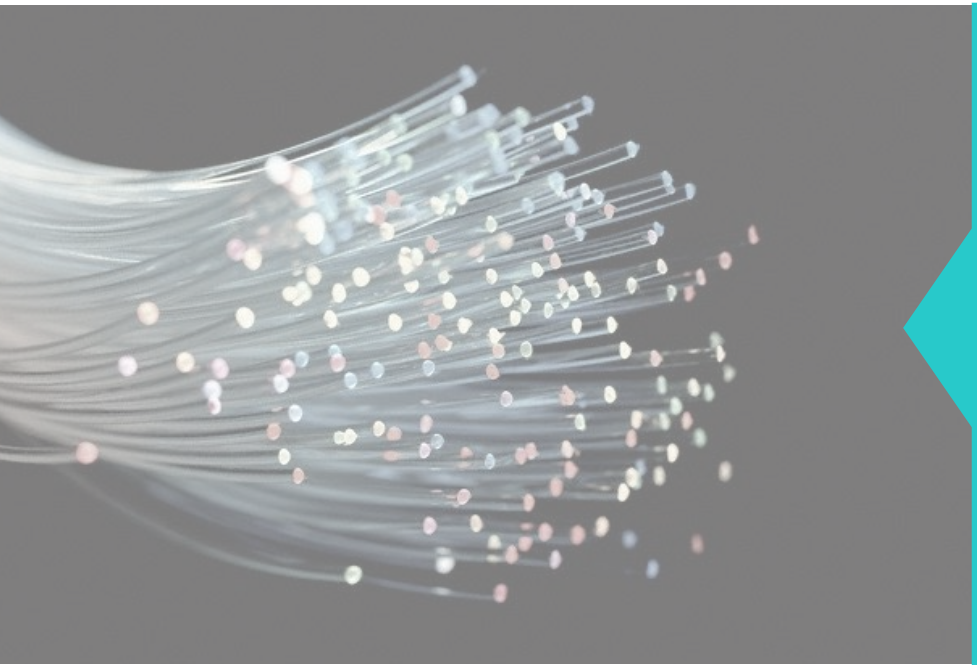
As cities develop broadband networks through public-private partnerships, commitments to digital inclusion are often lost in the shuffle for political capital and outside investment.[1]

Objective

This report seeks to help create citywide high speed Internet networks through the careful development of civic resources and strategic implementation of incentives when negotiating with internal and external parties throughout an RFP process. Many public-private telecommunications partnerships ignore digital inclusion due to increased focus on immediate costs and cash flow. Public officials using an RFP process to attract broadband development can close the digital divide by carefully providing incentives and sequencing the negotiations in favor of an outcome that serves an entire city. This report is dedicated to studying those key choice points through examples of similarly situated networks in order to provide guidelines for cities.

Key Recommendations

- Create demand for universal broadband before building
- Tie comprehensive coverage to quantifiable economic incentives
- Draft RFP materials with expert industry and market knowledge



What Really Matters to ISPs

- Speed to market and cash flow
- Pole and city property access
- Predictability
- Market positioning

Demand Must Come First

Throughout the process of negotiating with providers, cities are forced to evaluate their priorities, as all prices, assets, and end goals are constantly weighed against each other.[2] Without a clear demand for universal fiber coverage -- both from citizens and key municipal stakeholders -- revenue and speed of buildout can override what are necessarily delicate provisions and promises to build broadband access in all corners of a city.[3] If no political cost is associated with failure to connect certain neighborhoods, those connections will likely be forgotten. Information drives demand, and cities must create a public narrative clearly outlining the importance of fiber and the commitment to providing it universally.

RFPs Build a No-Cost Network, But Equity Can Suffer

Pursuing an RFP is a virtually cost-free way to create new investment in a city, but it requires that the city relinquish a measure of control over the development itself. The lack of financial commitment is attractive, but it comes with a commensurate lack of planning

ability on behalf of public officials. Some cities -- LA is a prime example -- have attempted to structure their RPF to provide cost-based incentives that are compelling enough to shape developer's plans.[4] Cities who choose to pursue private telecommunications investment via RFP must architect their agreements to incentivize development in all neighborhoods, otherwise the profit motive of the developers will ensure a lack of coverage and a perpetuation of the digital divide.

Of course, such incentives need to be balanced with the market realities of a given city -- how many subscribers are present, what media market is available, which incumbents currently control a majority of subscribers, etc. If requirements are too onerous, private partners may decline to invest at all, compounding the problem. If requirements are too lenient, cities may end up with coverage that closely resembles the status quo.

What Really Matters to ISPs

Distinct and quantifiable incentives are necessary to extract equity considerations from telecommunications companies. There are four main considerations for providers:

- Speed to market and cash flow
- Pole and city property access
- Predictable interactions with city agencies
- Market positioning vis-à-vis their primary competitors

These interests point directly to what incentives are most likely to shape provider bids. To promote universal access, cities can provide expedited permitting systems,

reduced rates for the use of city assets, even limited exclusivity, on the condition that RFP bidders meet requirements for bridging the digital divide.[5]

Cities Need Market Knowledge

The modern telecommunications market in the United States resembles a classic prisoner's dilemma. If one provider chooses to improve their network's speed and coverage, thereby throwing the competitive equilibrium out of balance, then they may incur retaliatory measures from their competitors and increased costs as all players in the market upgrade their service to compete at higher speeds. Fortunately for shareholders, but unfortunately for citizens of America's cities, most providers have effectively colluded over their long history to produce essential fiefdoms where each player enjoys a relative monopoly.[6]

Recently, the dynamics in this space have shifted significantly, with pressure mounting from citizens and new third-party players to create faster and more robust networks. These new factors have pushed incumbents into a complex cost-benefit analysis as they decide where to invest, and how to preserve their regional supremacy. The balance of market power and profit-maximization behavior on behalf of the telecommunications industry must be understood by cities as they enter into negotiations, because as the players move, new opportunities for leverage arise. Cities who understand the dynamics at play can offer players means to increase their territory and outmaneuver competitors, with the price of admission being universal fiber access.

