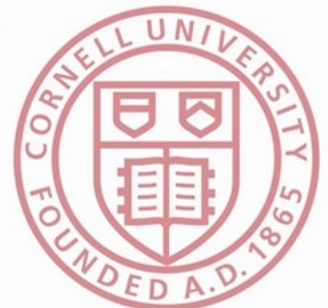Adoption

Affordability

Access

Addressing the Digital Divide in Affordable Housing:
The Power of Collective Action
March 2024

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Acknowledgments

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Overview

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Introduction

In today's ever-changing world, broadband access is becoming increasingly essential for school, health, work, and social connections. In light of the COVID-19 pandemic, many municipalities and local organizations across the United States have recognized the need to bring internet access to their communities. Unfortunately, the individuals who would benefit most from broadband services are often the ones without access to them. In 2017, the FCC found that over 21 million Americans did not have access to internet service that met the Commission's current benchmark,[1] and data analysis showed a 75% correlation between median household income and broadband access across the country.[2]

Increasing broadband service is difficult because there are so many barriers and challenges for both cities and internet service providers (ISPs). Local authorities struggle to balance the issues of access, affordability, and adoption of broadband initiatives. This project explores three unique case studies which address all three of these interconnected concerns in an especially important context - low-income multi-family housing. This project focuses specifically on public housing authorities that have implemented broadband services through strategies addressing the "Three A's"[3] framework commonly adopted in broadband policy and digital inclusion discussions: access, affordability, and adoption (see Figure 1-1).

"Access" refers to the availability of both high-speed Internet infrastructure and services to individuals and communities; "affordability" refers to whether people can access the Internet without financial barriers; and "adoption" refers to the knowledge, skills, and devices for people to adopt during the actual use and integration of broadband internet services.
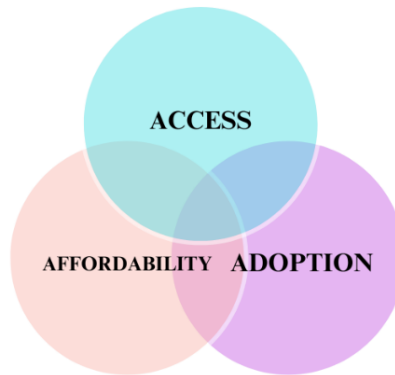
BROADBAND SERVICES

Figure 1-1. Three "A" Pillars of Broadband Services
Source: Jane Bowman Brady

This research builds on work done in 2022 on cases of broadband implementation in response to the COVID-19 pandemic across the United States. Students in Cornell University's Department of City and Regional Planning explored cases of local innovation in closing the digital divide across the US.[4] [5] This prior research found funding, local leadership and partnerships with Internet Service Providers (ISP) were key to expanding broadband internet. Localities partnered with outside organizations, service providers, and local non-profit organizations to fill gaps in access, adoption, and funding.

This current report focuses on closing the digital divide in affordable housing, and finds some similar themes, but the special focus on housing authorities shows the benefit of collective action and cross-community learning. Collective action usually refers to collaborative efforts among diverse stakeholders to achieve common goals. In the context of this report, it involves coordinated initiatives by housing authorities, nonprofit organizations, and private industry stakeholders to bridge the digital gap. Throughout the following chapters, we will delve into the cases selected from diverse geographical regions and demographic contexts. We follow the framework of the Digital Inclusion Ecosystem defined by NDIA, introducing the existence of programs and policies and the collaboration in the community of each case (see Figure 1-2).[6] These cases were examined through interviews, policy analysis, comparative studies, and comprehensive data collection methods, providing insights into effective strategies for promoting digital inclusion in affordable housing settings.
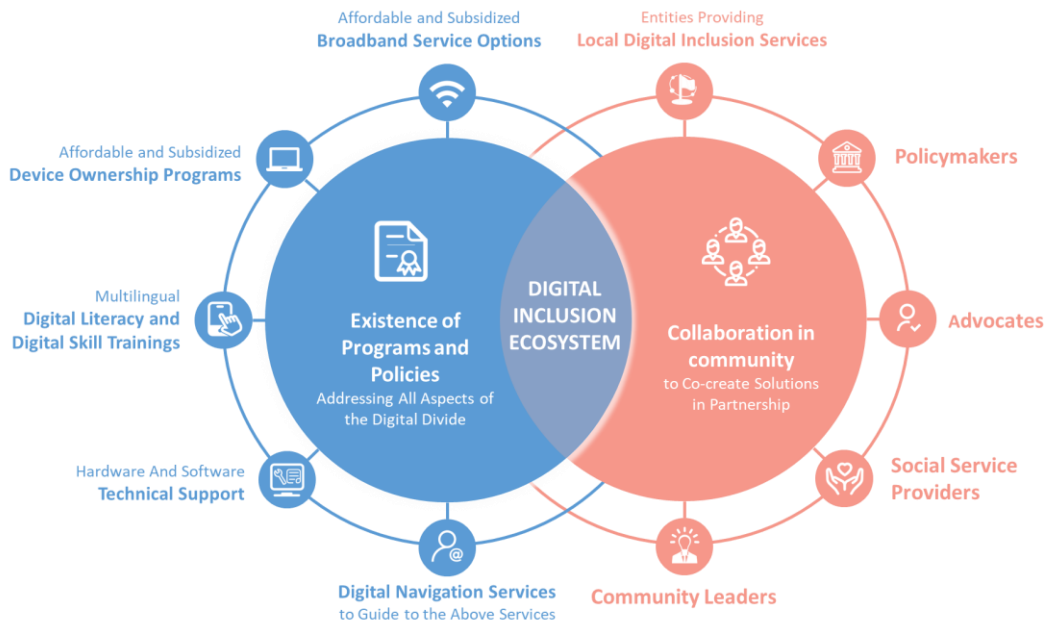
Figure 1-2. Digital Inclusion Ecosystem
Source: Duxixi Shen, based on the definition of Digital Inclusion Ecosystem by NDIA. [7]

