2020

An Exploration Of The
Digital Divide

Long Beach, California

Contents

Introduction

Long Beach is a thriving city within the greater Los Angeles, California, metropolitan area whose fight to narrow its digital divide is complicated by housing instability. Before the COVID-19 pandemic, the City of Long Beach increased free broadband access points throughout the city's public spaces, began the design and planning of a fiber optic backbone, and increased the number of digital services provided by its public library system. The national emergency, however, triggered an economic downturn for some residents. A potential wave of COVID-19 induced evictions that could cause the affected households to lose fixed broadband internet access at home.

This case study analyzes the housing-related financial strain felt by Long Beach residents and explores the intersection of housing and internet access in Long Beach. The qualitative data for this case study was gathered through one-on-one interviews with public officials, local social service professionals, a review of city budgets from 2014-2020, and a review of press coverage and studies that focus on housing and internet adoption in Long Beach. Based on this research, the following recommendations could improve connectivity for residents.

The City of Long Beach should provide COVID-safe spaces and facilities that provide internet access to families, allowing them to check email, research, and apply for new housing and COVID-safe employment opportunities.

The Long Beach Public Library system should collaborate with the Long Beach Housing Authority to provide information regarding affordable and subsidized housing opportunities through a text messaging interface.

City of Long Beach expand on free hotspot and tablet distribution programs, directing low-income residents to the Lifeline program while expanding the availability of WiFi-connected device rentals through federal E-Rate funding.

Logged Off and Locked Out

How Long Beach's Digital Divide Creates Additional Challenges for Those Facing Housing Insecurity

For the 14% of Long Beach California households who are estimated by the American Community Survey (ACS) to live on less than $20,000 per year, securing affordable housing options can be a daunting and frustrating experience, particularly for those without in-home broadband internet access.[1]

By May 2020, the COVID-19 pandemic's economic effects had suspended the flows of household income for roughly 17% of Long Beach residents,[2] down from 20% in the previous month.[3] This loss of income in some cases will suspend certain bill payments, including home internet subscriptions. As the pandemic drags out, financial pressure is quickly accumulating on the city's renters and mortgage holders, thus increasing the risk of eviction and a long-term reduction in overall internet access.

The city's existing digital divide, amidst the current economic and public health uncertainty, will widen if housing insecure residents are not provided with supplemental internet access and critical housing information.

Error Message –
Housing Market Indicators
Put Connectivity Obstacles
in a Sobering Light

The conventional wisdom of spending no more than 30% of one's income on housing costs dictates that Long Beach's estimated median household income of $60,551 would cap a resident's monthly housing expenses at about $1513 per month. While the median gross rent from 2014-2018 was estimated at $1,252 per month by RentJungle.com,[4] by June 2020, one and two-bedroom apartment rents for available units in Long Beach were averaging around $1869 and $2553 per month, respectively.[5]

IPUMS USA National Equity Atlas data indicates that 55% of Long Beach residents are rent-burdened, a figure that, once disaggregated, varies along racial lines. For example, 61% of African American renters in Long Beach are considered to be rent-burdened, compared to 51% of White renters and 50% of Asian/Pacific Islander renters. Prior to the Covid-19 pandemic, one of the contributing factors to the general financial burden placed upon the city's renters is the lack of affordable housing options.

Since 1990, the city's population grew by 21.7% while its housing stock increased by a mere 8.6%. This trend has gradually reduced the rental vacancy rate to 4.1%, 0.9% below what is considered by experts to be a healthy vacancy rate.[6]

The economic decline caused by the Covid-19 pandemic threatens the housing security of some Long Beach residents as well as the internet connections of many households. **Photo - ©Brittany Murray/Orange County Register via Zuma Wire**

Covid-19 has affected programs similar to this employment counseling initiative hosted by the Centro Community Hispanic Association that help Long Beach residents to access and adopt the internet for critical life endeavors.