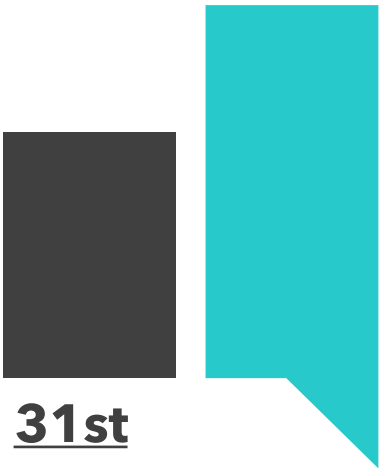
II. Context

Cities in the United States are falling behind the rest of the world when it comes to the Internet. The US ranked 31st in a recent survey of average global download speeds, and an even more troubling 42nd in average upload speed[7]

This connectivity is a fundamental component in building cities that will thrive in the economy of tomorrow, often dictating where firms locate, and also providing a platform for citizens to create new businesses that anticipate the extremely high speeds that are rapidly becoming standard worldwide. Without adequate civic infrastructure, businesses will locate elsewhere, citizens will leave, and cities can face an economic decline.[8]

The Problem

Cities connected to a high-speed fiber Internet network are at a significant advantage in the modern world because their economy is well positioned to take advantage of the markets of tomorrow, and their citizens are better able to reap the benefits of a global network -- whether through educational, cultural, or political manifestations. With this in mind, many municipalities have readied themselves for the opportunity to embrace this transformational technology by aggressively planning their own networks, or courting telecommunications firms to develop in their stead.



The United States' rank in Internet download speed

Many comprehensive resources have been created to help cities understand the need for new investment, and to guide them through the process of deciding on a plan for network building. Links to many of these resources are included in an **Appendix A**. The listed reports are highly recommended as integral information for understanding the basis of this report, particularly around issues of understanding the economic value of broadband networks and the process of evaluating how to build a network. There are three methods for development -- municipal buildout, where the city plays a primary role, public private partnership, in which the city is a partial partner, and private investment with the city acting as a facilitator.[9] This report will focus primarily on cities who choose to act as a facilitator through an RFP process.

The Digital Divide

It is not enough to build a network that serves part, or even most of a city. Often when these networks are developed in American cities, the most disadvantaged citizens are overlooked for service. In Kansas City, for example, a $300 connection fee for Google's new Google Fiber offering resulted in 25% of the city initially lacking access to the new network.[10] While this unfortunate reality is present worldwide, it is most visible domestically in America's cities. When whole neighborhoods are left underdeveloped, entire classes of people go without essential tools to participate in society, which in turn perpetuates the United States' endemic inequality issues. This 'Digital Divide' results in citizens who are

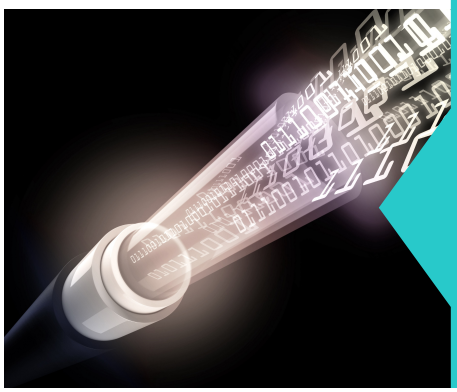
more alienated from the opportunities that new technology seeks to provide them. Children are denied the ability to participate fully in the modern classroom, adults are not able to access essential services, and city residents who are already at a disadvantage go unexposed to the technology that is increasingly critical to the modern workforce. This growing socio-economic divide between communities who have access to this global network and those who do not should provide a compelling governmental interest to seek a solution. Any effort to reduce inequality must take this fundamental division into consideration.[11]

However, there is little economic incentive to build expensive new fiber lines or other connectivity features in low-income areas of a city, primarily due to the fact that many potential subscribers have bad credit, a low willingness to pay, little incentive to engage with new technology, and a high likelihood of moving or otherwise discontinuing their contract. Given this reality, cities cannot rely on providers to organically incorporate all neighborhoods in a private build out. As a result, policymakers must actively incentivize development in these areas if they hope to bridge the divide.

Why Fiber?

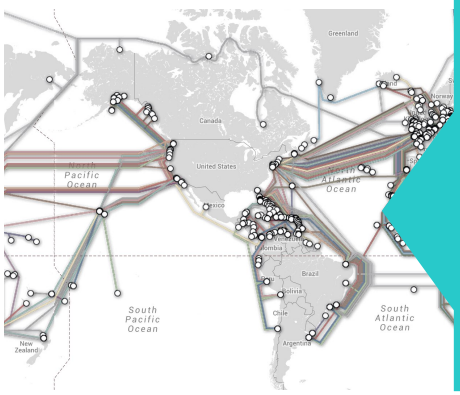
The Internet is carried to its users in a variety of ways, and when faced with the cost of providing fiber access, many policy makers would rather depend on the connectivity

provided by existing copper, DSL, cable, WiFi, satellite, or 4G mobile networks. When other modalities are cheaper and easier to implement, why all the focus on Fiber?



In the land of innovation, speed is king

The invention YouTube, a transformative $70 billion dollar video sharing platform, which would have been inconceivable in a 56k, dial-up world. Only by realizing the capabilities of new network capacities did a platform currently serving 4 billion views per day become possible. So, too, are the next generation of paradigm-altering goods and services dependent on the utilization of this next wave of capacity. Faster and more robust networks beget the invention of services that fully utilize their potential. Cities that enjoy fast fiber networks are the same cities that will build tomorrow's world-changing technology on top of them, attracting new jobs, supporting innovation in other industries, and providing a meta-platforms for every policy challenge that modern cities face.



Fiber undergirds other methods

With few exceptions, all other methods of connecting citizens to the Internet rely on fiber at some point in their transmission process. 4G cell towers and mini cell sites are themselves connected to the Internet via fiber. WiFi routers are connected to physical networks, which themselves eventually lead to a fiber backbone. Increasing the presence of fiber simultaneously creates new opportunities for new cell sites, new WiFi hotspots, and other connectivity hubs, while improving the speed of the network they already operate on.

Fiber is future proof

Fiber optic cable is essentially a long glass or plastic tube that transmits information coded as light. While there have been many technological advances since fiber was first implemented, it is a remarkable technology in that the fiber optic cable itself does not generally need to be upgraded. Electronics that encode and decode information as light impulses at each end of a strand must be replaced, but they operate on the same cable. The carrying capacity of a single strand of fiber has increased by 10X every four years for the last three decades. This ability to adapt to new technology without being replaced provides a long term solution for cities willing to make an investment upfront.

