



Office of the City Manager

WORKSESSION

June 19, 2018

To: Honorable Mayor and Members of the City Council

From: Dee Williams-Ridley, City Manager

Submitted by: Jordan Klein, Economic Development Manager

Subject: Referral Response: Addressing the Digital Divide & Berkeley's Broadband Infrastructure Master Plan

SUMMARY

In response to the October 2014 City Manager Referral on *Berkeley's "Digital Divide" in Ultrafast Fiber Optic Internet Technology* and in advance of the creation of a Broadband Infrastructure Master Plan, the Office of Economic Development (OED) and the Department of Information Technology (IT) engaged consultants to conduct research on Berkeley's digital divide. The research was included two distinct components:

1. Research on the challenges Berkeley's internet users currently face (e.g. access, reliability, cost, speed and/or know-how) and potential opportunities to address these issues.
2. A review of other US cities' broadband masterplans to determine how they incorporated goals pertaining to equity and inclusion.

The research findings and recommendations will inform the development of a Broadband Infrastructure Master Plan that ensures Berkeley's middle-class and low-income residents have access to reliable and affordable internet service options, while also enabling the City to maintain economic competitiveness and ensure continuous connectivity and service resilience for essential City functions.

CURRENT SITUATION AND ITS EFFECTS

This report responds to referral #2017-38 that originally appeared on the agenda of the October 7, 2014 Council meeting and was sponsored by Councilmember Worthington.

Internet connectivity has demonstrated benefits for users in terms of health and safety, education, economic opportunity, empowerment, and overall quality of life. In Berkeley, internet already enables:

- Efficient and effective essential city services. In the City of Berkeley, ambulances, police, traffic signals, streetlights, watering systems, online payment services for parking, the City's website, and the Berkeley Considers online forum for civic engagement are all dependent on the internet.

- Economic opportunity for residents of all socioeconomic backgrounds, including residents' ability to use digital skills to increase their earning potential, find flexible work opportunities, and access financial information, records and grant or other funding opportunities online.
- Economic competitiveness, which is achieved when existing businesses have lower business costs, access to more specialized inputs and talent, or higher productivity. High speed internet can contribute to business attraction, enabling existing small businesses to sell their products and services to a broader global market, retaining highly skilled residents who enjoy digital entertainment or require fast internet for professional purposes, and supporting sustainable job creation in fast-growing tech startups and other innovative, technology-supported businesses.

Yet the benefits of internet connectivity do not accrue equally to all people in all locations. The "digital divide", defined by the Merriam-Webster dictionary as "the economic, educational, and social inequalities between those who have computers and online access and those who do not", is evident in cities around the world. In fact, according to research conducted by the IEEE Internet Initiative in March 2017 (*Evidence-Based Research on Internet Connectivity: A Prerequisite for Effective Policymaking*), "only a little more than half of the world's 7 billion citizens have access to the internet".

While Berkeley's digital divide is significantly less extreme than that faced by cities in developing countries or rural locations, the quality of Berkeley's broadband infrastructure overall falls behind that of many other Bay Area cities. According to the California Public Utilities Commission, which collects service level reports from providers throughout the state, Berkeley ranks 41st out of 68 incorporated cities in the five-county Bay Area region including Alameda, Contra Costa, San Francisco, San Mateo, and Santa Clara counties. Calculated by Tellus Venture Associates in its preliminary 2018 *Five County Broadband Infrastructure Report Card*, this rank (and Berkeley's C- grade, or score of 1.8 out of 4.0) indicate that Berkeley's consumer grade broadband services, and consequently the underlying core infrastructure are just below the statewide average.¹

Berkeley's below-average infrastructure score is not an indication that residents and businesses in low-income neighborhoods have fewer choices than populations in more affluent neighborhoods. In fact:

¹ The Broadband Infrastructure Report Card assigns a numerical grade on a four point scale to each city (based on a comparative system for ranking with criteria developed for the East Bay Broadband Consortium). Although Berkeley's 2018 rank is preliminary, its below-average score is likely because AT&T hasn't made as significant infrastructure upgrades in Berkeley as it has recently in other Bay Area cities, such as those with a higher ROI in the Peninsula and Silicon Valley or with substantial greenfield development (e.g. Oakley and Brentwood).

- The most recent FCC data available (from December 2016), as validated by the CPUC, shows that all wireline broadband providers reach 99% of Berkeley housing units (and 97.0% of Berkeley's population) with a minimum speed of 10 Mbps down and 1 Mbps up.
- There are at least 6 private internet service providers (ISPs) servicing some or all of Berkeley's residents: AT&T, Xfinity from Comcast, LMI.net, Sonic, Unwired, and Webpass from Google Fiber.
- There are at least 12 private ISPs servicing some or all of Berkeley's businesses: AT&T, Comcast, Level 3 from CenturyLink, LMI.net, Paxio, Sonic, TPx Communications, Unwired, XO Communications from Verizon, Webpass from Google Fiber, Windstream and Zayo.
- Some providers have plans to expand or upgrade their fiber networks in Berkeley over the next few years. Publicly owned fiber or conduit (City of Berkeley, UC Berkeley, BART, and Caltrans) may be resources that could be used to facilitate network buildout.
- Two of the ISPs with the most significant geographic coverage and market penetration in Berkeley (Comcast & AT&T) offer extremely low-cost internet service options for low-income residents. (See Attachment 1 for information about the services offered by AT&T Access² & Comcast Internet Essentials.³)

However, residents' and businesses' ability to effectively use the internet to achieve their objectives depends on more than just the availability and cost of internet service; it also depends on the software and hardware ("devices") they have and their training and awareness about how to use these devices ("know-how"). In an effort to better understand the nature of Berkeley's digital divide, OED and IT engaged the consulting firm Marty to conduct outreach and research directly with Berkeley's population.

Marty conducted a total of 54 interviews across six Berkeley user segments between October 2017 and March 2018. The six segments researched were:

1. **Seniors:** Members of the community who are 70+ years old.
2. **Pretired:** Members of the community who are between 50-70 years old and are considering retirement in the next 5-15 years.
3. **High Schoolers:** Students who are in their last two years of High School.
4. **ESL:** Members of the community for whom English is a second language.
5. **Low-Income:** Members of the community who are living below or slightly above the poverty line.

² Through its Access program, AT&T offers low-cost (\$5-10) wireline home Internet service (768Kbps – 10Mbps) to Berkeley households in its wireline home Internet service area with at least one resident who participates in the U.S. Supplemental Nutrition Assistance Program (SNAP) or who receives Supplemental Security Income (SSI). More info can be found at: <https://www.att.com/shop/internet/access/#/>

³ Through its Internet Essentials program, Comcast offers affordable internet at \$9.95 + tax per month an option to purchase a low-cost computer for \$149.99 + tax. The 15Mbps service can be obtained with no credit check, installation or term contract. More info can be found at: <https://internetessentials.com/>.

6. **Business Owners:** Berkeley's small business owners.

The internet connectivity barriers were grouped in three categories: Training & Awareness, Internet Speed, and Devices. The key barriers identified for each segment, in order of priority, are as follows:

- **Low Income:** 1. Training and Awareness 2. Devices 3. Internet Speed
- **Pretired:** 1. Training and Awareness 2. Internet Speed 3. Devices
- **Seniors:** 1. Training and Awareness 2. Devices 3. Internet Speed
- **ESL⁴:** 1. Training and Awareness 2. Internet Speed 3. Devices
- **High Schoolers:** 1. Devices 2. Internet Speed 3. Training and Awareness (especially for Parents)
- **Business Owners:** 1. Internet Speed 2. Training and Awareness 3. Devices

Marty's research also found that Berkeley's Low Income, Pretired, and Senior segments present the most acute needs. Low income residents would benefit from more information about the options for affordable internet service plans and devices, and opportunities to build digital skills to increase their earning potential, such as learning how to apply for a job online. Similarly, Berkeley's Pretired population lacks community support related to technology access and training, especially with regard to ways to earn additional income as they age through flexible part-time work. Berkeley's Seniors, while served by a number of organizations that are aware of their technology barriers, need consolidated and easy-to-understand information about the training programs they can access; these training programs would ideally be expanded to cover a range of relevant digital tools and methodologies.

The Marty report includes opportunities to address the issues surfaced by the research for many of the City of Berkeley's partners, including the Berkeley Public Library, The Continuum (a community aging movement), Ashby Village, and Osher Lifelong Learning Institute, such as providing centralized resources about technology-related information and local trainings to offering new courses with skills desired by local residents, searching for a job online, managing personal finances and benefits online, or using a smartphone productively. The full list of organizations interviewed and community partner opportunities identified by Marty can be found in Attachment 2 of this report.

As a complement to this research about the existing digital divide in Berkeley, OED and IT commissioned Nutter Consulting to examine how other cities have prioritized equity in their Broadband Masterplans, RFPs and Equity Plans. Nutter Consulting reviewed 21 American cities to discover their approaches to enabling widespread digital inclusion. Typically, "digital inclusion" or "digital equity" is defined and measured in terms of three distinct pillars that correspond closely with the barriers identified in Marty's research:

⁴ ESL was determined to be a very broad segment and one which overlapped significantly with the Low Income segment.

1. Enabling *access to the Internet* through reliable, affordable connections
2. Providing residents with reliable *computers or other internet-enabled devices*
3. Educating residents with the knowledge or skills they need to effectively engage in a digital world.

Nutter Consulting found that other cities’ digital equity solutions fall into two broad categories: physical infrastructure investments (“infrastructure”) and training and education (“programming”). For each of these categories, there are three common strategies that other cities have pursued to bridge the digital divide.

Digital Equity Framework

<i>Infrastructure</i>	<i>Programming</i>
1. Laying fiber and cable infrastructure in underserved areas & connecting community serving buildings to broadband cable network	1. Digital Literacy Training
2. Implementing free WiFi	2. Device access through discounts and donations
3. Establishing innovation zones	3. Grant programs that support training and device donations

Enabling infrastructure to promote equitable outcomes

Network Implementation and Connecting Buildings and Assets

Cities across the country have shown that one way to increase digital inclusion is to connect public buildings (including city government buildings, schools, libraries, and public housing) to fiber-optic cable. By bringing the connections to where vulnerable or underserved populations congregate and receive services, cities have been able to reach multiple segments of their population. Examples include:

- The UC2B initiative in Urbana-Champaign, IL connected 256 of its community anchor organizations to fiber with funding from the federal government.
- Greater Austin Area Telecommunications Network in Austin, TX, has connected over 570 locations to its including government buildings, courthouses and public schools.
- Santa Monica connected the first of its 10 affordable housing buildings with 10 Gigabit Broadband through CityNET in 2015 and has plans to connect its other affordable housing sites as grant funds become available.

Free public WiFi which reaches downtown areas and other discrete areas

Many municipalities have installed free public WiFi in their downtown areas, parks and other public spaces. Examples of these range from ChicagoWiFi, a free public WiFi service at city facilities, public libraries and other public places, to San Jose's Terragraph free gigabit WiFi system, in which Facebook provides the hardware and the city offers access to its downtown public infrastructure. Access to free public WiFi allows those who do not have access to the internet at home to participate in the local economy.

Innovation Zones

A number of cities, including Chicago, Chattanooga and Pittsburgh, have designated specific neighborhoods as 'innovation zones'. Although the definition of an "innovation zone" varies across cities⁵, they typically include high speed internet connected-infrastructure (either new or retrofit) that enables the functioning of other cutting edge technologies (e.g. Internet of Things – or IoT – devices), offer a testing ground for emerging technologies, and have business incubators, entrepreneurial centers, or anchor institutions (such as a prominent business or university) that help develop ways to use broadband to support economic development. The selection of an innovation zone location can often correspond with the boundaries of an underserved or low income neighborhood, providing increased internet access (such as Noogonet's up to 1 gigabit per second public WiFi) as well as job creation in the area. Funding from both government and private partners has facilitated the installation of the connectivity infrastructure in these innovation zones.