© Robert Casillas/Orange County Register via Zuma Wire

With increasing competitiveness and a dearth of affordable options, access to reliable housing information is a challenge for some Long Beach residents, particularly when factoring in fair housing impediments. A 2016 assessment of Fair Housing in Long Beach found that 26 of its 406 survey respondents had experienced housing discrimination. Many offline rental postings were found to be only available only in Spanish and Khmer, "creating a barrier to fair housing choice for households that do not speak these languages."[7] In addition, between 2003 and 2008, blacks Long Beach residents, who make up roughly 12.9% of the city's population, constituted 46% of the fair housing complaints received by the Fair Housing Foundation (FHF) and 50% of race-based fair housing cases. A lack of relevant and accessible housing information is particularly detrimental to Long Beach's residents whose housing arrangements are primarily established through informal social networks instead of online vacancy listings and virtual databases.

For others outside of these informal networks, a hodgepodge of socioeconomic hurdles can mean that a successful housing search for an affordable or subsidized rental in Long Beach requires an increased amount of time and research. This intensive process becomes more manageable with web-based housing information and regular internet access.

However, with mounting bills and absent income, some households may be tempted to forgo a large amount of their internet access by pausing monthly payments for home-based broadband internet.

Quantifying the Challenge: A Subtle Crevice in a Narrowing Chasm

12%

of the city's households are without a broadband internet connection.

9%

of households do not have a desktop or mobile computer device at home.

10.6%

can only access the internet from their mobile phones.

25%
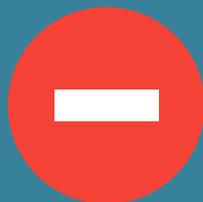
of the 24,552 households that earn less than $20k function without access to broadband of any kind.

Securing housing is just one of the important processes which becomes complicated without high speed internet access or digital literacy.

Summer youth enrichment programs, small business grants, job vacancies and mass transit service changes are critical bits of information that, 30 years ago, were bound together in daily newspaper deliveries but are now dispersed on various blogs, search engines, and email lists. This shift to the online distribution of information can create subtle but significant difficulties for marginalized communities.

ACS 2018 estimates show that 12% of the city's households are without a broadband internet connection, 9% of households lack any sort of desktop or mobile computing device, and 10.6% of households can only access the internet from their mobile phones. Among the 24,552 households that earn less than $20,000, 25% function without any form of broadband internet access at home, including wireless data.[8]

However, the digital divide in Long Beach, California is neither newly recognized nor unchallenged. The City government and a host of nonprofit organizations have diligently studied internet access and adoption in the city and have made huge strides towards empowering Long Beach residents to adopt the use of online tools once internet access has been established.

The City of Long Beach has previously convened community leaders and residents to explore the city's digital divide and to consider possible solutions and policies.

Photo Courtesy of the City of Long Beach

In 2017, with the support of the Long Beach Community Foundation, the Long Beach Media Collaborative was formed to help investigate the city's digital divide. Their collaborative reporting found that, like fair housing access, the city's disparities in broadband internet access correlated with race and income: 7 percent of whites living in Long Beach lack an Internet connection, while 12.4 percent of Asian-American, 16.9 percent of Latinx American, and 19.2 percent of Black American residents face that same hurdle. Moreover, "among those who didn't graduate from high school, more than a quarter – 25.7 percent – aren't connected at home" in any way. [9]

A survey in a January 2019 analysis by the City of Long Beach's Technology and Innovation Commission (TIC) discovered that roughly 60% of respondents without broadband subscriptions cited an inability to pay for a subscription or a necessary hardware device. Meanwhile "80 percent of survey respondents with an internet connection of some kind in their home stated that their home internet "was reliable enough for social media and entertainment, and for accessing city services," but "not adequate for educational or work purposes." [10]

If the TIC's survey found that the level of internet connectivity of respondents was considered inadequate for education or work, these respondents may also lack the level of connectivity necessary to help them manage a complicated housing search, particularly one with a very firm and imposing deadline.