With regards to the digital divide, connecting disadvantaged neighborhoods with inferior technology is not a lasting solution. If policymakers are serious about closing the gap, providing short-term solutions to what has proved to be a long-term problem isn't enough. The economics of building across an entire city are difficult to begin with, the chances of them improving to the point where building out single low-income neighborhoods is feasible without being bundled with other neighborhoods is unlikely.[12]

This report will examine the choice points most cities face when developing a broadband network, focused on incentivizing private companies to develop comprehensive networks that cover all neighborhoods. With a deeper understanding of the national and international telecommunications markets, as well as levers that are important to large

telecommunications providers, cities can be savvier customers who partner with these providers with concrete public goals in mind and the tools to implement them. Digital inclusion is not something that the free market will provide on its own. As private companies, providers are driven by profit and long term market strategy. Cities are driven by a number of factors, including job creation, citizen engagement, public safety, and quality of life. Accounting for this disconnect in the process of building a partnership is tantamount to success in closing the digital divide.

The Solution

Careful consideration of the underlying priorities of both parties yields the possibility to align interests, especially when it comes to closing the digital divide. This report outlines opportunities for cities to leverage the assets they already have to incentivize development in areas that may have otherwise gone unserved.

Methodology

This report used Los Angeles as the corpus for its qualitative research and analysis. Close contact with the Chief Technology Officer's staff, as well as key individuals in the Chief Information Officer's office and other officials within the Los Angeles City government were used to understand how the city plans to narrow the digital divide, what challenges arose, and ultimately how decisions are made throughout the RFP process. Extensive interviews with industry experts and city officials were used to determine the costs and benefits of each of Los Angeles' choices regarding its telecommunications partners and the digital divide, as well as to establish possible alternatives, ultimately yielding a report targeted at fiberless cities who can follow a similar trajectory.

Recommendations in Brief

Create political will, internally and externally

- Build a narrative around the tangible benefits and urgency of universal fiber connection
- Find a unifying leader and identity for your effort.
- Galvanize all internal parties with regards to digital inclusion and acceptable mechanisms for incentivizing equitable investment.

Align economically quantifiable incentives exactly with civic interests

- Digitize all information pertaining to physical assets and construction plans within the city.
- Create a catalog of all known assets relevant to broadband installation.
- Offer a construction process that includes industry friendly components like expedited permitting, shared use facilities, and integrated data.

Use expert industry and market knowledge to maximize leverage

- Open bidding to as many parties as possible, thereby disrupting the status quo to the greatest possible extent.

The Birthplace of the Internet

- Second largest American city
- 503 square miles
- High tech industry presence

III. The Story of Los Angeles

Los Angeles' development efforts have provided a model for parsing the RFP process, preparing a city for private investment, and engaging multiple firms in public-private partnerships for digital inclusion.

The city's recent RFP was designed to attract and shape mutually beneficial investment. Although the outcome is still in process, there are clear examples of what worked well, and what could be improved. In Los Angeles, as with many cities, there's a clear tension between the impulse to attract investment and promote infrastructure improvement on any basis, and the desire to harness provider's interest in the second largest American city to build a fully comprehensive network.

The Digital Divide in LA

While access has improved in recent years, more than 35% of Angelenos still do not have access to broadband Internet of any kind. The city ranks 113th in overall speed among its American cohort, while paying up to three times more for half the speed of other cities.[13]

Geographically, the city is massive, consisting of 503 square miles, and 28,000 lane-miles of roads. Poor neighborhoods are scattered throughout the city and not confined to one geographic location. The city is home to an array of telecommunications companies and the heart of the American content industry. AT&T and Time Warner have successfully warded off meaningful competitors and hold a practical duopoly.[14]