Equity Projects in Programming*Digital Literacy Training*

Through city-run programs, or through coordination with private and non-profit partners, cities have established digital literacy training programs to expand the audience that can access the benefits of internet connectivity. These programs offer a variety of services, ranging from basic internet navigation to job training and software accreditation. By primarily advertising these programs to underserved communities, including immigrants, senior citizens and low-income residents, cities have helped to address a core issue that increases the digital divide - the lack of basic knowledge and know-how regarding internet use. For example, Chicago's Internet to Go program works through the library system to offer digital training to anyone with a library card. In Boston, MA, the Tech Goes Home program offers 15 hours of training and provides participants with a subsidized Netbook when the training is completed.

⁵Chattanooga defines innovation districts as "dense, walkable urban cores packed with tech startups, entertainment hotspots, researchers and students, affordable housing, and popular eateries—basically everything you need to live, work, and play all in one place." Chicago's Broadband Innovation Zones are "commercial and industrial corridors the City of Chicago has initially targeted for the private provision of gigabit or near-gigabit broadband speeds for businesses, universities and schools, hospitals, research institutions, and other community organizations... to foster innovation, drive job creation, and stimulate economic growth."

Device Access and Donations

Without devices to get online, some community members are not able to take advantage of broadband infrastructure. To address this challenge, cities have created opportunities for public access to devices and for residents to receive refurbished devices for lower costs, including computers, laptops, tablets and mobile phones. Eligible recipients of refurbished devices are primarily public housing and low-income residents. For example, Chicago has increased access by establishing a device rental program in three public libraries, whereas Kansas City offers reduced-cost devices for low-income residents who have completed digital literacy courses.

Grants for community partners (enabling training and access to devices)

Many cities also directly assist community organizations to improve digital equity. Through grants, in the form of both funds and devices, community organizations can expand services for underserved populations and reduce the city's digital divide. Funding comes from both public and private entities: Austin, TX uses city dollars to fund its Grant for Technology Opportunities Program, whereas the private internet provider, iTV3, committed to providing \$50,000 per year for the first five years to Urbana-Champaign, IL's Community Benefit Fund.

All of the examples mentioned above, plus others, can be found in Attachment 3: Case Studies by Digital Equity Framework Category. Additional information on the Nutter Consulting research findings on other cities' digital divide solutions can also be found in the final presentation delivered to the City of Berkeley in May 2018 (Attachment 4).

Bridging the Digital Divide in Berkeley

A number of existing nonprofit and public agencies offer programming to increase digital inclusion. Critically, the Berkeley Public Library offers free wireless access at all of its five locations, a variety of digital literacy training classes⁶, 35 laptops that can be accessed through the Library's circulation desks, and a self-service laptop lending machine with 12 new laptops (expected to deploy in June 2018). It also has plans to expand these self-service laptop lending machines to other locations in the future and will be an important partner in any initiative to bridge the digital divide. Nonprofit and public organizations such as the Center for Accessible Technology, Tech Exchange and Berkeley City College are actively serving Berkeley citizens to ensure they have the resources and training to participate in the digital economy. And the City of Berkeley sends volunteers and speakers annually to the STEM Career Awareness Day organized by the Institute for STEM Education at California State University - East Bay to show local high school students from low-income communities what STEM jobs look like.

⁶ The Berkeley Public Library offers beginner computing classes every Monday and Thursday at the Central Library and periodically at its other locations, coding classes throughout the system, a PC building workshop at Central, Virtual Reality programs at the Central and West branches, and a variety of other programs.

Ultimately, eliminating the digital divide will require a combination of **new programming** and **new infrastructure**. With regard to programming, the City and its partners can reflect on the opportunities and case studies recently identified by consultants to consider how to expand on existing programming. In the near future, Health Housing and Community Services (HHCS) staff is working to recruit a nonprofit partner to co-host a pilot Tech Exchange Fair in Berkeley, which will provide local residents with devices provided by Department of IT, options for low-cost internet service, and technology training. It is important to note that any significant expansion of programming for digital literacy or device access would require the dedication of substantial resources.

With regard to infrastructure, the development of the City of Berkeley Broadband Infrastructure Master Plan began in March 2018. Kimley-Horn, the consultant hired to prepare the Plan, is currently reviewing Marty and Nutter Consulting's digital divide research and is gathering additional information on the broadband infrastructure needs of municipal, community, and business users through City staff workshops, business group meetings, and user surveys. Kimley-Horn has also conducted field investigation into the condition of traffic signal interconnect conduit, City facilities, and utility/street light poles for broadband network readiness and will be gathering information regarding existing and planned broadband infrastructure assets owned by the City, other public agencies, and private entities within City Limits in the months ahead.

Based on the information gathered regarding needs and available assets, the Broadband Infrastructure Master Plan will develop a recommended network design to address user needs, identify gaps, and develop prioritized initiatives and projects, including recommendations for any revisions to existing City policies and practices. The investment in infrastructure will strengthen the City's communications and traffic infrastructure and increase the possibility of digital inclusion projects and smart city initiatives such as public WiFi. By late 2018 or early 2019, the City will be well positioned to consider the possibilities for private-sector partners to assist with the build-out of the City's fiber network.

The City will be presented with various financial models and options to consider for its infrastructure buildout. There may be opportunities to reduce the level of municipal financing required by leveraging public-private partnerships, leasing existing infrastructure or securing outside grant funding. Nevertheless, it is important to note, again, major infrastructure projects such as free Wifi or public broadband access would likely require a commitment of significant public resources.

BACKGROUND

In 2014, Council adopted a referral to the City Manager to address the "digital divide" in Internet technology⁷. The referral suggested that the City explore partnerships to

⁷See October 7, 2015 City Manager Referral on "Digital Divide" in Ultrafast Fiber Optic Internet Technology from Councilmember Worthington

expand access to “ultrafast fiber technology” for Berkeley’s middle-class and low-income residents. In response, the City Manager contracted with Tellus Venture Associates in 2015 to evaluate Berkeley’s high-speed Internet service levels, and propose actions to improve Internet access.

The 2015 Tellus Venture assessment reported that the City of Berkeley’s broadband infrastructure was “substandard” (receiving a “C-” grade, or 1.7 on a 4-point scale), with the lowest service levels in Berkeley’s Downtown and West Berkeley commercial districts.⁸ The report also explained why telecommunication carriers are so selective in choosing business districts in which to invest. In contrast to residential markets, commercial markets have wide variations in Internet needs. For example, some firms need only basic email services while neighboring businesses may require extensive bandwidth because of their sectors or processes. Customer density, particularly in industrial areas, is also variable. On the other hand, most residential subscribers have similar use patterns and tend to purchase high-value television services as well. Because of the wide variation in the commercial marketplace, Internet Service Providers (ISPs) may be reluctant to risk investing in business districts.

Following the 2015 Tellus Venture broadband assessment, OED planned to release an RFP in fall 2016 to lease City-owned conduit or fiber to third-party telecommunications providers, as outlined in OED’s update to Council in April 2016.⁹ However, through consultation with other City departments and private-sector leaders, staff determined that the City lacked complete information regarding city-owned conduit and its capacity for additional fiber. Additionally, staff observed that the development of a Broadband Master Plan helped other municipalities to approach broadband expansion systematically rather than in a piecemeal fashion. By developing a Broadband Master Plan to address clearly articulated goals, the City will have the opportunity to determine areas to prioritize with fiber optic construction, evaluate potential cost savings, and generate additional economic and community development benefits.

On June 27, 2017, the Office of Economic Development submitted a report to Council on Broadband Infrastructure Development in Berkeley, explaining that Staff, in collaboration with IT (and with assistance from Tellus Venture Associates), would develop an RFP to recruit a vendor to lead the development of the Broadband Master

https://www.cityofberkeley.info/Clerk/City_Council/2014/10_Oct/City_Council_10-07-2014_-_Regular_Meeting_Agenda.aspx

⁸ The May 2015 *City of Berkeley Broadband Development Assessment* by Tellus Venture Associates is Attachment 1 in the April 26 2016 City Manager Update on the 2015 High Speed Fiber Report and Recommendations.

[http://records.cityofberkeley.info/Agenda/Documents/ViewDocument/4_26_2016%3B%20CLK%20-%20Agenda%20Item%20Attachment%20\(Public\)%3B%20CITY%20MANAGER%3B%20%3B%20REGULA.pdf?meetingId=181&documentType=Agenda&itemId=2048&publishId=3815&isSection=false](http://records.cityofberkeley.info/Agenda/Documents/ViewDocument/4_26_2016%3B%20CLK%20-%20Agenda%20Item%20Attachment%20(Public)%3B%20CITY%20MANAGER%3B%20%3B%20REGULA.pdf?meetingId=181&documentType=Agenda&itemId=2048&publishId=3815&isSection=false)

⁹ City Manager Update on the 2015 High Speed Fiber Report and Recommendations, April 26 2016.

[http://records.cityofberkeley.info/Agenda/Documents/ViewDocument/4_26_2016%3B%20CLK%20-%20Report%20\(Public\)%3B%20CITY%20MANAGER%3B%20%3B%20REGULAR%3B%20UPDATE%20ON.pdf?meetingId=181&documentType=Agenda&itemId=2048&publishId=3814&isSection=false](http://records.cityofberkeley.info/Agenda/Documents/ViewDocument/4_26_2016%3B%20CLK%20-%20Report%20(Public)%3B%20CITY%20MANAGER%3B%20%3B%20REGULAR%3B%20UPDATE%20ON.pdf?meetingId=181&documentType=Agenda&itemId=2048&publishId=3814&isSection=false)

Plan.¹⁰ In fall 2017, the RFP was released stating that the Plan should be designed to achieve three specific City goals:

- Expand fiber access for public facilities and infrastructure to ensure continuous connectivity and service resilience for public safety, emergency response and other essential City functions.
- Address the 'digital divide' by increasing high-speed internet access for low-income and disadvantaged residents.
- Improve fiber access in key commercial areas to maintain Berkeley's economic competitiveness and retain and attract job-creating businesses, entrepreneurs and other IT-reliant innovators.

During the same time period in which vendors were being recruited and selected to undertake the Broadband Infrastructure Master Plan (October 2017 - March 2018), OED and IT engaged Marty and Nutter Consulting to undertake additional research on the nature of Berkeley's digital divide and potential solutions (as offered by local partners and other US cities). Both consultants' research findings were presented to City staff and external community partners on May 1, 2018 at a meeting hosted by OED and IT.

Simultaneously, Kimley-Horn was selected as the Broadband Infrastructure Master Plan vendor in March 2018 and work has commenced. The final plan is expected to be completed by late 2018 or early 2019 and the City will have the roadmap it needs to recruit private-sector partners to assist with the build-out of the City's fiber network. The final report will include the assets the City has available and the financial models of different options for partnerships with other public and/or private entities. Going forward, IT will take the lead, with support from OED and Public Works as appropriate, to finalize the Broadband Infrastructure Master Plan and determine next steps.

ENVIRONMENTAL SUSTAINABILITY

While there are no direct environmental sustainability effects associated with the content of this report, the implementation of a Broadband Master Plan in the City of Berkeley could have implications for environmental sustainability. High-speed internet access increases the potential for telecommuting, teleconferencing and other online services which could reduce vehicle miles traveled and thereby reduce GHG emissions. In addition, by using existing telecommunications and traffic signal interconnect conduit for broadband infrastructure, the City could reduce emissions associated with additional construction projects and material production.

¹⁰ City Manager Update on Broadband Infrastructure Development, June 27, 2017.

https://www.cityofberkeley.info/Clerk/City_Council/2017/06_June/City_Council_06-27-2017_-_Regular_Meeting_Agenda.aspx

POSSIBLE FUTURE ACTION

Staff expects to engage Council throughout the development of the Broadband Master Plan, including an information report in late fall 2018, and for formal adoption of the Plan. Once the Plan is adopted, staff will likely seek Council action related to the recruitment of partners for its implementation.

FISCAL IMPACTS OF POSSIBLE FUTURE ACTION

The FY2018 budget includes an allocation of approximately \$210,000 for the development of the Broadband Master Plan, which corresponds with the typical cost for plans developed for comparably-sized municipalities. Future expenditures will depend on the specific objectives, prioritization, financing mechanisms and other elements developed through the Master Plan process. While staff hopes to minimize outlays of public funds by leveraging existing City infrastructure through public-private partnerships and pursuing opportunities for grant funding, the creation of any new programming (e.g., digital literacy or device access) or infrastructure access would likely require the commitment of substantial public resources.