Local Officials Are Working to Improve Broadband Infrastructure

While developing an empirical understanding of its digital divide, the City of Long Beach has also been focused on improving its local telecommunications infrastructure and is considered part of the emerging "Silicon Beach" ecosystem. Ranked as a top ten "Digital City" by the Center for Digital Government for 9 consecutive years, Long Beach has put more of its government processes online, a step that adds incentive for increased broadband adoption by the public. The city has also increased free broadband access levels for end-users throughout the city's public spaces and has made a $17 million investment to upgrade and extend its fiber network.[11]

Rebecca Kauma, the Economic and Digital Inclusion Program Manager for the City of Long Beach is helping to narrow its digital divide.

Photo Courtesy of the City of Long Beach

Starting in 2014, Long Beach's TIC began designing a series of public smartphone apps for various city departments. Subsequently, it also developed an online bill payment portal for residents as well as a business portal that makes it "easier to start a local business" through a collaboration with the Long Beach Innovation Team (i-team) and Code for America.

In addition to extending its deployment of public WiFi at 23 public parks, community centers, and all 12 library locations, the department has also installed 4G cellular modem technology at smaller city facilities to lower ongoing telecommunications costs, increased bandwidth and added WiFi capability for public guests.[12]

LONG BEACH

In 2019 the City released a memo drafted by the Department of Technology and Innovation, outlining recommendations for the utilization of school and library networks to bring connectivity to surrounding low-income communities. The memo highlights that school networks are often unused by late afternoon, on weekends, and during the summer months. Additionally, most library buildings are traditionally closed on Sundays and in the evening. The memo suggests that signal routers should be placed on the buildings of these institutions, allowing residents to take advantage of the resulting connectivity to look for employment, complete homework, access government services, and accomplish "countless other tasks." [13]

In 2020, the Department of Technology and Innovation has been optimizing "the technologies implemented across the new City Hall and new Main Library, including the data center, enhanced network communications, wireless infrastructure." It is also developing the design, planning and implementation of a citywide fiber-optic network that will "connect city facilities and deliver a fiber backbone that is within two miles of any location in the city," thus increasing access for public and private internet use. [14]

In addition, Long Beach's Digital Inclusion Initiative, launched in 2019, serves as a critical social equity component to the infrastructure improvements that increase access. [15]

"We are applying an equity lens and a collective impact approach to the Initiative. This includes ensuring that the community's strengths, perspectives and lived experiences are uplifted in the Roadmap development and implementation process" explains Rebecca F. Kauma, Economic and Digital Inclusion Manager. This Initiative has included digital inclusion stakeholder committee meetings, digital Inclusion community pop-ups, and digital inclusion workshops to better understand the contributing factors of the city's digital divide. It is also developing a Digital Inclusion Roadmap (strategic plan) that will layout a series of concrete action items. Included among its objectives is the provision for the following:

| Multilingual digital literacy training and support | Low-cost, quality cell phone data plans and high-speed, in-home Internet services | Job preparedness and digital literacy skills development | Free City-provided public WiFi. | Low-cost, quality, Internet-enabled technology devices -including refurbished (e.g. desktops, laptops, tablets). |

COVID-19's Impact on WiFi Access and Broadband Adoption
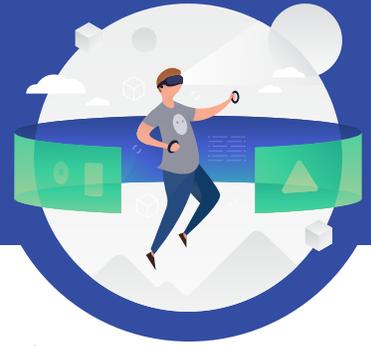
However, the 2020 COVID-19 emergency caused a number of adjustments to the planning and program implementation taking place within city departments and local nonprofit organizations.

In March, during the onset of the pandemic, the Long Beach Unified School District had to provide students with access to Chromebooks in addition to information for low-cost internet subscriptions or hotspot devices in order to facilitate school closures and virtual learning.[16]

The City Council also approved 1 million of the $40 million in federal CARES Act funding it received from the through the State of California to be used for digital inclusion. In June 2020, the City announced a partnership with the California Emerging Technology Fund (CETF), EveryoneOn and human-I-T, and launched a centralized online platform for Long Beach residents to access low-cost Internet services, computers, and digital literacy resources, called ConnectedLB Platform, in affiliation with CETF's Get Connected Initiative.