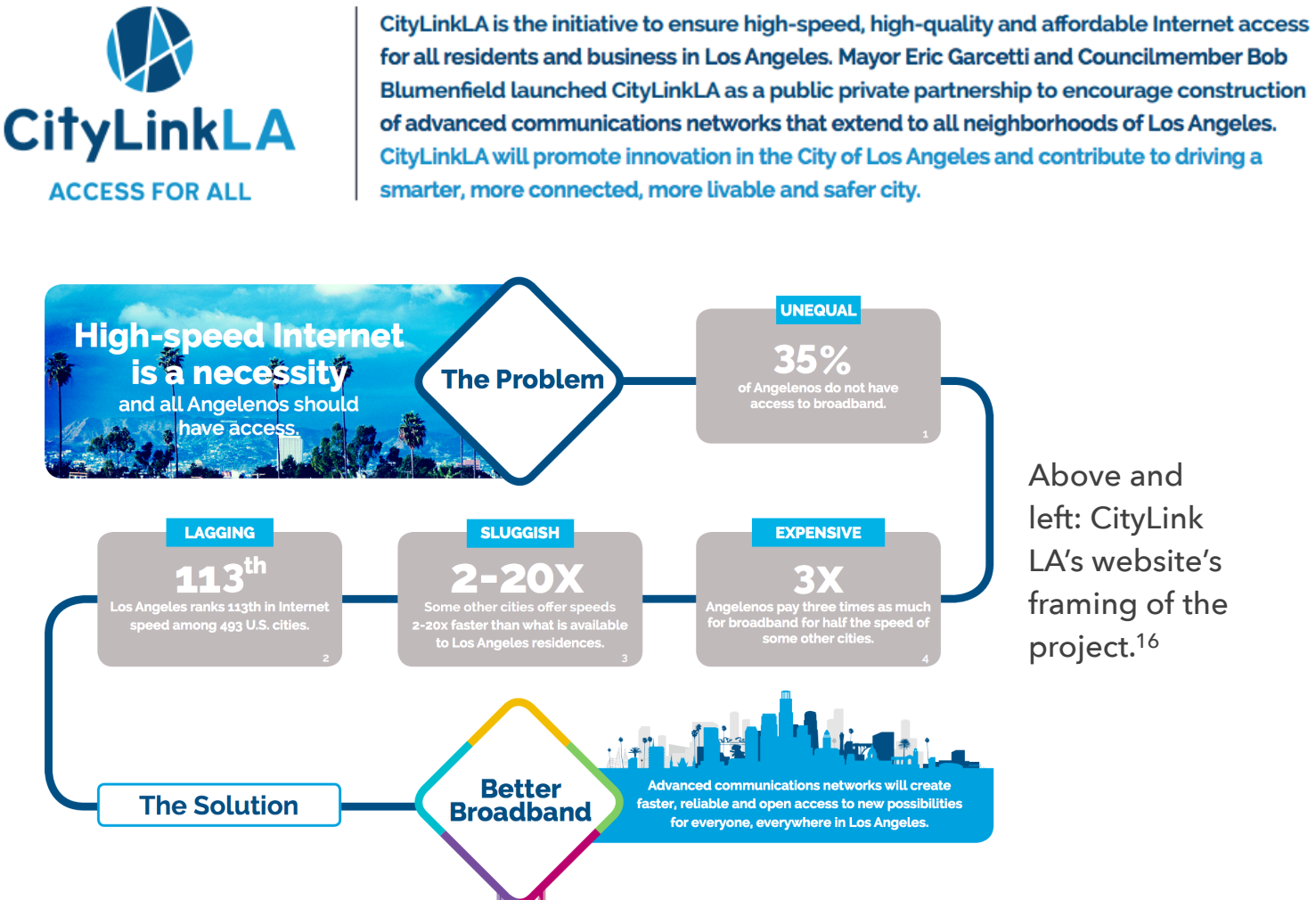
Existing City Use

The city has been incrementally building its own fiber loops for decades as it improves and expands infrastructure, primarily for internal use. Agencies within the city have started to use available connectivity which raises the demand for network capacity in the long run. The LA Fire Department began to utilizing Galaxy S6 smartphones and iPads to stream images and other data while The LAPD is planning to equip 7,000 active duty police officers with body cameras. These plans alone would ultimately generate 900 Gigabytes of data per day, effectively quadrupling the amount of data produced by the city, necessitating robust fiber networks just to manage the city's data.[15]

Infrastructure improvement

Even with internal consensus built around the need for fiber, constructing such a network is incredibly expensive and disruptive, requiring coordination across a majority of the city's agencies in what one city official called "the el nino of infrastructure improvement projects." With publicly financed expansions to the airport and a massive expansion for the metro

system underway, there was political little appetite to finance another expensive infrastructure endeavor, so the city opted to solicit private providers through a RFP process. The first request for information (RFI) by the city returned 34 entities interested in building a broadband network, including one from a Dutch telecom claiming that it could install a city-wide system for $3-5 Billion. These new proposals to the newly formed Los Angeles Community Broadband Network (LACBN, recently renamed CityLinkLA) prompted market leader Time Warner Cable to promise Gigabit speeds by 2016.



Above and left: CityLink LA's website's framing of the project.[16]

Political Will and Key Players

Peter Marx, Chief Technology Officer

Plays a central role in convening relevant parties and building a consensus for what outcomes are important to the city from a technological standpoint. Appointed by the mayor, he is positioned to build a narrative around what fiber could do for Los Angeles. At the end of the day, organizations need funding, politicians need votes, and a solid strategy can bind these realities together to actually connect underserved people to the Internet. The CTO's office ideally plays a central role in finding, connecting, and motivating a diverse list of city, community, private and financial assets.

Eric Garcetti, Mayor

Provides political cover for all city agencies by trumpeting the importance of the project and pledging resources to support it. With an eye on his legacy, however, the Mayor's office is primarily concerned with successfully partnering with private investors to build a network that provides opportunities for new business in LA, but also tangible evidence that the city is a cooperative partner for private investment. By empowering various agencies in Los Angeles, Garcetti can simultaneously drive agency motivation and create a more reliable experience for private investors.

Paul Blumenfield, City Council

While the Mayor is concerned with the job creation and competition aspects of a new network, Blumenfield is primarily interested in some level of free service for everyone in LA. The tension between the Mayor's desire to be a hassle-free partner for outside investment and Blumenfield's prioritization of universal coverage represent two important forces that must find a balance internally, before bids are awarded to RFP respondents.

An Evolving RFP

There were several phases that led to the current manifestation of the RFP. The original idea was to connect LA's five current high speed networks networks which include the city's Airport, Seaport, Information Technology Agency, Water & Power utility, and Public Safety organization. RFPs historically had been structured to contract new development out to partners who would then receive a revenue share for a set period of time. This model would have allocated money to manage the network so that a private partner could invest in infrastructure to do wholesale improvements. To sweeten the deal, LA would offer assistance in construction. Ultimately, a lack of interest derailed this initial offer. The assets held by the city, which would be offered to providers, were too unclear. Somewhere between 900 and 1400 city-owned buildings and untold miles of unmapped fiber did not signal to investors that the city was ready or willing to be a cooperative partner. This brand

of RFP anticipated the city as an anchor tenant, and dictated a level of free service, including a commitment to build fiber to every occupied building.[17]

The city changed tack in 2015 and issued an RFP that invited private companies to propose plans to build broadband networks that would be owned by those companies in perpetuity. These proposals are subject to evaluation via, among other things, a "Digital Inclusion Plan" that LA has mandated to guarantee a free level of service to all city residents, including some method of connection in all neighborhoods. Providers generate revenue by charging customers for faster speeds and higher levels of service.

In addition, Los Angeles created a comprehensive inventory for city assets across all agencies and departments. This information was easily sharable with interested firms via the LA Open Data Portal which includes APIs. In addition, LA provided letters of support from key stakeholders, listings for Recreation and Parks holdings, locations of possible service areas, access to known fiber optic runs, streetlights, and access tunnels under freeways. The new RFP coordinated all city departments to enable a single set of terms to winners while establishing an expedited permitting office across departments and a retail front door to get permits completed in a transparent and easy to manage process. As a result, the first meeting was at overflow capacity and ultimately yielded 79 submissions.[18]

The Digital Inclusion Provision

At the behest of Blumenfield and others, the city included a Digital Inclusion Provision that asked respondents to detail a plan to provide a base level of free service to all users. Along with the requirement for free service, the RFP splits the city into four quadrants (which have been drawn to include both high- and low-income neighborhoods) and calls for proposals to serve entire quadrants as a "Minimum Service Territory." Proposals that serve areas smaller than an entire quadrant are allowed as "Limited Area Proposals" but must "advance..the City's digital inclusion goals" in order to "be acceptable."[19]

Incentives

The key difference between the first RFP and the second was a clear incentive structure. There are six main incentives:

1. Expedited permitting
2. Access to comprehensive databases (StreetWise) that facilitate construction coordination
3. Placement of facilities on city property
4. Bulk lease rates for other city properties (street light placement, bulk fiber backbone, etc)
5. Storm water drainage system access
6. Public awareness through the CityLinkLA initiative.