CONTACT PERSON

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Attachments:

1. Information about AT&T Access & Comcast Internet Essentials (low-cost internet services)
2. May 1 2018 digital divide research findings for the City of Berkeley, final presentation by Eva-Marie Costello of Marty consulting
3. Nutter Consulting, Case Studies by Digital Equity Framework Category
4. May 1 2018 *Broadband Equity Research Report for the City of Berkeley*, final presentation by Melanie Nutter of Nutter Consulting
5. Original Referral Report from October 7, 2014

Affordable Home Internet. Incredible Opportunities.



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The digital world is full of possibilities. AT&T is making it easier to connect to friends, family, and the things that matter most. If at least one person in your household is a **SNAP* participant**, you may qualify for 10Mbps home Internet service at our discounted \$10 rate.**

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- **Search for jobs**
- **Pay bills**
- **Find news, information and entertainment**

And a whole lot more!

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*Supplemental Nutrition Assistance Program. **Available only in the AT&T 21-state wireline footprint. Slower speeds (5Mbps for \$10/month or 3Mbps for \$5/month) may be provided depending on availability at your address. Internet speed claims represent maximum network service capability speeds. Actual customer speeds may vary based on factors including site traffic, content provider server capacity, internal network management factors and device capabilities, and are not guaranteed. For more information, go to att.com/speed101. Pricing excludes taxes. From 4/22/16 through 5/22/16, service will include a monthly data allowance of either 150GB data/mo. or 250GB data/mo. depending on the type and speed of service you receive. Beginning 5/23/16 and thereafter, service will include a monthly data allowance of either 150GB, 300GB or 600GB data/mo. depending on the type and speed of service you receive. †If you exceed your monthly data plan allowance, you will be automatically charged \$10 for each 50GB of data usage in excess of your data plan, even if less than 50 gigabytes is used. For more information, go to att.com/internet-usage. †Wi-Fi enabled device required. Other restrictions apply. ©2016 AT&T Intellectual Property. All rights reserved. AT&T, the AT&T logo, and all other marks contained herein are trademarks of AT&T Intellectual Property and/or AT&T affiliated companies.

Internet Essentials from Comcast

Internet Essentials is the nation's largest and most comprehensive high-speed Internet adoption program for low-income households. The program has connected more low-income Americans to the Internet – by several orders of magnitude – than all other similar programs combined.

Internet Essentials has been designed as a comprehensive, wrap-around program to address each of the major barriers to broadband adoption. It provides low-cost Internet service for \$9.95 a month; the option to purchase an Internet-ready computer for less than \$150; and access to free digital literacy training in print, online, and in person.

In six years, Internet Essentials has connected more than four million low-income Americans, in one million households, to high-speed Internet service at home. After 10 expansions of eligibility, the program is now available to households with school-age children eligible for free and reduced price lunches, all households living in HUD-assisted housing (including Public Housing, Housing Choice Vouchers, or Multifamily), and, in select markets, to low-income senior citizens and community college students.

Since the program's inception in August 2011, the company has made more than 30 key enhancements, including:



Increased speeds four times in six years: Starting this fall, customers get up to 15 Mbps of download speeds and 2 Mbps of upload speeds. This year's increase will improve streaming quality in the home (15 Mbps is 3 times the speed necessary to view a high definition video), especially when multiple devices are connected to the Internet at the same time.

Added free in-home WiFi: Customers can connect any Internet-enabled device, such as tablets or smartphones, in their homes, which could help them save money on their monthly wireless bills.



Extended access to XFINITY WiFi hotspots: Internet Essentials customers will now enjoy 40 hours of free out-of-home WiFi access per month to the company's growing network of 18 million Xfinity WiFi hotspots.



Streamlined enrollment process: All families whose children attend schools where 40 percent or more of the students participate in the National School Lunch Program, as well as public housing residents, can use a streamlined application for Internet Essentials without having to submit additional verification documentation.



Reflected our diverse communities: English and Spanish-speaking families may call our dedicated in-language call centers or apply online at InternetEssentials.com. Materials for Internet Essentials are available in 14 languages, including English, Spanish, Somali, Chinese, Korean, and Russian.

Internet Essentials from Comcast

Internet Essentials Investments

Comcast has partnered with 9,000 community-based organizations, libraries, school districts, government agencies, and federal, state, and local elected officials to help families cross the digital divide. Through the end of June 2017, Comcast has:

- Expended about \$350 million in cash and in-kind support to help fund digital literacy and readiness training and education, reaching nearly 5 million people through national and local non-profit community partners.
- Sold more than 65,000 subsidized computers at less than \$150 each.
- Broadcast more than 10 million public service announcements, valued at more than \$120 million.

Customer Research:

We survey our Internet Essentials customers about their experiences. Here are some key results:

- 98 percent said their children use the program's Internet service for schoolwork.
- 93 percent feel the Internet service had a positive impact on their child's grades.
- 62 percent feel the Internet service helped someone in the household locate or obtain employment.
- More than 90 percent said they are satisfied with the program.
- 96 percent said they would recommend the program to friends and family.

INTERNET ESSENTIALS: REACHING CALIFORNIA

DATA THROUGH JUNE 2017

150,000
Households
Connected to
the power of the
internet*

That's
600,000
residents

850

partners including schools, nonprofit organizations, libraries, businesses, and elected officials

TOP 5
COUNTIES

COUNTY NAME

HOUSEHOLDS
CONNECTED -
LIFETIME

FRESNO

29,000

SACRAMENTO

24,000

SAN JOAQUIN

13,000

ALAMEDA

12,000

SAN FRANCISCO

6,500

CITY NAME

HOUSEHOLDS
CONNECTED -
LIFETIME

FRESNO

20,000

SACRAMENTO

17,000

STOCKTON

9,700

SAN JOSE

6,800

SAN FRANCISCO

6,500

TOP 5
CITIES

365,000

program materials distributed

40,000

people reached at more than 140 events

More work to do...while 82% of California households subscribe to broadband at home**...

\$350 MIL

Invested by Comcast nationally to support digital literacy training reaching 5 million low-income Americans since 2011

62%

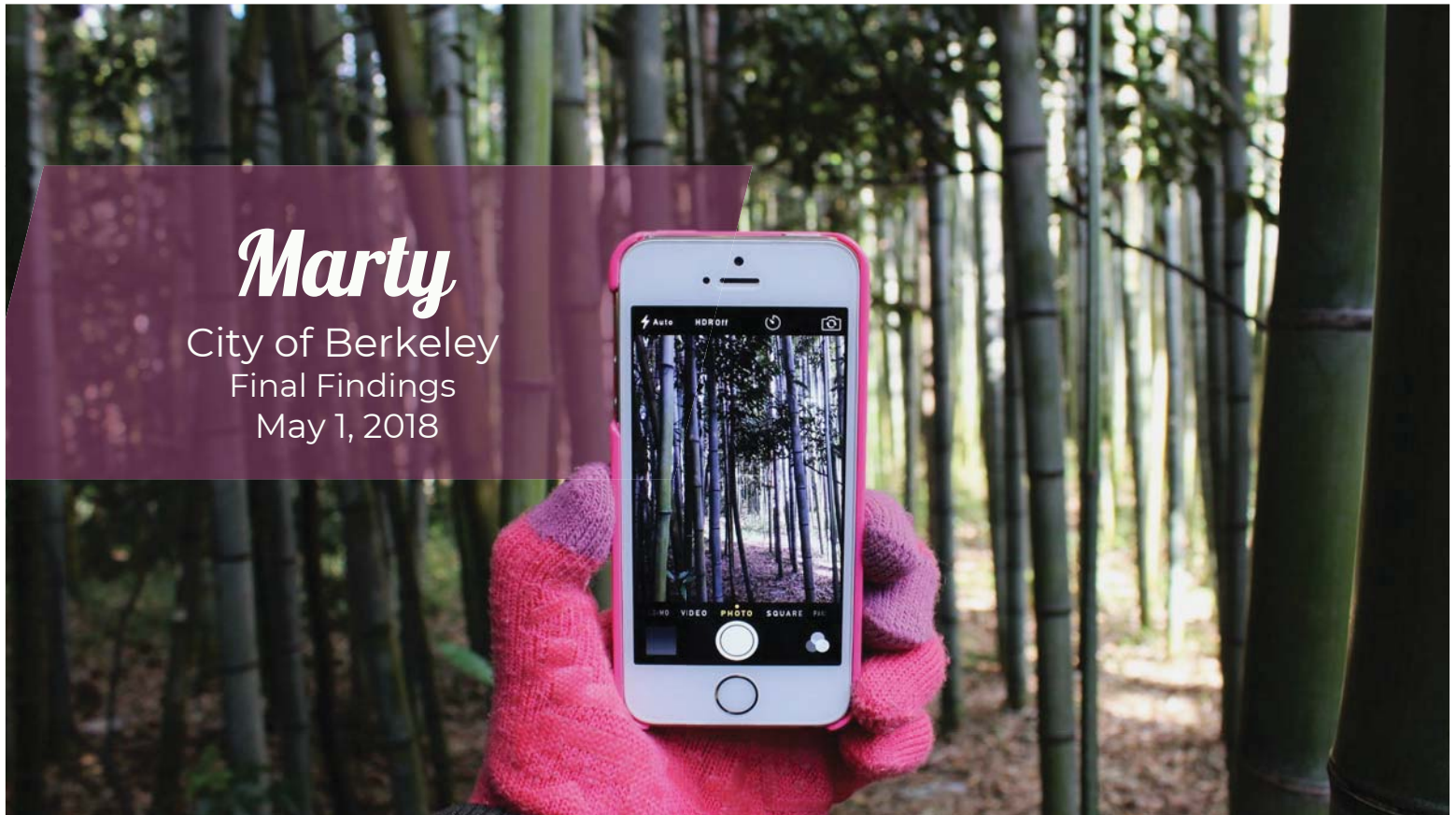
Of all California households with annual incomes less than \$35,000 have a broadband subscription at home

94%

Of all California households with annual incomes more than \$75,000 have a broadband subscription at home

*Nationally, one million households have connected to the internet through Internet Essentials.