On December 9, 2020, the City's Technology and Innovation Department in partnership with human-I-T and the Long Beach Public Library announced that more than 550 free tablets with keyboards and 250 mobile hotspots with one-year paid internet service plans will be distributed on a first-come, first-served basis to qualified, low-income Long Beach residents with proof of income eligibility, while supplies last.[17]

The economic distress of renters who have been unemployed or underemployed because of the pandemic may require additional resources in order to maintain widespread broadband access for residents.

On September 30, 2020, the City Council's emergency ordinance that halted evictions ended, affecting an undetermined segment of the estimated 60% of non-owner occupied households. Any interruption in housing will also cause interruptions in internet connectivity.[18] A large-scale uptick in evictions of economically vulnerable households would simultaneously increase the digital divide in the city. Victims of eviction in Long Beach, who formerly relied on workplace and home broadband connections, can subsequently be expected to increase their dependency on the City's public WiFi networks at a time when affordable housing information and resources, as well as other government services, will become especially critical to their well-being. One such public WiFi provider is the library.

A Default Front Door
Libraries Are a Key Access Point

For Long Beach residents without a home internet subscription, their nearby public library branch is often the only way that they can access critical information on the internet, print out documents, and complete housing, employment, or educational applications in a welcoming and safe space.

In 2014, Library Services "migrated to a new telecommunications service provider as part of the Federal e-Rate application process," substantially lowering costs for high-speed broadband. In 2015, electrical outlets and laptop tables were added to neighborhood libraries in an effort to accommodate additional guests. New systems were also implemented to allow for individual sessions on library computers to be extended for additional time and for wireless printing from personal devices. In 2017 and 2018 the Library partnered with local community organizations and the Department of Innovation and Technology to upgrade network equipment for faster internet speed throughout local branches, including an upgrade of "assistive software and hardware in the Main Library's Information Center for People with Disabilities."

At a time when many library systems across the United States are struggling for funding and to keep neighborhood branches open, Long Beach officials have continued to explore ways to expand digital services and public access to its internet networks.[19]

This collective effort to meet the digital needs of its residents has allowed the library to maintain demand amongst guests. According to the Long Beach Media Collaborative 2019 report, neighborhood libraries "are overwhelmed by those who need their computers for internet access."

"While [book] checkouts have declined by about 14 percent since 2010, library cardholder numbers have increased by 11 percent during that same time period" according to a 2019 Long Beach Media Collaborative report.[20]

From Luxury → To A Utility

Adequate increases in funding could assist the Long Beach library system in its digital inclusion efforts. Between 2016 and 2020, the annual library budget increased by 14% to $15,255,691, while the Technology and Innovation budget has increased by 16% to $57,066,605. In early 2020, the City increased the budget for expanded library hours, to include Sunday hours, Monday after school hours, and/or summer morning hours by an additional $88,133.[21]

However, the 2021 municipal budget is presenting some financial challenges to the library system. Amidst a possible "$18 million in departmental cuts, $11 million from employee furloughs" due to COVID-related budgetary shortfalls, a handful of library locations could face reduced hours and days of operation. Considering that the public library is a primary access point for low-income populations, budget cuts will require officials to be resourceful and innovative in generating connectivity solutions.

State Level Momentum

As Long Beach's digital divide and its ramifications become more apparent, elected officials at the state and local levels have taken some small but significant steps to address broadband internet needs.

In November 2019, California Governor, Gavin Newsom announced his intention to "convene stakeholders, the private sector, education institutions, and government agencies to develop an inclusive 'Broadband for All' plan for the state" that would "help close the digital divide that exists in communities across California."[22] This desire to reduce statewide digital inequities appears to be bipartisan.