Evaluation

Los Angeles has assembled a committee to review submissions and choose which developers will be allowed to proceed with the benefits the city had promised. While the Digital Inclusion Plan section of the RFP clearly states the need for comprehensive coverage and a base level of free service, it is ultimately up to the team of five reviewers from across the LA bureaucracy to decide what plans will be selected to enjoy the RFPs incentive promises. **In drafting the RFP, the key challenge is translating the promise of all the city's incentives through to the building of a comprehensive and free network in LA.** This is where LA's RFP may have ultimately come up short (although time will tell).

RFP Process Improvements

In the end, the incentives in the RFP were tied solely to being selected through the RFP, not to specific service requirements.

In other words, it's plausible for big telecommunications incumbents to put together large, otherwise attractive proposals that ignore digital inclusion. If these proposals are selected on their other merits (scope, integration with current service, speed, etc) they would enjoy the benefits of the city's incentive permitting and other concessions without subjecting themselves to the costly business of building in poor neighborhoods. The structure potentially undermines the digital inclusion requirements -- resulting in lots of mayor-pleasing investment, but fewer digital-divide-spanning efforts (to the chagrin of

Blumenfield and other advocates). **If digital inclusion and minimum service areas were tied directly to special rates, larger bidders would have an economic reason to take the Digital Inclusion Provision seriously.**

Potential RFP Cost Structure (Price/Fiber Strand-Mile)

LA's RFP offers a fixed 10 year lease price per fiber strand mile to RFP winners, starting at $100. Rather than setting one price and hoping for compliance, the city should create a pricing schedule that rewards compliance with the Digital Inclusion Provision with lower prices.

Instead of $100/year, the City could offer a slight discount off of the wholesale rate

RFP Winner	85% Inclusion	100% Inclusion
Best price not guaranteed by virtue of winning.	Incremental discounts for inclusion	Steep Discounts for full inclusion
$200	$150	$100

for RFP winners, then set the price at $170 for proposals that met 75% of the Digital Inclusion Provision's mandates, $150 for 85%, and $100 for 100%. Similar schedules could be set for other city assets (city property leases, storm drain access, etc). Assets like the expedited permitting system and the StreetWise database should be similarly gated -- offered for a fee to any developer and steeply discounted for inclusion compliance.

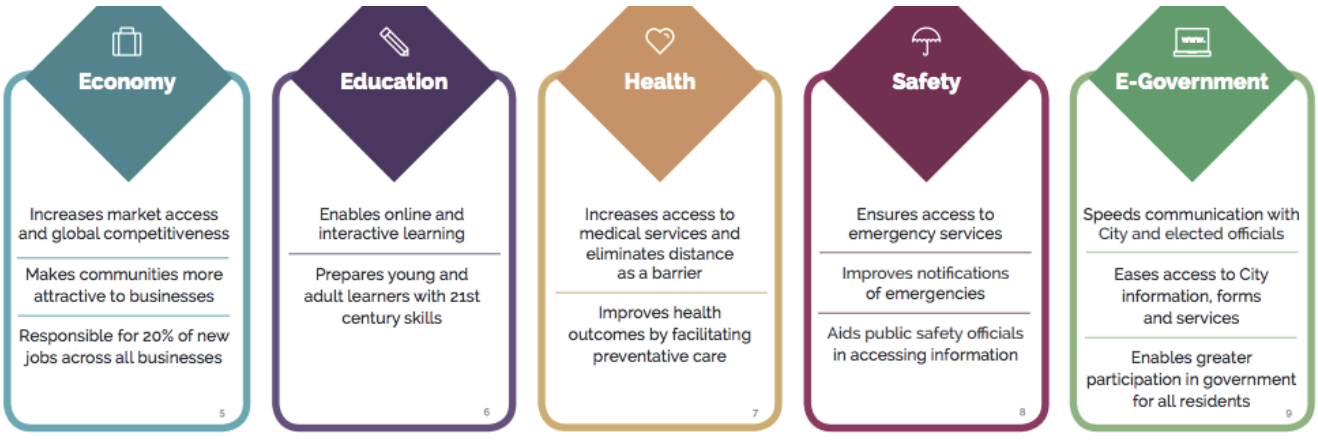
Creating alternate pricing scales enables providers to evaluate building a comprehensive network on a dollars to dollars basis, rather than relying on their goodwill to build out in all neighborhoods.

Next Steps for LA

Municipal broadband presents a number of challenges and opportunities similar to other policy challenges in the digital world. The rapidly evolving pace of technology poses a challenge to civic leaders as they attempt to evaluate and implement a barrage of new tools and capabilities. CitylinkLA.org, the current public facing site for LA's RFP process, misses an opportunity to highlight the network's importance in terms that could sway public opinion. While the site is very explicit about how many Angelenos do not have broadband, the fundamental question, 'Why is high-speed broadband important to Los Angeles?' is several clicks into an FAQ:

> "As seen in other cities where it is available, advanced broadband networks offering high-speed access to the Internet can have a dramatic impact on quality of life within communities providing advancements in e-learning, workforce development, commerce and telemedicine. The availability of affordable, high-speed networks can drive job creation, promote innovation, expand markets for businesses, and support improved education, health care and public safety." – http://citylinkla.org/about/

This answer isn't relevant in the vibrant way it could be. Words like "job creation" "innovation" "e-learning" and "education" do not carry to rhetorical power that a story could. Often policymakers and other technology insiders are so removed from the experiences of the average voter that it is not immediately obvious that such an awe inspiring technology needs to be explained in a way that highlights its human value. Cities should assume many citizens view the Internet as fundamentally unnecessary or scary. Los Angeles needs to claim agency by proclaiming that this fiber network will take Los Angeles into the future, shrinking the gap between rich and poor, educating children, creating jobs, and making the streets safer. While Marx, Blumenfield, and Garcetti have done a skillful job of building consensus among policy makers (despite their disagreements) and potential private sector partners, they have yet to build it among low income voters.