**U.S. Census, American Community Survey, 2015



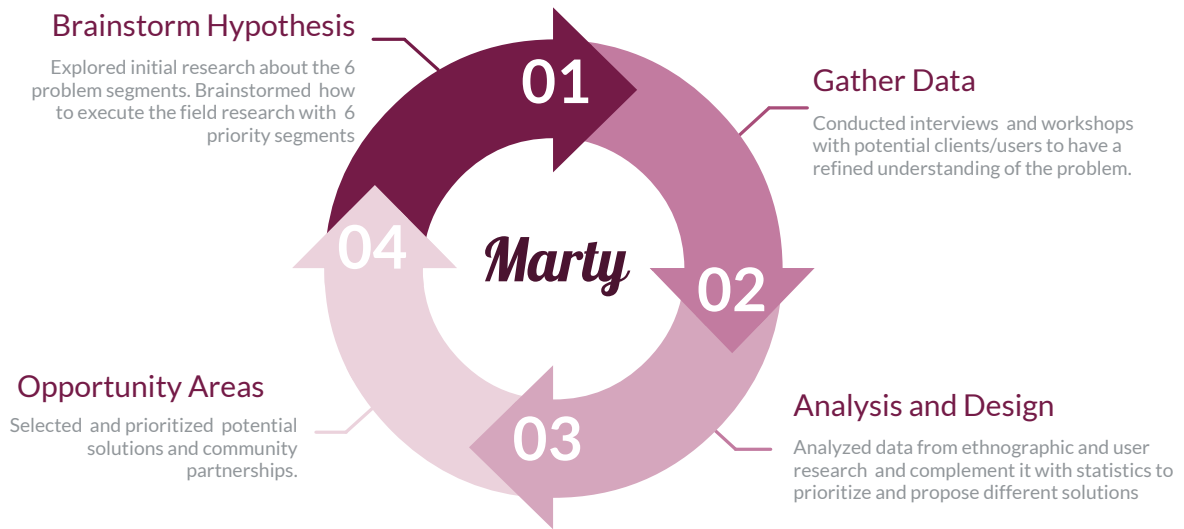
Scope of our Research

Our research was focused on understanding the meaning of “digital divide” from the perspective of six different user segments in the City of Berkeley. We asked them about their relationship with technology and what they expect from that relationship. The project included the following main activities:

- Research: City of Berkeley digital divide user segmentation and point of contacts within segments
- Data Gathering: Conducted interviews with representative of 6 user segments.
- Analysis and Opportunities: Defined problem in each segment and recommend potential solutions based off insights

Eva-Marie Costello, Germán Estrada

To understand the digital divide problem in Berkeley our research involves these four steps



Marty

Interviews Conducted

Seniors: 10 organization Interviews, 3 user interviews & 1 Workshop
High-Schoolers: 4 organization interviews, 6 user interviews, 1 Workshop
Pretired: 6 organization Interviews, 3 user interviews
Low Income: 7 organization Interviews, 2 user interviews
ESL: 3 organization Interviews, 2 user interviews
Business Owners: 2 organization Interviews, 7 user interviews (survey)

Oct 17'

March 18'

List of contacts:

<https://docs.google.com/spreadsheets/d/1sK8KaAWcogkHpoXtOl6aqz3TpDL3n347A-XMyWGuRX8/edit?usp=sharing>

Marty

Organizations Contacted

J-Sei	The CIL	RISE Youth	BAOBOB
BAHIA	The Continuum	Berkeley Bridge	CITRIS
Osher Lifelong Learning	The Suitcase Clinic	Berkeley High School	Oxford Plaza
CforAT	Ashby Village	Berkeley Unified School District	Resources for Community Development
Homeless Action Centre	Solano Business District	Oxford Plaza	U.C Berkeley

Marty

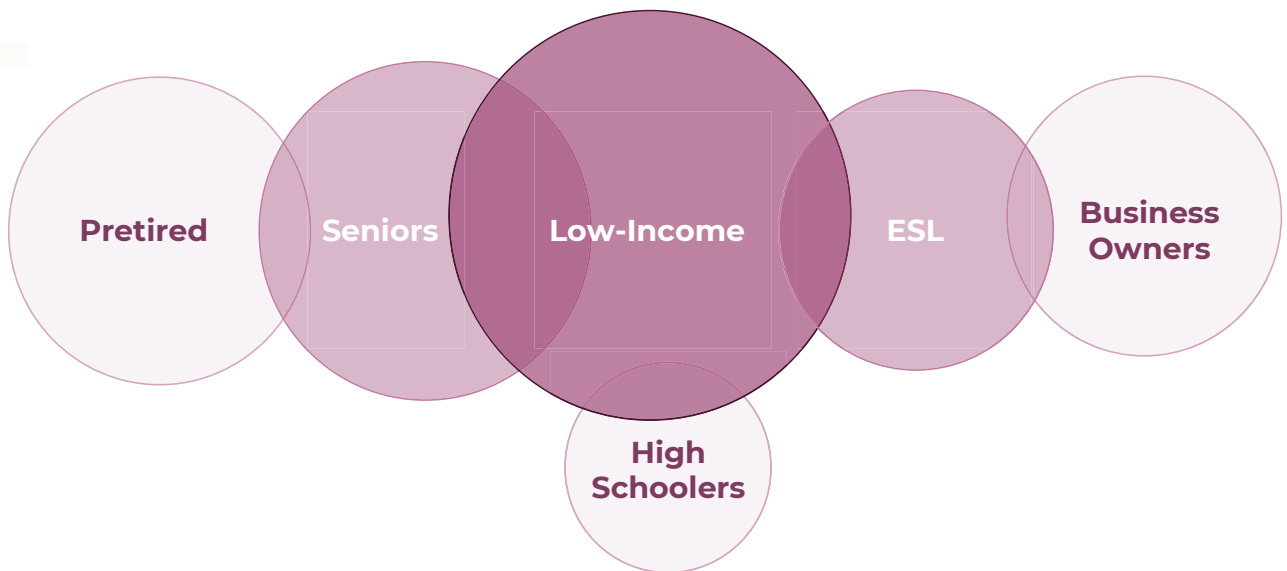
Examples of questions that were asked

- Tell me about a time you were frustrated with technology
- How do you use technology on a daily basis to accomplish your goals?
- If you don't know the answer to something tech related - talk me through your process of finding the answer
- Tell me about your internet plan and connection speed
- Have you ever seen some else do something with tech that you don't know how to do but wish you could?
- What is your biggest priority (Devices, training, connectivity)?

.....>
 Oct 17' March 18'

Marty

Big Picture: Segments with overlapping needs and opportunities



Marty

Overview of segments and their priorities

Segment	Barrier 1	Barrier 2
Pretired	Training specific to their needs, e.g online supplemental income opportunities	Reliable high-speed internet to build digital skills
Seniors	Basic training (focused on social media and photo sharing) in an accessible and constant location	Better devices (not hand-me downs and cheap androids)
Low-Income	Cheap smartphone training specific to needs (financial, housing, social services)	More user friendly devices (than obamaphone) + internet
ESL	Similar to low income training specific to needs (financial, housing, language, social)	Increasing connectivity in affordable housing options
High Schoolers	Expand chromebook loan program within schools	High-speed internet access at homes
Business Owners	Affordable high-speed internet connection	Access to digital marketing and enterprise software tools

Marty

“We need to educate and create awareness first. Explaining the reasons why use Uber/Lyft are important before teaching them how-to do it...”

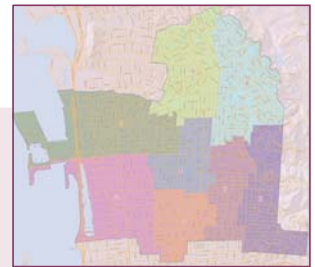
Steve Adashi, J-Sei Tech Teacher

“In a perfect world when internet works 100% of the time - it’s all good. But I was teaching someone how to use lyft but their GPS didn’t work. It was like teaching someone to play a bad instrument. The internet has to work”

Nathan, teacher at CTFORAT

Pretired

Pretired - 9 Interviews



Organizations & Active Programs

- **J-Sei:** J-Sei/U.C Berkeley tech training classes
- **The Continuum:** Aging friendly initiative
- **Osher lifelong learning:** UC Berkeley community of adults 50+
- **Ashby Village:** Matches pretired volunteers with seniors in need.
- **Center for Accessible Technology:** Making the digital world available to all
- **Berkeley Public Library:** Library in downtown Berkeley

Barriers

Level of concern

Training & Awareness

Internet Speed

Devices



Opportunities for partner organizations

1. **Osher lifelong learning:** Building out Oshers program to be tech focused (use Marty curriculum)
2. **CTforAT:** Promote their iPad/computer training course curriculum throughout the community (library, continuum)
3. **The Continuum:** Work closely with them as they roll out their Aging program in the community
4. **Marty:** Use training to teach community how to earn supplemental income

“Having enough money to live on to survive and employment are the top 2 biggest problems for the aging population. These gaps need to be bridged by technology.”

Steve Lustig, The Continuum

Pretired

“25% of berkeley population will be 65+ by 2030”

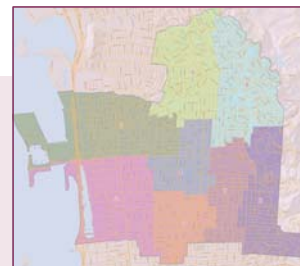
Steve Lustig, The Continuum

“A big barrier for seniors and tech is security when they share their personal information”

Steve Adashi, J-Sei

Seniors

Seniors - 12 Interviews



Organizations & Active Programs

- **Berkeley Senior Centers:** CoB Senior focused support initiative
- **The Continuum:** The Continuum aging friendly initiative
- **Ashby Village:** Matches pretired volunteers with seniors in need.
- **Center for Accessible Technology:** Making the digital world available to all
- **Berkeley Public Library:** Downtown library
- **The Center for Independent Living:** Provides support for people with disabilities to live independently
- **CITRIS:** The Center for Information Technology Research in the Interest of Society

Barriers

Level of concern

Training & Awareness

Devices

Internet Speed



Opportunities for partner organizations

1. **Berkeley Senior Centers:** Expand partnership w/ Berkeley Student Cooperative to provide tech training in senior centres. Utilize comp labs in centres.
2. **Berkeley Senior Centers:** Partnering with Community Living Campaign/SF Connected training
3. **BPL:** Library curriculum (beginners/senior focused) and training the librarians - e.g Apple store training
4. **BPL:** Fixed location and times for tech support.
5. **TechExchange Fair:** Distribute devices to students

Marty

“When I was working I could always run and get someone younger to help me with new tech things but now that I have been retired over 15 years, it all started coming in and I didn’t know who to ask. It’s difficult.”

Emmy, J-Sei Senior Student

“It’s been less about accessing internet and more about getting a phone. There needs to be more awareness around ways to get an Obama Phone and then use it effectively ”

Krupa, The Suitcase Clinic

“Low-income people have the cheaper android phones. These are much less user friendly which makes it even harder to learn how to use”

*Nathan, Tech Teacher
CFORAT*

Low-Income

Low Income - 9 Interviews

Organizations & Active Programs

- **Building Opportunities for Self Sufficiency (BOSS):** Center for homeless community
- **Homeless Action Centre:** Provides legal services to people that are homeless
- **Resources for Community Development:** Creates and preserves affordable housing
- **Oxford Plaza:** Affordable housing community
- **The Suitcase Clinic:** Multi-service drop-in center
- **Berkeley Public Library:** Downtown library
- **TechExchange:** Provides free internet, training and devices to low-income families



Barriers

Level of concern

Training & Awareness

Devices

Internet Speed



Opportunities for partner organizations

1. **BPL and affording housing units:** Create training program specific to Obama Phone
2. **CoB Social Services:** Circulate EveryoneOn program (eligibility checker) through affordable housing communities
3. **Marty:** Circulate training content (via BPL) to teach community how to earn supplemental income
4. **Homeless action center and CoB:** Get Online Mailbox addresses for homeless community
5. **CoB:** Establish public phone charging station

“... immigrants want internet to call their families or stream international tv shows. It’s a struggle to provide fast internet.”

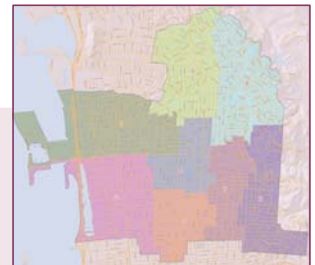
Quiana, Oxford Plaza

“For BAHIA parents it would be great to get them onboard with tech as that trickles down to the children.”

Beatriz, BAHIA

ESL

ESL - 5 Interviews



Organizations & Active Programs

- **J-Sei:** J-Sei/U.C Berkeley tech training classes
- **Oxford Plaza:** Affordable housing community
- **Bay Area Hispano Institute for Advancement (BAHIA):** Day care center that provides bilingual childcare

Segment Note: Very broad segment, overlapped a lot with low-income (except J-Sei) - difficult to find insights specific to this segment.

Barriers

Level of concern

Training and awareness

Internet Speed

Devices



Opportunities for partner organizations

1. **Affordable Housing Units and CoB:** Increasing connectivity in communities with high density of immigrant residents
2. **Berkeley Public Library:** Distribute easy to learn language apps (e.g Duolingo, FluentU, Rosetta Stone) to non-native English speakers

“ The connectivity is not reliable and frequently drops. This slows down customer interactions, and takes manager time and effort to fix.”

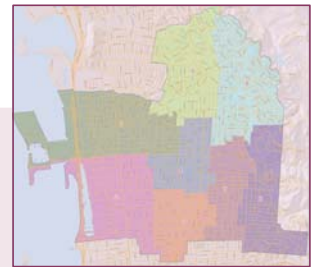
Christina Souza, Solano Ave

“...digital skills are definitely a barrier to growth, but most of them are not really interested in growing.”