In February 2020, Republican Assembly Member Jay Olbernote presented Bill No. 2686 which would require that the California Broadband Council meet four times per year instead of the currently mandated three annual meetings.

During the 2019-2020 session of the California state legislature, representatives presented numerous bills that expand the array of tools available to public entities to properly implement existing digital divide reduction policies and programs. In February 2020, Senator Lena Gonzalez presented SB 1130 which has popularly been referred to as the "Broadband for All" Bill.

A key component of SB1130 is that it makes necessary changes to previous requirements for speed minimums on new broadband infrastructure projects. Although the Federal Communications Commission defines broadband as 25/3 megabits per second (mbps), some federal and state funding programs still support infrastructure projects that are being built at slower speeds. SB1130, however, would update the minimum requirement for most projects to reflect the FCC's minimum. Moreover, the legislation proposes that the California Advanced Services Fund program deploy broadband infrastructure by 2024 which is high-capacity and future-proof. This future-proof qualification ensures that newly deployed networks keep pace with updated research and development standards.

SB 1130 passed on a 30-9 vote in the California Senate on the 26th of June 2020.[24] However, after being passed by state assembly committee members, the bill was ordered to an inactive file on request of Assemblymember Calderon after the California State Assembly leaders refused to hear the bill on the floor.[25] While the official opposition to the bill, in part, cites an upending of "California Advanced Services Fund program fund infrastructure in areas that still lack any internet connectivity," critics of the bill's shelving like the Electronic Frontier Foundation argue that "the Assembly insisted on poison pill amendments that support big industry." [26] [27]

Another important bill that awaits a final Senate vote is Assembly Bill 2626. As of July 7, 2020, the bill had been amended and referred to committee.[28]

AB 2626, introduced by Assembly Member Rebecca Bauer-Kahan in February 2020, is designed to "help cash-strapped school districts remedy the inequitable 'Digital Divide' amidst the COVID-19 pandemic, by eliminating sales tax on district purchases of tools like laptops and hot spots for students." The bill also provides "grant funds to school districts, county offices of education, and charter schools to purchase computers, tablets, computing devices, routers, hardware, software, and other equipment primarily purchased to provide low-income or otherwise disadvantaged students with access to distance learning using communications technology, as provided."[29] Future commitments to faster speed, modern infrastructure, and adequate funding would be supported by California's Public Utilities Commission who annually offers existing facility-based broadband providers the opportunity to demonstrate that they "will deploy broadband or upgrade existing facilities to a delineated unserved area within 90 days, instead of the previously required 180 days."[30]

For Long Beach residents attempting to secure a robust internet connection for work and personal research, the mere proposal of this legislation is, collectively, a step towards securing ubiquitous broadband access.

Federal Leadership & Programs Aimed at Unserved and Underserved Populations

In March 2020, the Federal Communications Commission (FCC) instituted the "Keep Americans Connected Pledge" which was a voluntary initiative undertaken by more than 800 companies and associations that promised not to terminate service to any residential or small business customer because of an inability to pay because of the pandemic until June 30, 2020, in addition to opening open Wi-Fi hotspots to any American who needs them.[31] This cooperative private sector agreement served as a starting point for public-private collaborations and cross-sector consensus building. It was particularly important in light of the economic downturn triggered by COIVD-19 shutdowns.

In addition to the pledge, the FCC created a new working group within the Broadband Deployment Advisory Committee entitled the Disaster Response and Recovery Working Group. The purpose of this working group is to convene federal, state, local, tribal, and private sector leaders to document the various strategies and solutions that stakeholders are developing within a report that can be used to generate best practices for future responses to the COVID-19 pandemic and to connectivity crises.[32]

As the pandemic has progressed, the Commission has sought to waive certain rules from the Lifeline, E-Rate, and Rural Healthcare programs in order to connect who struggled to get online and keep at-risk communities from being disconnected in addition to creating new opportunity for the unserved.[33]

In the long term, eligible low-income residents should be encouraged to apply for the Federal Communications Commission's Lifeline program which provides a monthly discount of nine dollars and twenty-five cents on eligible voice or broadband services. To participate in the Lifeline program consumers must either meet an income requirement that is at or below 135% of the Federal Poverty Guidelines or participate in certain federal assistance programs.[34] Subscribers are required to recertify their eligibility every year and are only allowed one Lifeline service per household.