Affordable Housing

Public Housing Programs

Public housing in the United States has a rich history dating back to the 1930s, with its origins rooted in efforts to address urban poverty and provide affordable housing for low-income families. For those who live in public housing, often making less than 50% to 30% of the local median family income,[8] high-quality, high-speed internet is often out of reach. A 2016 ConnectHome Baseline Internet Access Survey found that 35% of public housing households were under-connected to high-speed internet access, while 31% of households had no access at all.[9] Compared to the ACS data of the same year, only 10.7% of households did not have access to the internet averagely in the United States.[10] The ConnecHome survey also showed that affordability is a main barrier to adoption for households living in public housing: 80% of the households regarded the cost of internet access as one of the reasons for lack of connectivity, with 37% regarding the cost of devices.[11] Additionally, urban residents had a higher likelihood of using computing devices, with 93% of urban households compared to 89% of rural households from the 2018 U.S. Census Bureau report.[12]

Therefore, to assist in narrowing the digital divide, Public Housing Authorities (PHAs) are excellently positioned as they accommodate and offer services to some of the most economically disadvantaged and disconnected families.[13] Some study points out that

increasing access to digital opportunity in affordable housing not only yields at the individual level, but also benefits the community for enhanced connectedness and social capital and building operators for management efficiencies.[14] We interviewed different housing authorities who addressed digital equity in their affordable housing programs, especially one that tackled the connectivity challenges in rural areas. These cases showcase how various organizations combine to deliver necessary Internet access to residents.

ConnectHomeUSA
A common thread among these cases is their success through participation in the U.S. Department of Housing and Urban Development's ConnectHomeUSA digital inclusion program. The program was originally designed to address the "homework gap" for K-12 students, which refers to the challenge students face in completing their assignments when they do not have access to the internet at home. ConnectHomeUSA's consistent success in narrowing the digital divide led to a significant expansion in programming, helping local housing agencies connect with nationwide Internet Service Providers, non-profits and the private sector who offer technical training and digital literacy programs, and supplying guidance to HUD-funded grantees instead of providing broadband funding directly.

Launched as "ConnectHome", the program started with just 28 pilot communities in 2015. In 2017, HUD partnered with EveryoneOn, a national nonprofit aiming to eliminate the digital gap, to expand the program under a new name ConnectHomeUSA.[15] Today there are 100 participating communities.[16] Over 72,000 families have been connected to the Internet through the ConnectHome pilot program or ConnectHomeUSA, and over 30,000 devices have been deployed to families in need.[17]

ConnectHomeUSA continues to serve as a powerful resource with nationwide networks for participating public housing agencies (PHAs) looking to implement broadband services. Every second Monday of the month, housing authorities under the ConnectHomeUSA program have a call together with HUD to talk about success, ask questions, and share their experience. It's a hub for learning and collaboration for ConnectHome teams across the country.

While there is commendation for the attention drawn to the issue and the technical assistance offered, some studies have criticized the lack of funding allocated to Public Housing Authorities (PHAs) transitioning into ConnectHome communities.[18] Although HUD promised to assist in the integration of housing broadband beginning in 2015,[19] financial resources are still the key to success in this realm. In subsequent sections of the report, we will discuss how our cases leverage various funding opportunities to make their broadband projects affordable.

Case Studies Presented

These three cases were chosen for this study because of their distinctive attributes and their alignment with the research objectives, representing tribal, East Coast, and West Coast regions respectively. To begin, the Choctaw Nation case offers insights into the challenges and opportunities associated with broadband development in indigenous communities and rural areas, shedding light on the specific needs and strategies required to bridge the digital divide. Second, the case study of Jersey City provides a perspective on broadband initiatives in densely populated urban areas with aging buildings, where issues of access, affordability, and digital inclusion are often amplified. Lastly, the case of Seattle stands out as one of the pioneering cities to implement a Digital Navigators program, which has now become the largest of its kind in the country, providing valuable insights into broadband expansion efforts aimed at meeting diverse connectivity needs within communities. By examining cases from diverse geographical regions and demographic contexts, this study aims to provide a comprehensive understanding of the complexities surrounding broadband deployment and digital equity initiatives across different communities.