Above: an infographic outlining the benefits of broadband in LA[20]

IV. Preparing a City for Digital Success

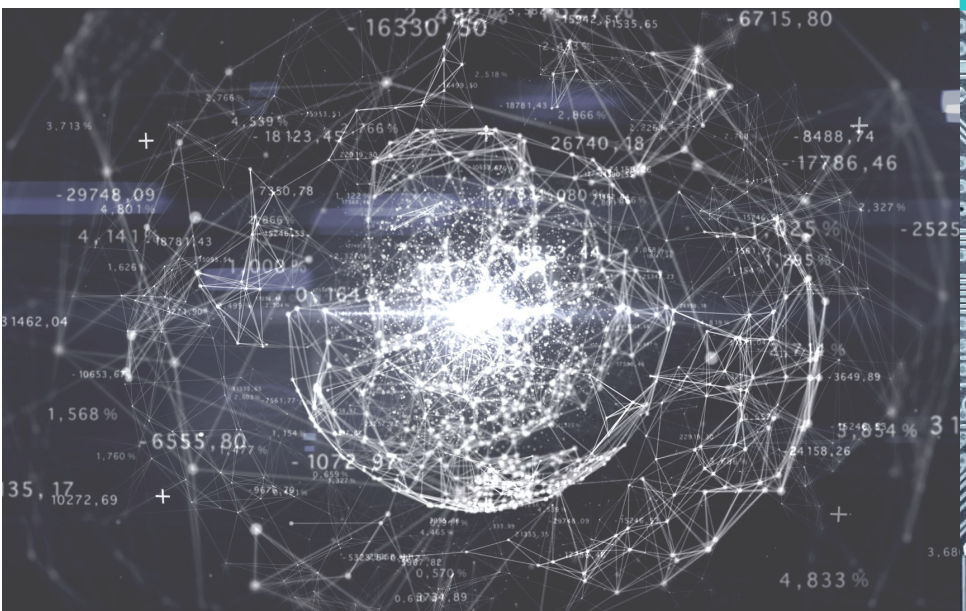
There are several steps a city can take to make the creation of a high speed, comprehensive network easier and more likely.

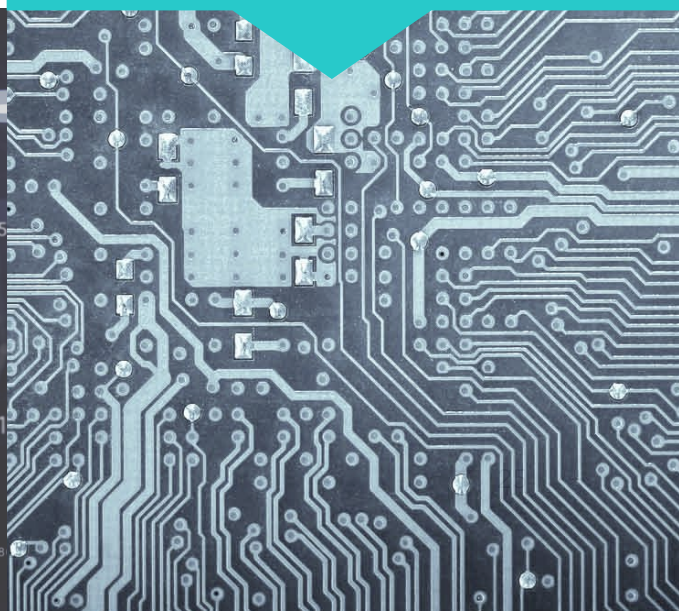
Drive Demand

There is a distinct lack of concrete benefits in the discourse surrounding broadband and the digital divide. Citizens should be presented with visions for what's possible, and jarring images of what's wrong with the status quo. Stories abound of students who must finish their homework at a local McDonalds because it offers the only open WiFi hotspot in the neighborhood. It should be clear to citizens that cities

8 Preparatory Steps

1. Drive citizen demand by creating a narrative that demonstrates value
2. Debunk common misconceptions related to the adoption of new technology
3. Reach consensus among civic stakeholders regarding digital inclusion
4. Anoint a single point of contact for all efforts within the city
5. Digitize and organize relevant city data
6. Solve civic permitting
7. Enlist industry Insiders to draft proposals
8. Craft RFP with specific incentives tied to digital inclusion metrics





must choose between connecting students to the resources that will let them thrive (via Khan Academy or Stanford's Online High School, for example) or sentencing them to a world of second rate educational outcomes and prospects for the future. On the flip side, the joys of a high speed network should be presented in sharp contrast -- telepresence, economic opportunity, equity. Civic leaders must blend municipal broadband with issues that citizens already care about while simultaneously building it as an issue in its own right. The more digital equity can be seen as a priority that many people share, the easier it is to build necessary resolve to provide it to them.

Black Lives matter is a social movement that has tremendous persuasive power and a large following. Due in large part to their efforts, more than 7,000 LAPD officers will begin wearing body cameras, quadrupling the amount of data the city produces on a given day. If policymakers can effectively link the social justice of those cameras with the need for fiber via the incredible amount of data that will need to be transferred and analyzed as a result of the cameras, an alliance between two otherwise unrelated groups could be created. Nearly any voting block could benefit from the informational bounty of a broadband network, and as such, advocates should seek to enlist them in the effort to connect a city. Citizens should be implored to "Demand Fiber" in the same way that they lobby for schools, or lower taxes. More demand leads to a more attractive market for developers and an easier set of decisions for policymakers.

Debunk Myths

Not everyone trusts government actors, or computers for that matter. Putting the two together is often a recipe for dissent and resistance, especially when security and privacy concerns are raised. Cities need clear and well articulated policies detailing how data is handled, how privacy is protected, and how security is maintained. Public officials should be well prepared for a barrage of misconceptions surrounding the implementation and use of technology by citizens. Cities should be careful to emphasize the transparency of their policies and the economic benefits of a new network.

Dialogue surrounding government and the Internet is almost always split into two camps: surveillance and economic opportunity. City officials should focus relentlessly on the latter. By shifting the focus to job creation, public benefits, and improved educational outcomes, cities can frame a new network as a closely regulated, safe, and useful tool for civic goals.