California, through the California Public Utilities Commission, administers a state-level Lifeline program that provides discounts on home and cell phone services. Similar to the federal Lifeline program, California Lifeline eligibility is based on whether any member of a household is enrolled in an eligible public assistance program, or if a household's total annual gross income is less than a set amount. Long Beach officials should explore ways of assisting more residents to enroll in this program.[35]

Accelerating the Fight to Close the Digital Divide

To paraphrase John Stinbeck's novel *Grapes of Wrath*, "it's a thing to see when a family finds home."

Amidst both a rising rate of evictions and an increased willingness of public officials to disincentivize, future evictions, COVID-19 has served as an accelerant for both social inequity and broadband policy innovation. It has pressured many governments to expeditiously assume important infrastructure expenses that were traditionally ignored or perpetually delayed. In a similar manner, pandemic-related economic distress may help to interrogate the relationship between the internet and affordable housing needs. As more families in Long Beach struggle to "find home" during this recession, their ability to find a reliable internet access point will become more important than ever.

The litany of successful collaborations between Long Beach's Public Library and the Department of Technology and Innovation may need to include both the work of the Long Beach's Housing Authority and community housing advocates. For if a wave of evictions crashes onto the shores of Long Beach in the middle of a deadly pandemic, while public libraries and housing authority office doors are closed, and while school fall semesters are virtually in-session, eviction victims will need to be swiftly connected to information and resources that inform them of their options and the next steps to take.

This aspect of the digital divide in Long Beach will require additional observation, measurement, new ideas, and implementation by municipal officials and community leaders. However, it is a challenge that these institutional representatives have proven themselves capable of addressing.

Recommendations

Digital inclusion Team should identify a COVID-safe physical environment that the city could open to the public, allowing residents to receive housing consultations and opportunities that are only available online.

Department of Technology and Innovation should develop or partner with a mobile-friendly website that provides alerts on below-market-rate rental units.

Library Services and the Housing Authority should seek funding to collaborate and develop an email and SMS messaging system that informs recipients of resources for newly unemployed or housing insecure residents.

Explore opportunities provided by federal E-Rate funding for WiFi and device distribution. Help educate newly eligible low-income residents about the Lifeline program.

Identify ways to decrease internet price and increase competition for Long Beach residents, particularly renters.

Monthly Internet Subscription Rates

AT&T	Frontier	Hughes	Spectrum	Viasat
$49.00	$29.99	$59.00	$49.99	$50.00
↓1000 Mbps & ↑1000 Mbps	↓6 Mbps	↓25 Mbps & ↑3 Mbps	↓100 Mbps & ↑10 Mbps	↓12 Mbps & ↑3 Mbps
	1-2 users	2-4 users	4+ users	1-2 users
HD and 4K streaming on multiple devices	Basic browsing, email use SD video streaming on one device	Gaming, live streaming, Alexa HD streaming on multiple devices	HD and 4K streaming Smart-home friendly	Basic browsing, email use SD video streaming on one device
Competitive gaming & home office Smart-home friendly				

Endnotes

1. U.S. Census Bureau, Types Of Computers And Internet Subscriptions: Long Beach (2018) https://data.census.gov/cedsci/table?q=internet&hidePreview=true&tid=ACSST1Y2018.S2801&vintage=2018&g=1600000US0643000

2. Samuel Stebbins, *Unemployment Rate Remains Historically High: These US Cities are Among Those With Highest Jobless Rates* (Aug. 8, 2020) https://www.usatoday.com/story/money/2020/08/08/cities-with-the-worst-unemployment-since-the-pandemic-started/42187029/