Yavette, BAOBOB

Business Owners

Business Owners - 9 Interviews



Organizations & Active Programs

- **BAOBOB:** Bay Area Organization of Black Owned Businesses
- **Solano Business District:**
- **8 independent business owners interview via survey (findings):**

https://docs.google.com/spreadsheets/u/2/d/1KdBT6Ea5qfES6azG0O-Q9qGmHB8M_LvJ7ztNkRu38/edit?oid=103165799718826133571&usp=sheets_home&ths=true

Barriers

Level of concern

Internet Speed

Training & Awareness

Devices



Opportunities for partner organizations

1. **CoB OED:** Better understand the nature and scope of businesses' connectivity concerns vis the Broadband MasterPlan
2. **CoB OED:** Encourage Berkeley's business networks and district associations to explore opportunities to get bulk, discounted rates for ISP.
3. **Business Districts and CoB:** Business district wide training focused on Digital Marketing and enterprise software training. Local SEO, FB Ads, Google Ads, CRM

Insights regarding user segments and their needs

01

Seniors, pretired, and low income seemed to present the most complicated and pressing needs. Seniors have support from numerous organizations. There is a need to identify organizations to support pretired and low-income.

02

High-Schoolers seem to struggle with getting access to laptops (chromebooks) to take home with them.

03

It seems ESL are currently being served through low-income focused organizations

04

Business owners have identified having access to high-speed affordable internet as a priority

Marty

Questions & Suggestions

evamarie@martyhow.com

Marty

Part -1

Community Partner	About the Partner	Segments and Opportunities
J-Sei	J-Sei offers different activities and programs focused on teaching new skills to older adults. The organization has its roots on the Japanese community in the area, in addition to the programs they offer several services for seniors	<ul style="list-style-type: none"> • Seniors (>60yrs) - Training and awareness programs about technology, devices, and internet
Bay Area Hispano Institute for Advancement (BAHIA)	Organization established by and for Latino families in the Berkeley area. Their focus is to provide childcare and education bilingual services to children	<ul style="list-style-type: none"> • ESL (<10yrs) - Training and awareness programs about technology <ul style="list-style-type: none"> - Bahia School Age Program - Centro VIDA Children's Center - La Academia de Bahia
Osher Lifelong Learning Institute	This is a program from the University of Berkeley that is focused on deliver programs and events for adults who are interested in new areas of knowledge	<ul style="list-style-type: none"> • Pretired (>50yrs), and Seniors - Creation of workshops and lectures about training and awareness about technology and public access to internet and devices.

Marty

Part -2

Community Partner	About the Partner	Segments and Opportunities
Center for Accessible Technology (CforAT)	CforAT's focus is on access to computers and technology for people with disabilities, and in some cases who are low-income. Their focus in on teaching people with disabilities how to have an independent life by using technology	<ul style="list-style-type: none"> • Seniors (>60yrs), Low-Income, Business Owners - CforAT provides a great opportunity to reach a big number on people in two main segments. They also provide services to businesses. <ul style="list-style-type: none"> - Ipad Loan - Senior Connects - Assistive Technology Explorations
Homeless Action Center (HAC)	The Homeless Action Center (HAC) provides no-cost, barrier-free, culturally competent legal representation that makes it possible for people who are homeless or at risk of becoming homeless to access benefits such as Supplemental Security Income (SSI)	<ul style="list-style-type: none"> • Low-Income - HAC can create a program to assists its clients by using technology to apply for social benefits
Berkeley Public Library	Public service provided by the City of Berkeley	<ul style="list-style-type: none"> • Seniors, Pretired, Low-Income, ESL - General assistance in access to technology and internet for job search and other relevant needs (provide Marty's learning part curriculum to users)

Marty

Part -3

Community Partner	About the Partner	Segments and Opportunities
The Center for Independent Living (CIL)	The Center for Independent Living (The CIL) provides advocacy and services that increase awareness, collaboration, and opportunity among people with disabilities and the community at large	<ul style="list-style-type: none"> ● Seniors and High Schoolers - Create more programs to bring support to the population with disabilities, such as: <ul style="list-style-type: none"> - Transit App and Trip Planning Tutorials
The Continuum	Community aging movement in the City of Berkeley	<ul style="list-style-type: none"> ● Seniors and Pretired - Create workshops and events. The organization has the potential to be a channel to seniors and an ideal place to centralize access to digital training (Marty), access and connectivity.
The Suitcase Clinic	The Suitcase Clinic is a humanitarian student organization and volunteer community offering free health and social services to underserved populations in the city Berkeley.	<ul style="list-style-type: none"> ● Senior, Pretired, and Low-Income - Work on future tech programs for minorities and underserved population in different ages. It could be part of the benefits provided to their clients in their implemented programs <ul style="list-style-type: none"> - The General Clinic, - the Woman’s Clinic, and - the Youth/LGBTQ+ Clinic

Marty

Part -4

Community Partner	About the Partner	Segments and Opportunities
Ashby Village	The Organization is a non-profit focused on provide services for senior adults with the objective to develop new skills so they can age independently in their own houses	<ul style="list-style-type: none"> ● Seniors and Pretired - Create more workshops and events like “TECH TIPS - Staying connected in our digital world”. The organization also has the potential to be an ideal place to centralize access to tech training.
Solano Business District	Initiative created by the Solano Avenue merchants and the Berkeley City Council for the businesses in the Solano District	<ul style="list-style-type: none"> ● Business Owners - Business programs fostering advantages of technology implementation on local businesses
TechExchange	Tech Exchange is a nonprofit project fiscally sponsored by the Oakland Public Education Fund dedicated to providing digital equity to all East Bay residents. They employ a re-use model by refurbishing donated computers and providing them to families, schools and community organizations	<ul style="list-style-type: none"> ● Seniors, Pretired, ESL, Low-Income, and High Schoolers - New initiatives to provide access to devices to different segments of the population

Marty

Part -5

Community Partner	About the Partner	Segments and Opportunities
RISE Youth Program	Dedicated to the social and academic advancement of at-risk teenagers	<ul style="list-style-type: none"> ● Low-Income, and High Schoolers - Programs on tech awareness
Berkeley Bridge	Bridge Program takes C-students from middle school and offers afterschool homework support, advice, and hand-holding by dedicated teachers. The goal is to keep those C students from slipping.	<ul style="list-style-type: none"> ● High-Schoolers, Low-Income - Channel to distributing devices for low-income students (e.g chrome books) and hosting Tech-Exchange fair
Berkeley High School	High school in City of Berkeley	<ul style="list-style-type: none"> ● High-Schoolers, Low-Income - - channel to serve this segment.

Marty

Part -6

Community Partner	About the Partner	Segments and Opportunities
Oxford Plaza	Low Income Housing project in the City of Berkeley	<ul style="list-style-type: none"> ● Low-Income - Collaboration program to provide higher internet speed and tech education to property residents
Berkeley Unified School District	Berkeley Unified is responsible for educating several students in public elementary, middle, and high schools. The district also has preschool facilities and an Adult School	<ul style="list-style-type: none"> ● Low-Income, High Schoolers, and Pretired - Programs, workshops, and event on tech awareness and its benefits. Distributing devices to those in need.
Berkeley Senior Centers	Berkeley senior centers offer a variety of enrichment activities and support services designed to empower seniors	<ul style="list-style-type: none"> ● Seniors and Pretired - Training and awareness programs about technology, devices, and internet

Marty

Part -7

Community Partner	About the Partner	Segments and Opportunities
Bay Area Organization of Black Owned Businesses (BAOBOB)	The Independent Business Alliance, BAOBOB, was launched by independent local business owners	<ul style="list-style-type: none"> ● Business Owners - Business programs fostering advantages of technology implementation on local businesses
Center for Information Technology Research in the Interest of Society (CITRIS)	The organization is focused on the creation of information technology solutions for society's most pressing challenges.	<ul style="list-style-type: none"> ● Seniors, Pretired, ESL, Low-Income, and High Schoolers - New initiatives to provide access to knowledge and devices to different segments of the population
Resources for Community Development	Resources for Community Development creates and preserves affordable housing for people with the fewest options, to build community and enrich lives	<ul style="list-style-type: none"> ● Low-Income - Collaboration program to provide higher internet speed and tech education to property residents

Marty

Part -8

Community Partner	About the Partner	Segments and Opportunities
U.C Berkeley	University of California Berkeley	<ul style="list-style-type: none"> ● Low-Income, Seniors - Utilizing Cal students to facilitate training and workshops (similar to J-Sei/CAL partnership)
Building Opportunities for Self Sufficiency (BOSS)	Organization dedicated to helping homeless, poor, and disabled people achieve health and self-sufficiency, and to fighting against the root causes of poverty and homelessness	<ul style="list-style-type: none"> ● Low-Income - Work on future tech programs for minorities and underserved population in different ages. Programs could be focused on providing new digital skills and assistance in job application

Marty

Attachment 3: Case Studies by Digital Equity Framework Category



Below is a summary of all of the case studies researched by Nutter Consulting with regard to other cities' solutions to bridge the digital divide. They are organized into two categories: equity in *infrastructure* and equity in *programming*. For each of these categories, there are three common strategies that other cities have pursued.

Digital Equity Framework

<i>Infrastructure</i>	<i>Programming</i>
1. Laying fiber and cable infrastructure in underserved areas & connecting community serving buildings to broadband cable network	2. Digital Literacy Training
2. Implementing free-WiFi	2. Device access through discounts and donations
3. Establishing innovation zones	3. Grant programs that support training and device donations

Infrastructure

Network Implementation and Connecting Buildings and Assets

- Austin, TX - Greater Austin Area Telecommunications Network (GAATN):** In 1993, Austin created GAATN, a metropolitan-wide network for 7 public sector partner organizations that now supports 371 miles of fiber-optic cables at over 540 locations. The public sector partners include Austin Independent School District, City of Austin, Travis County, State of Texas DIR, Austin Community College, The University at Texas Austin and Lower Colorado River Authority. GAATN connects public facilities to broadband, including city government buildings, local universities, courthouses, parks and public schools. GAATN saves the partners approximately \$15 million per year by sharing the costs of the cable.
- Boston, MA - Boston Fiber Optic Network (BoNET):** The Boston Fiber Optic Network (BoNET), which provides service for City offices and public safety, uses dark fiber assets to connect 180 city buildings, including community centers where there is free access to internet-connected computers and

training. The city has plans to double that in the next year. They are expecting to have a fiber network based on redundant rings to likely 300 buildings within the next 2 years. This includes community centers where the city provides free broadband access and training. They are also extending BoNET to every public school. It also includes public convenience WiFi, Boston Wicked Free WiFi.

- **Chicago, IL - Comcast Internet Essentials:** Comcast Internet Essentials is a program designed to bridge the digital divide by offering low cost Internet and devices as well as digital literacy training. Eligible participants include families receiving food stamps, senior citizens and community college students. Comcast invested \$125,000 to install a public computer lab at the Chicago Housing Authority (CHA), which includes both a mobile learning lab and digital literacy training programs.
- **Chicago, IL - Connect Chicago**, launched in 2012, is a donor advised fund led by the City Tech Collaborative that brings together both private and public partners for digital goals in the community. They have created a network of over 250 community centers in Chicago where residents can access the internet for free. They created a web based map that shows the locations at <https://data.cityofchicago.org/Education/Connect-Chicago-Locations-Map/4jzv-pgsc/data>
- **Kansas City, MO - Google Fiber Community Connections and network access:** Google has implemented the Google Fiber Community Connections program in Kansas City, an effort working with community partners to improve Internet Access. The program has helped 164 schools, libraries, community centers and City-owned buildings connect to the Internet.⁷
- **Kansas City, MO - Partners Free Network Foundation and Connecting for Good** established free network access to over 600 low-income residences.⁴
- **Santa Monica, CA - Digital Inclusion Pilot with CityNet:** Through the CityNet initiative, the City of Santa Monica plans to install affordable, 10 Gbps broadband in 10 affordable housing units, as a part of their Digital Inclusion Pilot. Additionally, each housing complex has a Community Room with free 1Gbps Internet and at least one desktop computer. The first housing unit was successfully completed in 2015.
- **Urbana-Champaign, IL - Connecting Community Anchor Institutions:** Through the UC2B nonprofit program, Urbana-Champaign has connected 256 Community Anchor Institutions (CAI) with free Internet. CAIs were identified as organizations who “serve vulnerable populations who may not otherwise have Internet access, including, but not limited to: low-income families; the homeless; battered women and their children; people with disabilities; early education, youth, and crisis centers; and senior living facilities.”