The Choctaw Nation of Oklahoma
The Choctaw Nation of Oklahoma is a unique broadband deployment case on tribal land. The Tribal Council and its local governments are responsible for all the tribal members. The Choctaw Nation is large and spread out geographically, with a population density of 20.89 per mile^2, compared to the 57.90 of Oklahoma State.[20][21][22] The ConnectHome program was introduced to the Choctaw Nation in 2015 when there were only three percent of residents with at-home internet. As a tribal nation, the Housing Authority of Choctaw Nation was able to use grants from the Native American Housing Assistance and Self-Determination Act (NAHASDA), as well as its local funds, to bring internet to 90% of its residents in 2023.

Jersey City Housing Authority
The Jersey City Housing Authority (JCHA) approaches broadband using its three pillars of digital inclusion: access to affordable internet, access to affordable devices, and access to literacy opportunities. To address the challenges of building internet access in aging buildings, JCHA partnered with local service providers to use digital wireless technology at the building scale. To ensure affordability, they worked with the Affordable Connectivity Program to provide subsidies to households. To encourage adoption, they partnered with local non-profits, utilized grants to provide devices to their community members, and built a tutoring program to support technology education.

Seattle Housing Authority
The Seattle Housing Authority (SHA) is a stand-out example for municipalities and organizations seeking to bring broadband to their communities. Seattle was one of the first

cities to have a Digital Navigators program, which is now the largest in the country with eighteen staff members. These Digital Navigators help support the community with technology set-up, accessing broadband subsidies, and computer literacy. In addition, SHA has dedicated computer labs for seniors and disabled individuals, in order to meet a diverse range of needs in their community.

Themes

In this section, we delve into the common themes observed across the cases studied, shedding light on the collaborative efforts, funding strategies, and innovative approaches employed to address the digital divide. While each case presented unique circumstances and contexts, the recurring themes underscore the importance of collective action, partnerships, affordability, and digital. Through a comprehensive examination of these common threads, we gain valuable insights into the diverse strategies employed to promote broadband access, affordability, and adoption across diverse communities.

Collective Action
The influence and collaboration built by housing authorities remove some of the barriers to implementing broadband services. These organizations have more power than individuals to organize and implement projects, especially when they actively establish and maintain their credibility in their communities. This collective approach enabled a community-wide response.

Regular communications among housing authorities under the ConnectHomeUSA program also triggered collective action on addressing digital equity in their communities. By working collectively, PHAs were able to come together and share knowledge, resources, and strategies to develop various solutions that benefit residents across multiple housing developments.

Access & Partnerships
These cases relied heavily on partnerships to ensure successful broadband deployment and uptake. Housing authorities partnered with local service providers and municipalities for successful project implementation and to supplement gaps in funding. Some authorities sought partnerships with other local non-profit organizations or local businesses such as public libraries, which were able to provide volunteers, broadband expertise, or technology.

Funding & Affordability
Financial resources are essential for the success of ConnectHome Programs. We looked into how our cases leverage various funding opportunities from city, state to federal sources.

Most used the new Affordable Connect Program, while the Choctaw Nation used the Native American Housing Assistance and Self-Determination Act (NAHASDA) funds to achieve affordability in fiber installation and internet service provision. They also were able to attract private sector investment in build-out.

Additionally, housing authorities, due to their extensive reach and influence within affordable housing communities, had the scale to possess the necessary capacity and resources to facilitate broadband investment initiatives either within individual buildings or across entire housing complexes. This enabled them to effectively address issues related to internet access and connectivity through innovative technical solutions such as broadcast wireless and fiber optic networks.

Adoption & Digital Inclusion Services
These projects moved beyond providing internet connections to providing devices and training in how to use them. Often this involved partnerships with nonprofits and inter-generational programs.

All of our cases provided access to the internet, devices (or computer labs), and training in how to use devices to ensure adoption. They also addressed affordability via subsidized monthly rates or direct purchase from providers, so that residents could enjoy the full package – of access, affordability and adoption – to build digital equity.

Conclusion and Implications

While there are multifaceted challenges from access, and affordability to adoption when addressing digital equity, many local authorities are working on solutions to these challenges. This project examines three housing authorities that are tackling these concerns. As demand for broadband increases, these cases provide examples and implications for other local authorities to address similar challenges within their communities.

1. Build on community partnerships.
All our cases worked with public institutions like public libraries and built community partnerships to foster digital education. The Housing Authority of Choctaw Nation (HACNO) worked closely with the local Youth Advisory to empower students through digital volunteering programs and foster connections within the community. The Jersey City Housing Authority (JCHA) partnered with local colleges to bring in students to train seniors on portable tablets. Many large and small technology firms have their base in Seattle, including organizations like Microsoft and Amazon. In addition, there are many smaller technology firms in the City. Partnering with local businesses might help the

Seattle Housing Authority (SHA) extend its reach and gain valuable connections to help sustain its programs.