3. Brandon Richardson, *Long Beach Unemployment Hits Highest Level in City's History* (May 28, 2020), https://www.lbbusinessjournal.com/long-beach-unemployment-hits-highest-level-in-citys-history/

4. U.S. Census Bureau, Long Beach City, California (2018), https://www.census.gov/quickfacts/fact/table/longbeachcitycalifornia/HSG860218#HSG860218

5. Rent Jungle, Rent Trend Data in Long Beach, California (Sept. 2020), https://www.rentjungle.com/average-rent-in-long-beach-rent-trends/

6. Patricia Diefenderfer, David Bergman, Alejandro Sanchez-Lopez & Veronica Tam, *Housing Element Update Workshop 1*, at 22 (Aug. 8, 2020), http://www.longbeach.gov/globalassets/lbds/media-library/documents/planning/housing-element-update/clb_lbheu_webinarpresentation_final_8-8-20_web.

7. Long Beach Development Services, Assessment of Fair Housing, 17 (Dec. 21, 2016), http://www.longbeach.gov/globalassets/lbds/media-library/documents/housing--neighborhood-services/homebuyer/final-afh-reduced--1- pg 8

8. U.S. Census Bureau, Types Of Computers And Internet Subscriptions: Long Beach (2018), https://data.census.gov/cedsci/table?q=internet&hidePreview=true&tid=ACSST1Y2018.S2801&vintage=2018&g=1600000US0643000.

9. Dave Downey, *The Harsh Realities of Living in Long Beach—Without the Internet* (Oct. 24, 2017), http://longbeachmc.org/the-harsh-realities-of-living-in-long-beach-without-the-internet/.

10. The City of Long Beach Technology and Innovation Commission, Analysis and Recommendations for Advancing Digital Inclusion in Long Beach, at 6 (Jan. 23, 2019), http://www.longbeach.gov/globalassets/ti/media-library/documents/digital-inclusion/analysis-and-recommendations-for-advancing-digital-inclusion-in-long-beach.

11. Press release, City of Long Beach, City of Long Beach Named Top 10 Digital City Nine Years in a Row (Nov. 14, 2019), http://www.longbeach.gov/press-releases/city-of-long-beach-named-top-10-digital-city-nine-years-in-a-row/.

12. City of Long Beach, Technology & Innovation (Oct. 17, 2014), http://www.longbeach.gov/globalassets/finance/media-library/documents/city-budget-and-finances/budget/budget-documents/fy-15-adopted-budget-webpage/technology-and-innovation.

13. Memo from Lea D. Eakerson, Director of Technology & Innovation, to Patrick H. West, City Manager, City of Long Beach, at 38 (Feb. 28, 2019), http://www.longbeach.gov/globalassets/city-manager/media-library/documents/memos-to-the-mayor-tabbed-file-list-folders/2019/february-28--2019---update-on-digital-inclusion-initiatives.

14. City of Long Beach, Technology & Innovation, Financial Management (2019), http://www.longbeach.gov/globalassets/finance/media-library/documents/city-budget-and-finances/budget/budget-documents/fy-20-adopted-budget/34-technology-and-innovation.

15. City of Long Beach, Digital Inclusion Initiative, http://www.longbeach.gov/ti/digital-inclusion/ (last visited Oct. 27, 2020).

16. Mike Guardabascio, *How LBUSD Students Can Get Access to Chromebooks, Internet and Meals* (Mar. 24, 2020), https://lbpost.com/news/education/free-chromebooks-internet-meals-lbusd-schools.

17. Press release, City of Long Beach Announces Free Mobile Hotspots and Computers for Long Beach Residents (Dec. 9, 2020), http://www.longbeach.gov/press-releases/city-of-long-beach-announces-free-mobile-hotspots-and-computers-for-long-beach-residents/.

18. ORDINANCE NO. ORD-20-0028 - Long Beach City Council http://www.longbeach.gov/globalassets/lbds/media-library/documents/covid-19/ord-20-0028--emerg- (July 31, 2020)

19. American Library Association, *How Many Closings?* (June 15, 2010), http://www.ala.org/tools/how-many-closings.

20. Long Beach Media Collaborative, Strengthening the Signal (June 4, 2019), http://longbeachmc.org/long-beach-media-collaborative-phase-1-strengthening-the-signal/.