Common Misconceptions

WiFi causes cancer – FALSE

There is no concrete link between wifi (or cell phones, or fiber) and cancer.
http://www.ncbi.nlm.nih.gov/pubmed/17619826

People will just use a new network to watch cat videos – FALSE

The Internet is responsible for 21 percent of GDP growth in mature economies over the last 5 years.
http://www.mckinsey.com/industries/high-tech/our-insights/the-great-transformer

Cell phones will negate the need for fiber in the near future – FALSE

New cell technology relies on fiber connections, making fiber necessary for cell phones too.
http://muninetworks.org/content/wireless-driving-fiber-optic-boom

Find Internal Consensus on Digital Inclusion

Internally, cities are full of different constituencies, agencies, and offices, all of which are charged with unique missions which result in diverse goals. Not everyone will embrace digital inclusion as a component of the RFP process, even once it has been built as a priority for the general public. Some stakeholders see the investment of large private firms as an opportunity to signal to other large firms that the city is a friendly partner for further investment. As such, they may be less willing to impose restrictions on companies that would otherwise invest. Other stakeholders will see universal access as issue of economic justice, and are more likely to value the outcome of underserved citizens above long term macroeconomic outcomes. Balancing the need for both investment and equity should be done before soliciting bids, because fractured support for digital inclusion will allow firms to appeal to factions within the city. All stakeholders should agree on an ideal outcome, and an acceptable blend of pro-investment and pro-inclusion in the RFP.

Beware the empty threat or promise

When new entrants announce plans to build broadband networks in a given market, incumbents often counter with a promise to upgrade their existing service to the same speed within an expedited timeframe.

These promises are often made to scare new entrants away from the market, and often do not result in the development that was initially proposed.

Making an economic argument for universal access

Service providers know that there is a large percentage of society that doesn't engage with the Internet or.

Its possible to frame a base level of free service, or universal access as an opportunity to reach this segment of society. By developing new customers, providers may reap long term benefits.

A single point of contact

Once consensus has been reached, a city should give one person or one entity license to coordinate efforts across city agencies with that consensus in mind. Ownership is essential, and one point of contact eliminates the possibility of telling RFP bidders two different things (increasing predictability in their eyes). The lead should work to interface with bidders, expedite permitting, coordinate construction, and to convene other experts by subject matter. It should be easy to find out what resources are available where, and for how much. During this process, cities benefit greatly from uniform contract provisions and other pre-approved legal features that can be held by the central figure and distributed as needed. Proposed build-outs can increase permitting workloads across several departments, so any funds allocated through the city's RFP process to alleviate permitting burdens should be funneled through this central authority as well.

Digitize and organize all relevant city data

Data centralization saves time and confusion, internally and externally. The broader smart city movement can pay dividends in the effort to attract and direct private investment. Collecting all civic data often simply requires gathering it from each siloed agency tasked with maintaining various databases. The central authority administering the RFP internally should be familiar with what data is contained in a city's open data portal, and what data providers typically need as they're planning and evaluating new plans. Comprehensive databases can also minimize the amount of construction necessary by coordinating different projects so that when a street is dug up, all interested parties can complete their

A word on fiber wholesaling

In cities with lots of competition there's the potential for up to five different providers to dig their own fiber cable into every street, each with its accompanying damage to roadways clutter to utility poles. Even with "dig once" permitting, five different utility cabinets on every street corner isn't tenable. As an alternative, cities could pursue a utility structure where the city owns and maintains the fiberline line itself, then leases access to the line to telecommunications providers at wholesale rates. Providers would then be free to use proprietary electronics, as well as customer service differentials to distinguish their offerings and compete with one another.

Huntsville, Alabama, in a recent deal with Google Fiber, built out a city-wide fiber network with the intention of leasing strands to Google and any other provider who cared to compete.Acting as a wholesaler would give the city new leverage in the effort to bridge the digital divide by bundling parcels of service that include diverse neighborhoods to lessees.
Such a network is initially more costly, since the city bears more of the financial burden, but recoups value quickly through wholesale rents.

StreetWise

Los Angeles built software that was able to coordinate construction, which made the promise of a "dig once" policy easier to bring to fruition.

construction in that area at the same time (power, water, fiber, etc). These "dig once" policies are much easier to implement when there's an ongoing, accurate record of all word, public and private, planned in the city at a given moment. The Sunlight Foundation's Open Data Policy Guidelines are a fantastic starting point for cities looking to establish modern data practices.[21]

Solve Permitting

One official admitted that "[cities] suck at permitting" when it comes to extensive civic infrastructure projects. A typical city has more than five permitting bodies, each requiring different paperwork on different schedules. Due to the minimal costs of building a network through the RFP process, cities should set aside funds to establish a special permitting group, which can also be used as an incentive during the bidding process. If each installation (say, of a wifi transmitter on one of thousands of light poles) requires at least one permit, expediting that process saves considerable time and money for both the city and the provider. By implementing 'per hour permitting,' cities can tailor costs to the scale

of the project, which enables flexibility in the face of any staffing lag due to civil service exams, current staffing levels, and union obligations. Cities may also establish "expedited groups" made up of high performing reviewers to focus on priority permits. Predictability is key – cities should guarantee a quick turnaround on all submitted permits, and strive to meet those guarantees. Some RFPs even propose to pass the costs of increased permit review volume to bidders. Many providers embrace this provision, provided that the costs are not exorbitant, because it serves to make the process more predictable, lowering overall costs over the long run.

Enlist Industry Insiders

Modern telecommunications law is not a core competency of most American cities. While a city attorney may have limited experience grappling with large providers, enlisting outside counsel for their expertise in the industry can make a tremendous difference, with some cities even funding additional consulting out of existing telecom fees. To understand the complicated landscape modern telecommunications firms inhabit and compete for, attorneys must have extensive experience with other public-private partnerships and within a continually evolving regulatory framework. Furthermore, outside counsel can effectively evaluate the technical elements of RFP; what is old vs. new tech, what is easy and hard, what is feasible, etc. Frequently telecommunications providers seek to use their advanced

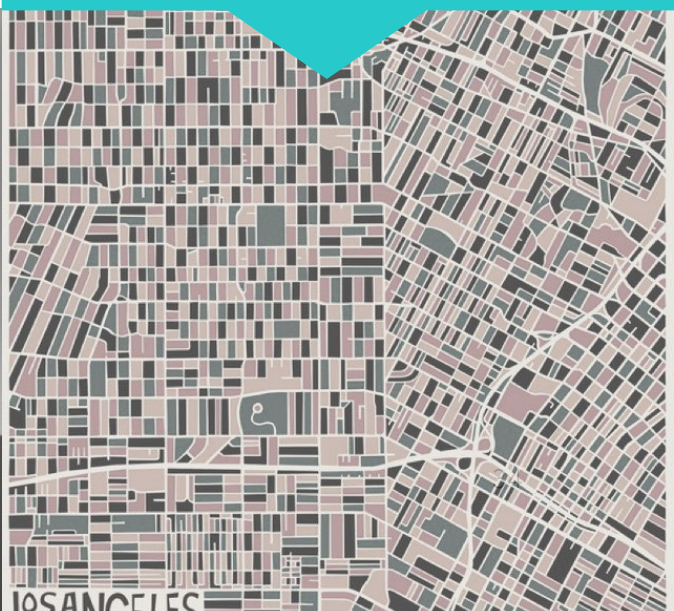
familiarity with technology to gain an upper hand in negotiations, good counsel can counteract this advantage.