2. Apply for Funding Opportunities.
Actively pursuing funding opportunities has proven to be instrumental for housing authorities in expanding broadband access to their residents. The creation of new funding streams, such as the Affordable Connectivity Program by the FCC, has provided all the housing authorities with a chance to address the connectivity needs of their residents, who are among the most disconnected. Similarly, the latest round of Washington State broadband funding has enabled SHA to significantly expand its Digital Navigator team, making it possibly the largest dedicated team for this work in any city nationwide. HACNO's ability to utilize both local tribal funds and federal grants, along with funds from NAHASDA, provides examples for other tribal nations in leveraging diverse funding opportunities to deliver broadband connectivity. These examples underscore the importance of actively seeking and accessing diverse funding sources to support broadband expansion efforts and bridge the digital divide in underserved communities.

3. Learn from others.
Leveraging networks and learning from other housing authorities are strategies used by all the housing authorities in our cases. The monthly calls facilitated by HUD offer a unique opportunity for HACNO, JCHA, SHA, and other PHAs under ConnectHomeUSA to collaborate and learn from each other's experiences.
SHA's Digital Navigator program may have been the first in the country, but it is not the only one in 2023. Connections through the ConnectHomeUSA program present an opportunity to learn about what other cities are doing, their own funding sources and partnerships. This can help a PHA design a model for sustaining programs long-term. Overall, building community partnerships, applying for funding opportunities, and fostering connections among housing authorities are essential for addressing broadband accessibility and promoting digital inclusion in affordable housing communities nationwide.

Appendix A

About the project

This case study report is part of a broader research effort at Cornell on Broadband and Digital Inclusion, directed by Professor Mildred E. Warner. This set of case studies focused specifically on broadband deployment in publicly supported housing.

Links to this report and other reports from the Cornell Broadband Research Team can be found at https://labs.aap.cornell.edu/node/881.

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Case Study#1
Promoting Digital Inclusion by a Local Housing Authority:
The Case of the Choctaw Nation of Oklahoma

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March 2024

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Introduction

The Choctaw Nation of Oklahoma, the third largest federally recognized tribe in the United States,[1] is located in the southeastern corner of Oklahoma. As a tribal nation, the challenge of having high-speed internet connections is more acute. According to a recent report published by the Federal Communications Commission (FCC), 20.9% of the residents in tribal areas lie outside the coverage of fixed terrestrial 25/3 Mbps internet connection in 2019, compared to the number of 17.3% in rural areas and 1.2% in urban areas.[2]
The Connect Home project in the Choctaw Nation is aimed at closing the digital divide in public and assisted housing. It was launched with the support of political will from the federal government. In 2015, then-President Obama visited the Choctaw Nation to announce the nationwide ConnectHome program.[3] Twenty-eight local public housing authorities including the Housing Authority of the Choctaw Nation of Oklahoma (HACNO) [a] were selected to join forces in digital equity in their communities.

The determination to bring connectivity and digital upgrade to the whole tribe was written in the 2021-2025 Strategic Goals and Strategies of the Choctaw Nation.[4] Aligned with the goals of enhancing the quality of life, boosting financial growth, preserving Choctaw culture, and becoming an employer of choice, the fifth objective-- digital transformation seeks to strategically position the tribal nation within the digital economy by tackling connectivity and technological challenges.[5]

This case study report explores the digital equity efforts of HACNO over the last few years. The housing authority has a variety of housing programs for tribal members, including the Lease to Purchase program (LEAP), and 202 Supportive Elder Housing. In 2023, HACNO has 1,165 Choctaw-managed properties. Among them are 406 units in Affordable Rental Housing I&II programs, 239 for Independent Elder units, and 87 Choctaw 202 Properties

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[a] The Housing Authority of the Choctaw Nation of Oklahoma (HACNO) is also sometimes mentioned as the Choctaw Nation Housing Authority (CNHA) in the HUD case study and other open sources. See https://www.hudexchange.info/programs/connecthomeusa/case-studies/cnha-fiber-networks-and-reliable-internet-service-provided-to-remote-sites-for-the-first-time/

owned by HUD. Unlike the properties owned or managed by most housing authorities in the U.S., many HACNO developments are in remote areas without ISP coverage.[6] Therefore, many households in the Choctaw Nation could not access internet services from their homes before the Connect Home program was introduced.

This case study report is based on expert interviews conducted by the research team in mid-2023, as well as a review of public documents from HACNO, HUD, and other partners involved in the initiatives described below. A list of interviewees can be found in Appendix B.