Endnotes - Continued

21. Jason Ruiz, *City Proposes Furloughs, Job Cuts to Plug $30M Budget Deficit Next Year* (Aug. 3, 2020), https://lbpost.com/news/city-proposes-furloughs-job-cuts-to-plug-30m-budget-deficit-next-year.

22. Press release, Office of Governor Gavin Newsom, In Fresno at the California Economic Summit, Governor Newsom Highlights New Investments in Higher Education, Actions to Strengthen California's Workforce & His Administration's Focus on Regional Growth Strategies (Nov. 8, 2019), https://www.gov.ca.gov/2019/11/08/in-fresno-at-the-california-economic-summit-governor-newsom-highlights-new-investments-in-higher-education-actions-to-strengthen-californias-workforce-his-administrations-focus-on-regiona/.

23. Micah Singleton, *The FCC Has Changed the Definition of Broadband: 25/3 Means the Minimum Download Speed is 25Mbps and the Minimum Upload Speed is 3Mbps* (Jan. 29, 2015), https://www.theverge.com/2015/1/29/7932653/fcc-changed-definition-broadband-25mbps.

24. Karla M. Enriquez, *Lena Gonzalez' Broadband For All Bill Passes out of Senator Floor* (July 1, 2020), https://signaltribunenewspaper.com/50624/news/lena-gonzalez-broadband-for-all-bill-passes-out-of-senator-floor/.

25. California Legislative Information, SB-1130 Communications: California Advanced Services Fund - Bill History (November 5, 2020), https://leginfo.legislature.ca.gov/faces/billHistoryClient.xhtml?bill_id=201920200SB1130

26. Falcon, Ernesto and Hayley Tsukayama, *How California's Assembly Killed The Effort to Expand Broadband for All Californians* (September 1, 2020), https://www.eff.org/deeplinks/2020/09/how-californias-assembly-killed-effort-expand-broadband-all-californians

27. California Legislative Information, AB-2626 Digital divide: distance learning: California Research Bureau: communications technology grant program-Bill History (November 5, 2020), https://leginfo.legislature.ca.gov/faces/billHistoryClient.xhtml?bill_id=201920200AB2626

28. California Legislative Information, AB-2626 Digital Divide: Distance Learning: California Research Bureau: Communications Technology Grant Program (July 7, 2020), https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200AB2626

29. California Legislative Information, California SB 1130 (Aug. 24, 2020), https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200SB1130.

30. FCC, Keep Americans Connected (last updated July 8, 2020), https://www.fcc.gov/keep-americans-connected.

31. Press release, FCC, FCC Chairman Pai Announces New Charges and Solicits Additional Nominations for the Disaster Response and Recovery Working Group of the Broadband Deployment Advisory Committee to Address the Challenges Presented by COVID-19 (Apr. 16, 2020), https://docs.fcc.gov/public/attachments/DA-20-420A1.pdf

32. Lifeline and Link Up Reform and Modernization, 35 FCC Rcd 2729, pg 2, para. 2 (2020), https://docs.fcc.gov/public/attachments/DA-20-285A1.pdf;

33. Rural Health Care Universal Service Support Mechanism; Schools and Libraries Universal Service Support Mechanism, Order, 35 FCC Rcd 2741, pg 4, para. 2 (2020), https://docs.fcc.gov/public/attachments/DA-20-290A1.pdf.

34. FCC, Lifeline Support for Affordable Communications (last updated Sept. 14, 2020), https://www.fcc.gov/consumers/guides/lifeline-support-affordable-communications#:~:text=To%20participate%20in%20the%20Lifeline,Nutrition%20Assistance%20Program%20or%20Medicaid..

35. California Public Utilities Commission, California Lifeline (June 1, 2017), https://www.cpuc.ca.gov/General.aspx?id=2752.