Free public WiFi which reaches downtown areas and other discrete areas

- **Chicago, IL - Chicago WiFi:** In Chicago, establishing “free wireless service in parks and public spaces citywide” was one of the three equity goals outlined by Mayor Emanuel. In accordance with this goal, the city created ChicagoWiFi, a free public WiFi service available at City facilities, all Chicago public libraries and other key public places, including the Cultural Center, Daley Plaza and

Millennium Park. Free Wi-Fi is also available at 21 senior centers and six community service centers located across the city. In addition to leveraging unused fiber in the subway systems, the City of Chicago has engaged private sector companies to provide some of the free WiFi, such as SilverIP Communications' coverage of Millennium Park and Google's free WiFi in two other public parks.

- **San Jose, CA - Terragraph WiFi:** Facebook's Terragraph system offers free gigabit WiFi in downtown San Jose. Facebook has agreed to provide the hardware, while the city gave access to public infrastructure. To date, Facebook has installed 250 nodes.
- **Chattanooga, TN - NoogaNet:** NoogaNet offers free wifi in several Chattanooga innovation districts, Youth and Family (YFD) Centers, city buildings and libraries across the city. The city has also facilitated infrastructure to access NoogaNet; the cost of these units is covered through a partnership with EPB. There are approximately 27 YFD Centers throughout the city that require both indoors and outdoors infrastructure to sustain NoogaNet.
- **Kansas City, MO - Sprint's public WiFi:** Sprint has partnered with the city to install a new public WiFi network downtown. The project does not receive city dollars; instead, the partnership waives permit fees and Sprint will use 50% of the network for private uses.

Establishing Innovation Zones

- **Chicago, IL - Broadband Innovation Zones:** The City of Chicago has identified 7 Innovation Zones. They are taking bids for private companies to provide gigabit speed broadband for the businesses, universities and schools, hospitals, research institutions, and other community organizations in each zone, estimated to be between \$500,000 to \$2.3 million annually. Each plan needs to have an aspect a Community Plan, giving free or low cost WiFi in public spaces or low-income areas. Additionally private partners are expected to provide services that include gigabit speed Internet for businesses, universities, hospitals and community organizations within each district to foster innovation and economic development.
- **Chattanooga, TN - Innovation District:** Chattanooga has created an innovation district to encourage economic development and job creation in the city. This downtown area has free WiFi access through NoogaNet. The city has also encouraged business accelerators, such as the Enterprise Center, to help businesses capitalize on the broadband availability.
- **Pittsburgh - Eco Innovation Zone:** The City of Pittsburgh in partnership with Uptown Partners of Pittsburgh, Oakland Planning and Development Corporation, Sustainable Pittsburgh, Urban Redevelopment Authority of Pittsburgh, Port Authority of Allegheny County, and Allegheny County Economic Development, neighborhood residents and groups, universities, and other partners is developing a new type of neighborhood based project by combining the goals of Ecodistricts and Innovation Zones.

Programming

Digital Literacy Training

- **Austin, TX - Austin Free-Net and Google Fiber:** Free-Net offers free adult computer training and training solutions for nonprofits, residents and government agencies. Additionally, Google Fiber has leveraged its partners to provide over 10,000 hours of digital literacy training to residents.
- **Boston, MA: Tech Goes Home:** Tech Goes Home, a nonprofit created in 2000, focuses on empowering communities to access digital tools and bridge the digital divide. With backing from the City of Boston, Tech Goes Home provides a 15-hour training program aimed at helping immigrants, underserved populations, individuals with disabilities, the unemployed and underemployed and underserved local merchants.
- **Boston, MA: The Timothy Smith Network:** This network serves the Roxbury Township, which geographically includes many underserved populations in the City of Boston. Through this program, eligible residents have access to training (as well as devices) to get licensed in Microsoft accredited certifications or other software. The goal is to provide people with tools for future employment.
- **Chicago, IL - Internet To Go:** The Chicago Internet To Go program enables anyone with a Library card to receive digital literacy and skills coaching. The Chicago Public Library Branches are staffed with “CyberNavigators”, computer tutors that provide access to training and helpful resources for adults and youth. This effort has been funded since 1998 by the Chicago Public Library Foundation.
- **Chicago, IL- Chicago Connect:** Through Connect Chicago, the city provides more than 8.6 million hourly computer and technology training sessions on an annual basis to Chicago residents in community centers at over 250 locations across Chicago (with funding from a Broadband USA Grant).
- **San Jose, CA - PACT:** The San Jose division of the organization People Acting in Community Together (PACT) received a \$200,000 grant from the Knight Foundation in 2013. The program offers training for low-income residents to use the Internet and online tools to address community challenges, such as public safety or elder health care services.

Device Access and Donations

- **Boston, MA - Tech Goes Home:** The program provides incentives to participate in their training program with a subsidized Netbook for ~\$50 at the conclusion of the 15-hour training.
- **Chicago, IL - Internet To Go:** At 3 Chicago public libraries, the Internet to Go program enables anyone with a Library card to check out laptops or tablets for up to three weeks at a time. Internet to Go is supported through a \$400,000 grant by the Knight Foundation and \$175,000 from Google.
- **Kansas City, MO - Digital Upcycling Program:** The City Council has partnered with The Surplus Exchange to create the Digital Upcycling Program. Those eligible for devices include housing authority residents and HUD voucher

residents participating in ConnectHome who have completed a course in digital life skills community learning centers operated in HAKC computer labs, city community centers and other locations; and low-income residents who have completed a course in digital life skills. Partners include the Housing Authority, the Full Employment Council, Surplus Exchange, Connecting for Good, and other various unnamed nonprofits. Eligible recipients can purchase refurbished computers for as low as \$55.

- **Austin, TX - Grant for Technology Opportunities Program (GTOP) and Google Fiber:** In 2018, 269 refurbished Dell Optiplex desktops have been made available for distribution and are leased to recipients. Due to purchasing laws, the city government is only allowed to loan the devices; they are currently working to get designated as a delegated surplus property authority by City Council. Google Fiber and the Housing Authority City of Austin (HACA) have helped 530 Austin residents earn a refurbished device through device donations provided by Austin Community College.
- **Austin, TX - Austin Free-Net:** The City established Austin Free-Net in 1995, which provides public access to computers and the Internet to those who cannot afford it. They host free computer centers at multiple sites to increase Internet accessibility, with more than 100 computer stations, providing an average of 100,000 computer user sessions per year.

Grants for community partners (enabling training and access to devices)

- **Urbana-Champaign, IL - Community Benefit Fund:** Urbana-Champaign's Community Benefit Fund provides funding for community members and NGOs pursuing projects that leverage the broadband network for community development and social engagement, such as community computer labs at neighborhood churches, educational programs to teach kids basic coding and electronics design principles, and laptops for refugees, asylees, and other immigrants visiting the East Central Illinois Refugee Mutual Assistance Center. In their new private-public partnership, iTV3 committed to providing \$50,000 per year for the first five years. For subsequent years, UC2B's Policy Board mandates that at least 2-5% of annual revenue will go toward the Community Benefit Fund.
- **Austin, TX - Grant for Technology Opportunities Program (GTOP):** Austin's GTOP, which awarded \$200,000 in grants last year, is directed at improving the community's ability to fully participate in the digital society. The GTOP offers grants of \$10,000 to \$25,000 for projects that create digital opportunities and promote digital equity. GTOP provides \$10,000 to \$25,000 individual grants to community groups or other non-profits. Since its creation in 2001, Austin has distributed over \$9 million. GTOP funding comes from either a back charge to the municipally owned utility and/or an allocation of funding from enterprise departments across the organization.
- **Kansas City, MO - Digital Inclusion Fund:** The fund is operated by the Greater Kansas City Community Foundation. They allocated over \$300,000 to community groups aimed at narrowing the digital divide in the KC metro area.

BROADBAND EQUITY RESEARCH REPORT

THE CITY OF BERKELEY



May 1, 2018

Prepared By
Melanie Nutter, Principal
Katherine Lee, Consulting Associate

PURPOSE & SCOPE

The City of Berkeley seeks to link their broadband strategy to equitable growth and development. The main goals of the City's broadband initiative are to:

1. Expand fiber access for public facilities and other City services.
2. Improve Berkeley's economic competitiveness and support economic development.
3. Address the 'digital divide' impacting low-income and disadvantaged residents.

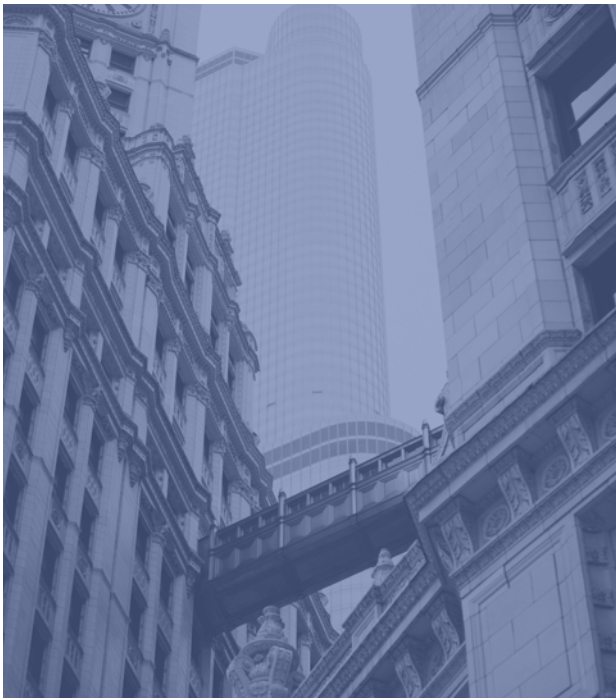
The purpose of this research project is to:

1. Identify cities that prioritize equity as core to their broadband strategy and investigate best practices and tactics for success
2. Engage cities on their funding strategies and broadband development plans
3. Make recommendations for the City of Berkeley on equity in advance of their development of a Broadband Masterplan.

INITIAL RESEARCH PHASE 1

Nutter Consulting reviewed 21 cities and their broadband initiatives

- Alameda, CA
- Austin, TX
- Baltimore, MD
- Boston, MA
- Boulder, CO
- Burlington, VT
- Cambridge, MA
- Chattanooga, TN
- Chicago, IL
- Concord, CA
- Kansas City, KS
- Los Angeles, CA
- Oakland, CA
- Portland, OR
- Richmond, CA
- San Francisco, CA
- San Jose, CA
- San Leandro, CA
- Santa Monica, CA
- Seattle, WA
- Urbana-Champaign, IL



WHAT WE REVIEWED

- Broadband RFPs: Cities outline their stated goals for broadband infrastructure development and the criteria for proposals.
- Broadband Master plans: Cities provide background that informed the goals and strategies for broadband.
- Broadband equity plans: Cities define equity in the context of their population needs and their strategic goals to address disparities in affordability and equity,

PUBLICLY OWNED (4)

The main challenge to municipal-owned plans is securing necessary funding.

- Chattanooga, TN: Electric Power Board
- Burlington, VT: Burlington Telecom
- Santa Monica, CA: CityNet

PUBLIC - PRIVATE PARTNERSHIP (11)

The other main tradeoff in private-public partnerships is decreased local control, especially in executing equity goals.

- Chicago, IL: Google Fiber
- Seattle, WA: Gigabit Squared, CenturyLink, Wave Broadband, Cascade Networks
- Kansas City, MO: Google Fiber
- Austin, TX: Google Fiber
- Portland, OR: CenturyLink and Comcast
- Boston, MA: BNN-TV, NNN, and WGBH



INSIGHTS ON PUBLICLY-OWNED VERSUS PUBLIC-PRIVATE PARTNERSHIPS

from interviews with key stakeholders

- Municipalities take a long-term perspective on broadband build-out
- Private partners will want a monopoly on the market that may reduce broadband options for communities and future competition
- However, cities with high competition benefit from lower prices anyway.