Incentives

A city should present a mix of carrots and sticks for digital inclusion. Beyond permitting and standardized contracts, cities have many assets that are valuable to developers. Investors value access to maps of current fiber loops and other civic facilities. These developers want to access to utility poles for wifi installation, use utility cabinets to house fiber infrastructure, and build on public land. The city also has things it would like from developers like GIS databases of what is being

Utility Poles

Using the joint pole authority and an agreement with the local utilities, the city can offer access to utility poles. From an engineering standpoint, there's a distinct balance that must be stuck between the appearance of the street and the benefit of the infrastructure above, on and under it. Utilizing the previously discussed permit fee schedule can simplify cost projections while the city can offer discounted permits as developers pledge to build in higher percentages of the city.



built, or what has been built in the past. Expanding the scope of what may be shared in a negotiation allows each party to benefit from the other.

State and local law complicates the array of incentives a city can offer because there are different rights and restrictions guaranteed to utility providers in each jurisdiction. While further emphasizing the need for competent legal representation, such laws often prohibit cities from blocking telecommunications construction. Some incentives may only be applied to projects of a certain size, with all “large” project qualifying for special treatment.

Historically, the cities were expected to provide access to the right of way for free. Recently, some cities (notably Portland, OR) have attempted to include that access as a condition of building a comprehensive network, which charging other providers who do not meet digital inclusion provisions. Some states have laws that prohibit cities giving away public property, so at least some charge must be levied.

A key moment in history

- Universal coverage from the outset
- Leverage process control for digital equality

V. Summary

Fiber is the future. An ultrafast connection provides cities with a platform for innovation that enables profound improvements from educational parity to new economic realities. Cities must prioritize providing this opportunity to citizens far removed from the technology gospel, at the lower end of the socioeconomic spectrum. As networks are built, cities have the special opportunity to use their influence to do just that.

The network is just the beginning

A high speed connection is necessary but not sufficient for closing the digital divide in American cities.

One motivated and charismatic person can still make a difference

Unlike other political arenas that require large budgets, third party involvement, and partisan wrangling, cities are still navigable on a person to person basis, which is what makes them such a promising venue for innovation in America.

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Appendices

Appendix A: Highly Recommended General Resources for Municipal Broadband Development

The Next Generation Network Connectivity Handbook

http://www.gig-u.org/cms/assets/uploads/2015/07/Val-NexGen_design_7.9_v2.pdf

The Emerging World of Broadband Public-Private Partnerships: A Business Strategy and Legal Guide

https://www.benton.org/sites/default/files/partnerships.pdf

A Data-Driven Digital Inclusion Strategy for Gigabit Cities

http://nextcenturycities.org/wp/wp-content/uploads/2015/07/Denise-Linn-PAE-3.31.15.pdf

Gigabit Communities: Technical Strategies for Facilitating Public or Private Broadband Construction in Your Community

http://www.ctcnet.us/wp-content/uploads/2014/01/GigabitCommunities.pdf

Appendix B: Interview List

Peter Marx, Ted Ross – September 25, 2015

Deb Socia, Christopher Mitchell, Todd O'Boyle – October 9, 2015

Peter Marx – November 12, 2015

Francois Nion – December 14, 2015

Claudia Aguilar – December 14, 2015

Gary Lee Moore, Ted Allen – December 14, 2015

Lilian Coral - December 15, 2015

Derek Slater – December 15, 2015

Norma Fernandez – December 16, 2015

Greg Good, Emmett McOsker – December 16, 2015

Stephanie Magnien, Jason Levin – December 16, 2015

Marina Sanchez, Ted Ross, Laura Ito – December 16, 2015

Peter Marx – December 16, 2015

John Clippinger – February 24, 2016

Blair Levin – March 3, 2016

Lilian Coral – March 4, 2016

Emmett McCosker – March 4, 2016

Augustin Urgiles, Susan Walters, Raquel Sinat – March 4, 2016

Peter Marx – March 4, 2016

Joe Van Eaton – March 9, 2016

Todd O'Boyle – March 11, 2016

Endnotes **(Bibliography available on request)**

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[2] https://www.benton.org/sites/default/files/partnerships.pdf

[3] Ibid

[4] Good, Greg. Personal interview. 15 Dec. 2016

[5] Van Eaton, Joe. Phone interview. 9 Mar. 2016.

[6] Levin, Blair. Phone interview. 3 Mar. 2016.

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[11] https://www.whitehouse.gov/sites/default/files/wh_digital_divide_issue_brief.pdf

[12] http://www.bbcmag.com/2010mags/march-april10/BBP_MarApril_FiberIsFuture.pdf

[13] http://www.ppic.org/main/publication_show.asp?i=263

[14] Allen, Ted. Personal interview. 14 Dec. 2015

[15] Marx, Peter. Personal interview. 4 Mar. 2016

[16] http://citylinkla.org/wp-content/uploads/2015/03/16789-07-LACBN15-Infographic-Digital-03.pdf

[17] Marx, Peter. Personal interview. 15 Dec. 2015

[18] Coral, Lilian. Personal interview. 15 Dec. 2015

[19] http://citylinkla.org/wp-content/uploads/2015/07/RFP-CityLinkLA-6-16-15-c2.pdf

[20] http://citylinkla.org/wp-content/uploads/2015/03/16789-07-LACBN15-Infographic-Digital-03.pdf

[21] http://sunlightfoundation.com/opendataguidelines/