Challenges in terms of the State of Connectivity in Public Housing

Minimal Connectivity
When HUD first started the ConnectHome project in 2015, the state of internet access for residents of public housing was poor. The HUD's National Baseline Internet Access Survey surveyed residents' connectivity from November 2015 to June 2016. The national results showed that only 34% of the public-housing households had high-speed Internet access with computers, laptops, or tablets; 35% were under-connected and 31% had no Internet access at home.[7] For the Choctaw Nation, the situation was worse -- "we found out only 3 percent had at-home Internet (in 2015)," said Fred Logan, the former manager for the Choctaw Connect Home program, at the 2017-2018 ConnectHome Webinar. [8]

Josh Raper, the current Manager for the Choctaw Connect Home Department, explained that: "the connectivity was very minimal… I mean, we struggled because we are a rural area." Activities like visiting school calendars and educational websites, filing health information and job applications, and reaching out for schoolwork help were essential actions that required Internet access for Choctaw Nation residents. However, there weren't any Internet Service Providers (ISPs) interested in serving the entire geographic area.[9]

Geographic Challenges
One reason why many ISPs were not interested in building infrastructure is that the terrain of the Choctaw Nation is so large that it even exceeds some states, like New Hampshire or Rhode Island and the housing is spread out. Although fiber would have higher speeds and fewer interruptions, laying fiber and establishing Internet service in these areas would be costly. When fiber is not available, HACNO would provide wireless options by cell towers or coax internet services as alternatives. However, in some places, these alternatives may show poor connectivity results in speed tests due to the considerable distance from infrastructure towers. The vast geography also posed another barrier for housing authority staff who aimed to contact each resident of HACNO housing for better digital adoption service.

Distinctive Governance System
In addition to the geographic and technical challenges in infrastructure, the distinctive governance system of tribal nations also affected how the funding and policy are structured. The Tribal Council and its city governments are responsible for all the tribal members. However, this means tribal members living outside the Choctaw official 10.5 county area and non-tribal residents living in the territory may find it hard to receive services from public sector actors like HACNO.[b]

For ConnectHome projects, only the Choctaw 202 Supportive Elder Housing is not limited to tribal members, as these are open-market properties. "We have people that live outside of the 10.5 counties of the tribal reservation," said the current Program Manager Raper, "I wish there was a way we could provide them with Internet services."

Connect Home Programs in Choctaw: Access

Housing Programs Under the Connect Home Program
Currently, there are five Choctaw housing programs enrolled in the ConnectHome program: three affordable housing programs for tribal members (Affordable Rental I&II and Independent Elder Housing), one affordable housing program open to all the elderly fulfilling the requirements (202 Supportive Elder Housing), and a Lease to Purchase (LEAP) program funded by the tribe (See Table 2-1).

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[b] "10.5 counties" as the service coverage for the Choctaw Nation refer to Atoka, Bryan, Choctaw, Coal, Haskell, Hughes, Latimer, Leflore, McCurtain, Pittsburg, and Pushmataha counties.

Table 2-1. Housing Programs Enrolled in the Connect Home Program in the Choctaw Nation

`	Affordable Housing				Housing Purchase
	Affordable Rental	**Affordable Rental II**	**Independent Elder Housing**	**202 Supportive Elder Housing**	**LEAP**
Ownership	HACNO	HACNO	HACNO	HUD	/
Type	Multi-family	Multi-family	Single-family	Multi-family	Multi-family
Eligibility	Tribal members in the 10.5 counties	Tribal members in the 10.5 counties	Tribal members in the 10.5 counties	Residents in the terrain	Tribal members in the 10.5 counties
Other Requirements	15% income towards rent	20% income towards rent	Age >= 55, >=62 preferred, HUD income guidelines 15% income towards rent	Age >= 62 HUD income guidelines	Two years of employment
Disability Rate	10%	10%	15%	15%	/
Total Units	406		239	87	200+
Funding Sources for Broadband Infrastructure and Internet Subscriptions	NAHASDA Grants from HUD	NAHASDA Grants from HUD	NAHASDA Grants from HUD	Program Income Generated from Each Site	Tribe
Locations	Antlers, Atoka, Bokoshe, Broken Bow, Calera, Caney, Coalgate, Hugo, Idabel, Poteau, Quinton, Red Oak, Savanna, Stigler, Talihina, Wilburton, and Wright City.		Antlers, Atoka, Broken Bow, Calera, Coalgate, Hartshorne, Hugo, Idabel, Poteau, Savanna, Smithville, Stigler, Talihina, and Wilburton.	Atoka, Durant, Hugo, Idabel, and Poteau	All across the Choctaw Nation

Source: Author Analysis, based on the interview with the current Connect Home manager Josh Raper and materials from the Housing Authority of Choctaw Nation of Oklahoma (HACNO)[10] and HUD case study.[11] 2023.

Smart Contracts with ISPs

Currently, the Choctaw Nation of Oklahoma pays for all the broadband infrastructure upgrades. They are usually charged one-time fiber installation fees to ISPs, the price of which depends on factors like location, geological characteristics of the land, and the number of units. Sometimes ISPs are inclined to waive the construction costs because of the smart negotiation contracts HACNO makes with the ISPs. HACNO agrees to cover the internet service payments for households by including these in HACNO's annual budget through a multiple-year contract with ISPs. This ensures effective demand for internet providers' services, the monthly charge of which for each household is around $45 on average.