EQUITY

Assets and Access

1

CITY BUILDINGS

A common priority for municipal-owned broadband plans is connecting city buildings to fiber optic cable.

2

AFFORDABLE HOUSING SITES & UNDERSERVED NEIGHBORHOODS

To increase equitable Internet access, cities have made connectivity in these areas a priority.

3

COMMUNITY CENTERS

Cities have prioritized Internet connectivity for community centers, since these organizations traditionally serve underserved populations.

EQUITY

Programming and Access

1

TEACHING DIGITAL LITERACY

In order to ensure residents are best utilizing their broadband access, cities have established programs to increase digital literacy.

2

REDUCING COSTS OF CONNECTIVITY

Cities have decreased rates for low-income communities as a part of their broadband plans. This ensures that the barrier to access is reduced.

3

ACCESS TO COMPUTERS AND DEVICES

There are two main strategies to provide devices: grants and refurbished devices.

DEEP DIVE CITY RESEARCH & INTERVIEWS PHASE 2

Nutter Consulting interviewed key stakeholders for more detailed information about each city's broadband & equity strategies and financing opportunities.

- **Austin, TX: Jesse Rodriguez and John Speirs**
- **Chattanooga, TN: Brent Messer**
- **Boston, MA: Mike Lynch**
- **Urbana-Champaign, IL: Mike Smeltzer**



STAKEHOLDER INTERVIEWS

URBANA-CHAMPAIGN, IL

- *Includes 187 miles of fiber-optic broadband network cables*
- *Serves 1,058 households, increasing the percent of connected households to 45%*
- *Connected 294 Community Anchor Institutions that help underserved populations*

Urbana-Champaign Big Broadband (UC2B) is a collaborative non-profit agency representing 4 main entities: City of Urbana, City of Champaign, the University of Illinois, and service provider iTV3 Broadband.

HISTORY

- UC2B built out the fiber network through federal, state, and local funding sources
- After the first year of operation, the project was transitioned to a public-private partnership

FUNDING

UC2B received funding for their two-part broadband development plan. They connected 294 Community Anchor Institutions that serve vulnerable populations and identified 11 underserved census block groups to bring fiber to homes.

• Urbana-Champaign applied for funding from the National Telecommunications and Information Administration's (NTIA) Broadband Technology Opportunity Program. They received \$22 million grant for 2010-2012 through a two-part plan.

• UC2B also received approximately \$3.5 million in additional funding from the Illinois state government.

• As a part of the NTIA grant, UC2B had to match about \$3.5 million with local funds.
• They raised money through pre-sold fiber leases. They sold indefeasible rights of use (IRUs) to 6 local entities, including the local mass transit district.

FEDERAL

STATE

LOCAL

UC2B EQUITY PLAN

"Affordable broadband is available everywhere and everyone has the means and skills to use valuable broadband applications"

COMMUNITY BENEFIT FUND

iTV3, a St. Louis based ISP, has committed to provide \$50,000 per year for the first 5 years of the contract. Community members and NGOs can pursue funding for projects that leverages the broadband network for community development and social engagement. UC2B distributed its first round of funding on January 1, 2018.

CONNECTING COMMUNITY ANCHORS INSTITUTIONS

By doing this, UC2B hopes to help groups served by CAIs that historically lack access to Internet services, including low-income families, homeless, and youth or senior facilities.

FIRST GRANTS OF THE COMMUNITY BENEFIT FUND

UC2B distributed the first round of funding in 2018, a total of over \$112,000 to 11 local recipients. Below is a list of the types of programs funded, and an example of each.

3 awards: community computer labs sponsored by neighborhood churches

- St. Luke's Church and New Hope Academy will be refurbishing and re-starting their after-school and community computer labs.

2 awards: programs aimed at preparing youth for a future in IT

- Ghetto Genius will be using their grant to expand a curriculum designed to teach kids basic electronics design principles as well as initial coding through a project focused on radio-controlled cars.

1 award: prisoner re-entry education program

- First Followers will use a mobile computer lab to meet with recently paroled former prisoners and work with them to help them acquire life and employment skills so they can be successful in their new life.

2 awards: programs for immigrants and refugees in the community

- ECIRMAC - the East Central Illinois Refugee Mutual Assistance Center — needed laptops so that refugees, asylees, and other immigrants who visit their office could use these new computers to enroll their kids in school, apply for SNAP benefits, and other services in an environment where ECIRMAC staff can help with language and/or computer use questions.

1 award: housing complex providing shared wireless access to residents

- Homestead apartments simply needed to install some mesh routers to distribute wireless connectivity to their residents.

2 projects: IT services to medical programs that serve the area

- Both Promise Healthcare and Avicenna Health Center needed equipment to update medical records services.

KEY INSIGHTS FROM INTERVIEW WITH MIKE ON UC₂B

COMMUNITY HELP DESK

UC2B plans to roll out a Community Help Desk in the next 2-3 months. This initiative would provide IT support for low-income families that can't afford services like the Geek Squad, to help with tasks such as setting up computers in the home.

PRE-SOLD IRUS TO RAISE LOCAL FUNDS

If Berkeley plans to build a fiber network with municipally raised funds, IRUs are a great way to generate capital. There is a clear incentive for fire stations, public schools, public safety buildings and medical facilities to save money.

PRIVATE PARTNERSHIPS

If the fiber operations are turned over to a private partner, Mike suggests that it isn't fully turned over to the first company. By only giving the first company control over half, the city could have sold or leased the other half to other providers.

AUSTIN, TX

A state law of Texas prohibits Austin from having municipally owned broadband. Therefore, they pursued Google Fiber in 2013.

- At the same time, the city created the Digital Inclusion Steering Committee that transitioned into the Community of Practice once the Digital Inclusion Strategic Plan was drafted.
- Beginning in 2011, the city conducts residential technology surveys every 3 years with the University of Texas at Austin.



PILLARS OF DIGITAL INCLUSION



DEVICE ACCESS

Connecting residents to computers and other devices to access the Internet



INTERNET

Ensuring that residents have access to Internet



KNOWLEDGE

Helping residents gain knowledge to utilize the other two through digital literacy training

DIGITAL INCLUSION PROJECTS

GRANT FOR TECHNOLOGY OPPORTUNITIES PROGRAM

The program offers individual grants of \$10,000 to \$25,000 for projects that create digital opportunities and promote digital equity. It also offers technology grants for projects with similar goals. For 2018, 269 refurbished Dell Optiplex desktops (towers only, no screen or peripherals) are available for request.

AUSTIN FREE-NET

This program provides public access to computers and the Internet through free computer centers with more than 100 computer stations. Free-Net also offers free adult computer training and training solutions for nonprofits and government agencies.

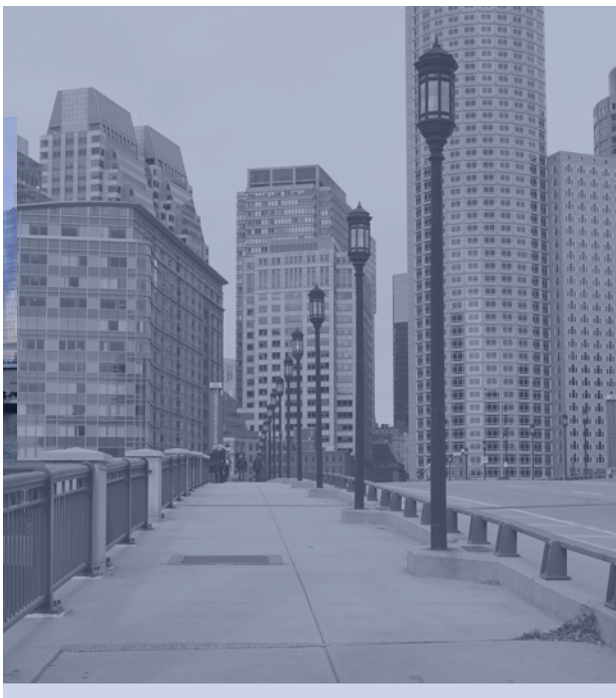
TAKEAWAYS FROM AUSTIN INTERVIEW

Key Findings from the Technology Surveys

- Over 75% of those that responded to the survey indicated they are connected to the Internet through their smartphone
- Many members of the homeless population have access to smartphones but the major upstream barrier is the data plan.

The City's Role in a Public-Private Partnership

The City of Austin has embraced its role of goal-setting and facilitating a shared vision through its networks, acknowledging that their goal is not to be the direct service provider.



BOSTON, MA

The City of Boston pursued broadband development through a public-private partnership.

- Because there are 3 providers (Verizon, Comcast and RCN), Boston did not build a municipally-owned fiber network. Instead, they ensure there is competition. Approximately 60% of the city has choice between at least 2 providers.
- They have also acquired dark fiber assets to connect city buildings. The Boston Fiber Optic Network (BoNET) touches 140 city buildings, including community centers where there is free broadband access and training.

DIGITAL EQUITY IN BOSTON

The city views digital equity as a three-legged stool: access, competition, and pricing. The 2 main programs are funded through ~90% city dollars.

TECH GOES HOME

Provides a 15-hour training program aimed at helping immigrants, underserved populations, and underserved local merchants. The program provides the incentive of a subsidized Netbook for ~\$50 at the conclusion of the 15-hour training.

TIMOTHY SMITH NETWORK

Serves the Roxbury Township, an underserved neighborhood. Through this program, people have access to hardware and training to get licensed software. The goal is to provide people with tools for future employment.

DIGITAL EQUITY FUND

Will be funded by the wireless network licenses of the small cell providers, pending their deployment throughout the city. Supported projects should include these goals: 1) help people use the Internet, digital skills, and digital tools to pursue life goals; 2) allow communities to work, play, learn, and engage in civic life on the Internet safely and securely; 3) make decisions based on the needs of their community; 4) work to help households who don't subscribe to broadband get access to this service.

TAKEAWAYS FROM BOSTON INTERVIEW

CHALLENGES WITH NEW CONSTRUCTION

With a large amount of new construction, the city has made developers and the prospective tenants aware of the need for broadband connectivity in their buildings. Often times, building owners will either forget to install cable or will only allow for one vendor. The city has built up a broadband connectivity awareness program to make sure that landlords and future condo owners are aware of building access issues, as it relates to both competition and choice.

2004 WIFI TASKFORCE

This was the only aspect that technically "failed". The taskforce started with an idea to build free municipal WiFi across the city, but since Boston has a private competitive market, they found it wasn't needed.



CHATTANOOGA, TN

The Electric Power Board (EPB), a municipally-owned utilities provider, spent \$330 million on building a fiberoptic network, raising \$220 million in bond money and winning \$111.5 million in federal stimulus dollars.

There is a publicly-owned fiber network throughout their 600 mile service area, offering 10-gigabit-per-second fiber internet service to all residents and businesses.

NOTEWORTHY PROJECTS

INNOVATION DISTRICT

The mayor recently began an initiative to create an innovation district downtown and increase economic development.

NOOGANET

NoogaNet is a free wifi program currently available in the innovation district and other test areas. They are conducting surveys to determine which areas will be effective and cost effective to expand to.

LOW COST INTERNET

The city is working with EPB to provide reduced cost Internet for low income populations. Through one program, families can get 100 mbps broadband at home for \$20-25 per month.

NOOGANET

The operation costs of public wifi are funded through city dollars.

- Success metrics tracked: bandwidth usage, traffic, type of traffic (i.e. devices used)
- EPB funds the installation of units to access NoogaNet. Approximately 27 Youth and Family Development (YFD) Centers have received infrastructure.

Key Lesson

In some wifi areas, the service is being underutilized. One cause was poor advertising by the city. A new marketing campaign is pursuing bus shelter signage and local press coverage to increase awareness.



DIGITAL EQUITY

Internet availability

Specifically, schools have increased technology utilization. Through programs, students have access to Chromebooks, but in underserved areas there is limited Internet access at home.