HACNO has built up partnerships with Cherokee Communications, Dobson Fiber, Pine Cellular, and Vyve Broadband for fiber options, and with T-Mobile and Verizon for hotspots and towers. Wireless options like Verizon jetpacks are issued to tenants during the fiber installation period as a temporary solution for internet connection. Among these partnerships, Cherokee Communications, Pine Cellular, Vyve Broadband, and Verizon were

introduced from the ConnectHomeUSA Initiative back in 2015. [12] Every year, HACNO also does an open Request for Proposal (RFP) to all the ISPs.

The tribal nation also covers all the internet subscriptions for the residents of their housing programs. To achieve this, the tribe has accessed funding from different sources. In the Connect Home Manager Mr. Raper's opinion, one of the biggest advantages of being a tribal nation in terms of delivering broadband connectivity is that HACNO can leverage both local tribal funds and federal grants. The Internet subscriptions in Affordable Rental Programs and Independent Elder Housing are covered by the Native American Housing Assistance and Self-Determination Act (NAHASDA) funding. The Chief and the Tribal Council also strive to reallocate local funds and leverage local programming. Section 202 Elder Housing program uses the program income generated from the site, and the LEAP program gets its internet plans paid by the tribal nation out of its own budget for the homeowners (see Table 2-1).

Benefits as a Tribal Nation: Funding Sustains Affordability

The Very Beginning
One benefit of joining ConnectHome was that it held National ConnectHomeUSA Summits providing an opportunity to communicate and connect with digital experts. The 2015 Summit in Washington D.C. was the one that brought assistance from Michelle Garber in USAC (Universal Service Administrative Company) to the Choctaw's Connect Home team.[13] Among the programs under USAC, there are two federal programs, Lifeline and Affordable Connectivity Program (ACP), that offer eligible users a monthly subsidy for internet or phone services.

"We are a little different because we're tribal. We have a different budget and different standards," said Josh Raper. For example, the ACP Program offers consumers a monthly benefit of up to $30 for broadband services while providing up to $75 per month if they are residents of Tribal lands.[14] When residents are enrolled with Lifeline, they are automatically qualified for the ACP. Although the FCC has cut back on the Lifeline project now, back in 2015 the program nearly covered every dollar for the service subscription of Connect Home residents. This definitely helped Choctaw's Connect Home stand on its feet, especially at the very beginning of the program.

Sufficient Funds as a Tribal Nation
The main funding source HACNO now uses for the housing program is the Native American Housing Assistance and Self-Determination Act (NAHASDA). It helps promote housing services and maintenance and ensures better access to private mortgage markets for Indian Tribes, members, and reservations. In 2022, HACNO applied for $13,016,928 in

grants from the NAHASDA Indian Housing Plan for FY2023, among which $400,000 was spent on Connect Home Program for 600 households. In 2023, HACNO submitted an application for $13,439,758 for FY2024, where an estimated $400,000 will be spent on 200 Connect Home units.[15]

Table 2-3. NAHASDA Grants Requested in Recent Years

NAHASDA	Connect Home Program		+ Other Programs
Fiscal Year	Capacity	Grant Request	Total Grant Request
2023-24	200 Units	400,000.00	13,439,758.00
2022-23	600 Households	400,000.00	13,016,928.00

Source: Author analysis based on Tribal Council's Approval of the Application of NAHASDA 2022-2024.

Beyond NAHASDA, the Tribal Council has actively explored and applied for different federal grants. The previous Choctaw Connect Home manager, Fred Logan, noted in the 2017-2018 ConnectHome training webinar[16] that, "Choctaw Nation has their own grant department… that goes out looking for grants and they were able to get us one of these to get us started to help pay for all the Internet service." The grant applications for housing and broadband connectivity include the Tribal Broadband Connectivity Program Grant, United States Department of Agriculture (USDA) funds, the Coronavirus Aid, Relief, and Economic Security (CARES) Act and American Rescue Plan Act (ARPA) funding.[17]

Digital Adoption is Highly Valued

Local Efforts
The Connect Home team of the HACNO is dedicated to the third pillar of broadband connectivity – *adoption*. It contains three main staff in the team: a manager, a training coordinator who conducts individual and group training for the residents and coordinates events with public libraries for digital knowledge, and an IT project coordinator to handle all the technical issues with all the equipment. HACNO has a contract with Azpen Technology for tablets, which are taken to the residents and used for training.

Collaboration in the community in the Digital Inclusion Ecosystem has been highlighted greatly by HACNO. They collaborate with the Youth Advisory Board (YAB), a local program that empowers students in grades 8–12 through leadership projects. Digital training with the elderly is one of the volunteer activities they support. "… sometimes we will have training, say in the middle of the week on a Wednesday evening at an Independent Elderly (program site). And these are high school kids. But we have them sit with the elders and help them set up emails and other things. And it's also good for the youth and the elders to get to know each other, talk to each other, and kind of learn," said Josh Raper. The students even do games, throw holiday parties, and host karaoke and dancing events with the

elderly, bringing all their favorite activities as well as vibrancy into the community. "It's a win-win for everybody... We furnish a meal for everybody there. And it's turned out really well. Both parties are enjoying it quite a bit."