Utilization of technology

There are education programs aimed at educating adults in the community to make them more technologically proficient.

Economic development

By expanding the innovation downtown, the city hopes to create more jobs and improve the city's economy. Part of the development is facilitated by access to NoogaNet.

CHALLENGES

After Hours NoogaNet Use and Crime

The city has observed a high amount of after hours traffic in certain locations outside of public buildings, some linked to illegal activities. Some potential solutions being considered are a curfew, requiring a password, and the My Chattanooga Initiative.

Device Donation

Due to purchasing laws in the state, the city can't directly facilitate device donation programs. Therefore, they rely on partners, specifically those who work with the YSD Centers, to collect used city material or devices from other sources (like the school board).

INTEGRATION WITH SMART CITY INITIATIVES

Chattanooga considers itself a leader in the smart city space, and has capitalized on using the municipal fiber network to advance new projects.

Transportation

In one part of the city, there is an intelligent traffic system that utilizes the fiber network. They are exploring applications for future automated vehicles.

IoT

One of the city's most recent projects is developing smart meters. The goal is to implement smart meters that can communicate with an app, letting users know where available parking spaces exist.

Data

Using examples of Austin's and Seattle's data collection systems, the city wants to use data to optimize their annual events like the IronMan Challenge and Riverbend Music Festival.

RECOMMENDATIONS FOR BERKELEY, CA

- 1.) Form a Broadband & Equity Taskforce which includes community members, nonprofit organizations, city officials, small business owners, academic researchers and other stakeholders to work with the broadband consultant team.
- 2.) Leveraging the research on other cities as well as the needs of the City of Berkeley, define what equity means for the broadband initiative locally to guide the entire effort.
- 3.) Begin developing a parallel funding strategy both for the broadband infrastructure (longer term) and for the supporting programming (near term).
- 4.) Begin development of an outreach and education effort for underserved communities.
- 5.) Create a mini grant program that would support community partners in executing the equity and broadband strategy.
- 6.) Work with the development community to raise awareness about including conduit in new construction or in building renovations. Could include a review of the building code.
- 7.) Consider the establishment of an innovation/equity/smart district to pilot projects.

QUESTIONS?



THANK YOU!

melanie@nutterconsulting.net



Mayor Murray set out three central strategies to ensure Seattleites have access to affordable and competitive internet service:

- 1) reduce regulatory barriers
- 2) explore public/private partnerships
- 3) examine municipal broadband

- Key partners: departments of the city government, utilities and transportation providers, and the University of Washington
- Could not finance a city-owned broadband network: estimated costs were between \$440-850 million.

ALTERNATIVE PLAN

- Dark fiber leasing to finance infrastructure buildout: partners include CenturyLink, Wave Broadband, Cascade Networks
- Pursued other public-private partnerships: a collaboration with Gigabit Squared will bring broadband to 12 neighborhoods
- Since 2014, more than 60% of single family households have access to broadband internet.

SEATTLE

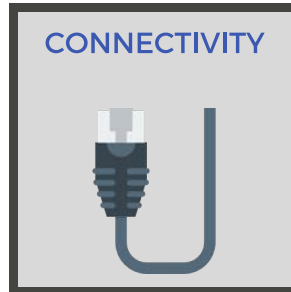


SEATTLE: Digital Action Equity Plan

DIGITAL EQUITY

“ensure all residents and neighborhoods have the information technology capacity needed for civic and cultural participation, employment, lifelong learning, and access to essential services”

The City created 4-6 person working groups to address 3 central equity goals. Each have timelines with benchmarks through 2018.



SANTA MONICA

CityNet is led by an office within the city government tasked with planning and executing broadband expansion, following their incremental build-out plan.

FUNDING

The project was initially funded through a \$530,000 contract with Adelphia Communications Corporation to build a network servicing public schools. By owning the cables, the city started saving \$400,000 per year, paying back the initial loan in the first year. The city created policies to reinvest the savings, allowing incremental network expansion without incurring debt. Further buildout is also supported by revenue (~\$300,000 per year) from local businesses, who have the opportunity to lease dark fiber from the city.

SANTA MONICA DIGITAL INCLUSION PLAN

The City approved \$175,000 to start the pilot. They plan to connect 10 affordable housing complexes with 10Gbps Internet.

The first of these buildings was completed in 2015, and all services are offered at affordable prices.

Additionally, each housing complex has a Community Room with free 1Gbps Internet and at least one desktop computer.

FREE PUBLIC WIFI

CityNet now operates free public WiFi hotspots at 36 popular community locations.

10

AFFORDABLE HOUSING
COMPLEXES WITH 10 GBPS

36

PUBLIC WIFI HOTSPOTS

In March of 2010, Kansas City, led by Mayor Sylvester “Sly” James, responded to Google’s RFI and was selected to be part of the Google Fiber Network. The City has goals to use Google Fiber to improve public services, create community, assist and advance education, spark economic development and job creation, or otherwise improve the standard of life for residents.

BISTATE INNOVATIONS TEAM

In 2011, the Mayor created a Bistate Innovations Team of 12 people, tasked with creating a plan to utilize Google infrastructure and market KC’s high-speed fiber-optic network.

KC DIGITAL DRIVE

is a non profit whose mission is to secure economic prosperity and improve the quality of life for all people in the region. They have generated \$1.25 million in direct financial support for programming and technology projects.

Digital Inclusion Fund

supports digital literacy training and increasing technology access. First round of funded projects totaled \$311,670, including:

- Kansas City Public Library District – Mobile Digital Media Lab for Youth, \$98,400
- Hispanic Economic Development Council – Digital Life Skills Training for Low-Income Latinos, \$77,770



KANSAS CITY

DIGITAL EQUITY STRATEGIC PLAN

In Kansas City, digital inclusion: “a means of narrowing the Digital Divide between the Internet haves and have-nots, and thereby improving our society, removing power differentials, increasing shared understanding, and gaining a free and democratic world.”

POLICY PRIORITIES

- Access to Affordable Broadband, Devices, And Digital Literacy Training for the Consumer
- Internet Use for Education for the Learner
- Internet Use to Promote Civic Responsibility for the Digital Citizen
- Internet Use to Promote Employment
- Internet Use for Business and Job Creation for the Entrepreneur
- Collaboration to Promote Ongoing Digital Equity Opportunities

EQUITY PROJECTS

- Digital Inclusion Fund
- Partners Free Network Foundation and Connecting for Good connected over 600 low-income residences to free networks. They provide computers, digital literacy training, and install broadband at community centers
- Google funded Google Fiber Community Connects at 164 schools, libraries, community centers and City-owned buildings.

On September 24, 2012, Mayor Emanuel announced his broadband initiative:

A CAMPAIGN FOR DIGITAL CHICAGO

GOAL 1

Ensure universal and affordable high-speed internet access for all Chicago residents, businesses and visitors to the city, paying specific attention to low-income populations and underserved areas.

GOAL 2

Enhance education through the use of technology and improve the interaction among teachers, students and parents.

GOAL 3

Promote job creation, business growth, and economic development.

GOAL 4

Improve the efficiency of government service delivery.



EQUITY GOALS

- Establish free wireless service in parks and public spaces citywide.
- Increase accessibility and affordability of internet service in underserved residential areas.

CHICAGO PROJECTS

COMCAST INTERNET ESSENTIALS

provides low-cost broadband services to underserved communities. Comcast has connected 172,000 low-income residents across Chicago. They also gave \$125,000 in support for the creation of a computer lab at a Chicago Housing Authority (CHA) facility, a mobile learning lab and digital literacy training.

INTERNET TO GO

is already implemented at 3 public libraries. The program enables anyone with a library card to check out Wi-Fi hotspots, laptops or tablets and sign up for digital literacy and skills coaching.

CONNECT CHICAGO

is a network of over 250 education locations in Chicago. More than 8.6 million hourly computer and technology training sessions are provided on an annual basis to Chicago residents in participating community centers.

KEY FINDINGS FROM CASE STUDY ANALYSIS

INSIGHTS

- Most equity plans focus on either connecting core city assets or developing programming to address equity. Few covered how equity is impacted by the overall location of the broadband infrastructure although a couple of them prioritized low income neighborhoods for investment (Seattle).
- Most cities identified innovative financing strategies to fund both the overall broadband initiatives as well as the equity programs.
- Successful equity initiatives often involved partners outside the city including nonprofits, universities and the private sector.



FINANCING OPTIONS

1

Leasing Dark Fiber (Seattle)

2

Incremental Build Out (Santa Monica)

3

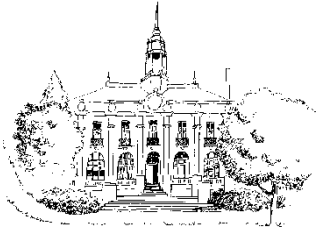
Foundation Support (Chicago)

4

Federal/state government support (Urbana-Champaign)

5

Bond Financing (Chattanooga)



Kriss Worthington

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ACTION CALENDAR
 October 7, 2014

To: Honorable Mayor and Members of the City Council
 From: Kriss Worthington, District 7, Berkeley City Council
 Subject: City Manager Referral on “Digital Divide” in Ultrafast Fiber Optic Internet Technology

RECOMMENDATION

Refer to the City Manager to address the growing “Digital Divide” through making ultrafast fiber technology available to middle class and low income residents.

BACKGROUND

Adoption of fiber technology could be the next stage in Berkeley’s technological advancement. On the most basic level, the ultrafast fiber internet technology will provide all of Berkeley internet speeds up to 100 times faster than the current levels.

Equally important, by providing affordable, faster internet access, the City could effectively reduce the “digital divide” between the wealthy and middle class/low income families by providing universal internet access. By making faster internet more accessible, Berkeley would be taking a crucial step towards closing this divide.

The City could investigate partnerships with U.C Berkeley, Berkeley City College, and the Port of Oakland as potential sources of this ultrafast fiber technology. A partnership with BART should also be investigated as access to their tunnels for fiber networks could reduce economic and environmental costs significantly. The City itself could also be a potential provider of the internet network, as has been done with great effectiveness in Chattanooga, Lafayette, and Bristol. Public-Private partnerships with companies such as Google and AT&T may also be a viable option.

Environmental Sustainability:

Maximizing internet use reduces paper documents.

FISCAL IMPACTS:

Significant.

CONTACT PERSON:

Councilmember Kriss Worthington	(510) 981-7170
Ravi Maddali, Intern	(510) 981-7170
Poojan Dave, Intern	(510) 981-7170

ATTACHMENTS:

1. Potential Sources of Technology

Potential Sources of Technology

City of Berkeley

As per The Institute for Local-Self Reliance and Benton Foundations “The fastest networks in the nation are built by local governments.” For the cities cited in this conclusion, Lafayette, Bristol, and Chattanooga, the publicly owned networks have “each created hundreds of jobs and saved millions of dollars,” as per Director of ILSR’s Telecommunications as Commons Initiative. Their successes show that Berkeley can also could create its own network. (<http://www.muninetworks.org/reports/how-chattanooga-bristol-and-lafayette-built-best-broadband-america>)

More info on Chattanooga:

:<http://money.cnn.com/2014/05/20/technology/innovation/chattanooga-internet/> and <http://www.washingtonpost.com/blogs/the-switch/wp/2013/09/17/how-chattanooga-beat-google-fiber-by-half-a-decade/>)

Google

Google is one of the major companies which could prove to be a potential source of fiber optic technology. Google Fiber can provide free basic internet (after a small installment fee of \$300 or \$25/month for 12 months) as well as a faster internet (1 gigabyte/second internet) for a normal monthly charge

In order to prepare for the next wave of Google Fiber applications, the City of Berkeley would need to begin addressing the Google checklist.

More information can be found at:

<https://static.googleusercontent.com/media/fiber.google.com/en/us/about/files/googlefiberchecklist2-24-14.pdf>

AT&T

AT&T’s GigaPower is another possibility for the City to gain this technology. As of now, AT&T has confirmed two cities as locations for their fiber-optic network, and is considering many others. Unlike Google, which has closed candidates for the technology until a future time, AT&T is still open to considering candidate cities.

More information can be found at <http://www.att.com/att/gigapowercities/>