Figure 1-1. Training of Youth Advisory Board. Source: Choctaw Nation of Oklahoma[18]

Working with public libraries to foster digital education is something common for housing authorities across the country.[19] The Choctaw Housing Authority works with Oklahoma libraries to get every tenant a library card, so that they can have access to the digital literacy programs and all kinds of video courses.

The Impact of ConnectHomeUSAand EveryoneOn's Partnership Network
The strong network of EveryoneOn from ConnectHomeUSA supports the housing authorities greatly in building partnerships, especially in terms of the third pillar of broadband connectivity –*adoption*.

Best Buy, one of the biggest supporters of EveryoneOn, promised to offer HACNO residents computer training and technical support to gain the academic and economic benefits of broadband access. [20] Kano is another partner that the Choctaw Connect Home team met in the 2015 Washington ConnectHome meeting.[21] Kano provides training opportunities for students at different levels of education. Like other housing authorities in ConnectHome programs, the Housing Authority of the Choctaw Nation of Oklahoma also works with ABCMouse which provides a code for its residents so they can receive a one-year free membership for online courses, including coding.

What's next?

In 2023, more than 90% of HACNO residents have internet access, 77% of which is connected to fiber (See Table 2-3). By the end of 2024, it's estimated that over 600 housing units in the Choctaw Nation will be completed. HACNO is now working with ISPs to get internet access fiber laid before the tenants move in.

The next step for the Housing Authority of the Choctaw Nation is to make its properties 100% connected to the Internet, the higher the proportion of fiber, the better. "That is our struggle every day. We have such rural areas in our 10.5 counties that finding an ISP to provide affordable broadband services is a problem in some of the areas," said the current program manager Raper, "every year we have a goal of adding more units. Some of the areas are going to be harder, the construction costs are going to be a little higher and we have to negotiate that. We might have to wait a little longer on some of those. But yeah, we will still make sure that they have connectivity, one way or another."

Table 2-3. Connectivity of the Units Managed by the HACNO in 2023

Year	Units Managed by HACNO	Connected		Connected to Fiber		Connected to Wireless	
		Number	%	Number	%	Number	%
2023	1,165	1,076	92%	901	77%	175	15%
2022	1082	920	85%	561	52%	359	33%
2021	942	755	80%	383	41%	372	39%

Source: Data provided by the Connect Home manager Josh Raper, 2023.

The next step for the Housing Authority of the Choctaw Nation is to get every tenant connected to the internet. Currently, there are more than 600 housing units being constructed throughout the 10.5 counties. The estimated time for completion is by the end of 2024. HACNO is now working with ISPs to get internet access fiber laid before the tenants move in.

Appendix B

List of interviewees
Josh A. Raper, Manager for the Connect Home department, Housing Authority of the Choctaw Nation of Oklahoma

About the project
This case study report is part of a broader research effort at Cornell on Broadband and Digital Inclusion, directed by Professor Mildred E. Warner. This set of case studies focused specifically on broadband deployment in publicly supported housing.

Links to this report and other reports from the Cornell Broadband Research Team can be found at https://labs.aap.cornell.edu/node/881.

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Case Study#2
Promoting Digital Inclusion by a Local Housing Authority:
The Case of Jersey City, New Jersey

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March 2024

Introduction

In 2018, the Jersey City Housing Authority (JCHA) decided to take on the challenge of addressing the digital divide. Their primary focus was to combat the lack of broadband accessibility among their resident population. The JCHA serves over 3,400 residents across their nine public housing developments, many of whom make less than $20,000 annually,[1] less than half of the per capita income in the area.[2] Through resident surveys, the JCHA found that, in line with national trends, roughly two-thirds of their resident population did not have access to the Internet.

This case study delves into the JCHA's efforts to bridge the digital divide. First, we will look at the background and preliminary challenges to broadband accessibility the resident population faced, including cost of service and inhibitory requirements such as credit checks and annual contracts. Then, we will discuss early initiatives undertaken by the JCHA including the establishment of their Department of Resident Empowerment and Community Engagement (RECE), and their participation in the ConnectHomeUSA (CHUSA) program, which laid a conceptual framework for their later initiatives. Specific strategies the JCHA used in identifying and contracting with new internet service providers (ISP) will focus on infrastructural challenges faced by the housing authority due to the age of their buildings, and the ways in which the ISPs addressed these. Once the technical foundation is set, we will shift to look at the importance of community engagement in integrating the three A's of digital inclusion–Access, Affordability, and Adoption–[3]as we look at senior-specific programming the JCHA undertook. Lastly, we will explore the ongoing challenges faced by the housing authority, and draw our conclusions.

This case study was based on review of publicly accessible documents as well as expert interviews conducted with key players in the JCHA: Trena Hinton, the Assistant Director of Resident Empowerment and Community Engagement (RECE), and Devin Monserrate, the housing authority's Digital Inclusion Coordinator.

Foundation and Early Initiatives

Background and Preliminary Challenges
Before the JCHA introduced its broadband initiatives, residents had to secure their own internet access. This typically involved identifying local Internet Service Providers (ISPs) and registering their households for service. This process was a barrier, noted Hinton of RECE, because many ISPs required credit checks, contracts, and a checking account. She acknowledged that a number of JCHA residents had credit issues stemming from unfulfilled contracts, and many lived paycheck-to-paycheck without maintaining bank accounts.

While local ISPs offered reduced-rate plans to low-income households, the quality of those plans did not meet household needs. A 2021 JCHA report shed light on this disparity, noting that the service offered to their low-income residents as part of the Comcast Essentials program met only the minimum requirements of the Federal Communications Commission's definition of broadband,[4] and was far slower than even the lowest-speed plan offered to the company's conventional customers. There were many additional barriers associated with the incumbent's service, including required credit checks and annual contracts.[5]

The JCHA recognized that a more hands-on approach was needed to ensure their residents received access to high-quality, high-speed internet rather than relying on commercially available plans. Two early initiatives were the establishment of their Department of Resident Empowerment and Community Engagement (RECE), and their participation in the Department of Housing and Urban Development's (HUD) signature digital inclusion program, ConnectHomeUSA (CHUSA).

Establishment of RECE and Digital Access Insights
Established in 2018, the Department of Resident Empowerment and Community Engagement (RECE) was given the mission to empower residents and invest in social infrastructure.[6] One of their early initiatives was a digital access survey designed to elucidate the needs of their community. The results of the survey revealed that only one-third of JCHA residents had internet access, and, of that group, the majority (68%) relied solely on smartphones for connectivity. Research has shown that relying solely on smartphones for internet access doesn't allow individuals to complete complex tasks, or access the full benefits of connectivity.[7] Many of the JCHA's future actions were predicated on the initial surveys conducted by RECE.

Participation in ConnectHomeUSA
In 2018, the JCHA joined ConnectHomeUSA's 3rd cohort. Participation in ConnectHomeUSA has allowed the JCHA to leverage what Monserrate described as a "national-regional

networking group." As a member of this networking group the JCHA was able to meet with other ConnectHomeUSA communities on a monthly basis, exchanging valuable information and experience in the quest for broadband accessibility. One of the JCHA's major takeaways from the program was the "three pillars of digital inclusion" framework, which focused on the three A's: Access, Affordability, and Adoption. Each pillar, while important in its own right, only partially addresses the digital divide. To achieve comprehensive digital inclusion, all three pillars must be balanced and work together.

In our interview with Hinton and Monserrate, it was clear that the three A's acted as a practical framework for the JCHA's digital inclusion efforts. While early strategies focused on affordability, the JCHA soon expanded their programming to include accessibility, through the provision of low-cost devices, and adoption, through digital literacy training.

Addressing Infrastructure and Broadband Challenges

Proactive Engagement with ISPs
As the JCHA built out their digital inclusion strategy, it became clear that they would need to directly reach out to local ISPs to secure broadband services for their residents. Through prior initiatives, the JCHA understood the specific needs of their community, and could identify which ISPs would be the best fit. They knew they needed an ISP which would offer low-cost services and did not require credit checks or annual contracts. In 2021, the JCHA released a public bid for ISPs that detailed service, equipment, and financing specifications, as outlined in Table 3-1.

JCHA sought an ISP that would offer their residents broadband service comparable to that of the general public. In exchange, they offered up to $10,000 to help cover the infrastructure costs of the first two sites.[8] After reviewing the bids they received, the JCHA opted to contract with two wireless ISPs, Starry and Andrena. Both ISPs offered very low-cost, tiered services to their resident population, with faster speeds than existing local ISPs. Hinton and Monserrate highlighted the importance of the tiered approach, noting the varied connectivity needs of their residents.

Table 3-1. Specifications and Details of JCHA's ISP bid.

Specification	Details
Wi-Fi Infrastructure	Property assessment and design
	Property assessment and design
	Installation and maintenance
	Provision of services directly to residents
Equipment and Technology	Provision of all required devices and technology
	Essential equipment provided to residents without charge
Broadband Speed	Minimum 30 Mbps, symmetrical
Rates	Introductory: No more than $10/mo. for a minimum of two months
	Regular: No more than $20/mo., inclusive of taxes/fees
Contractual Terms	No credit checks
	Month-to-month contracts, no annual contracts
JCHA Financial Support	Maximum $10,000 for infrastructure costs for the first two sites
	Additional sites supported based on availability of funds

Source: Jersey City Housing Authority - Invitation to Bid.[9]

Through the Affordable Connectivity Program (ACP), which provided a discount of up to $30 per month toward Internet services, several tiers of Starry and Andrena's services came at no cost to residents: Starry Connect (30 Mbps/30 Mbps), Starry Select (100 Mbps/50 Mbps), and Andrena's Tier I plan (≤100 Mbps), whose pre-subsidy cost was $15, $30, and $25/mo., respectively.[10]

While the JCHA's partnership with Starry and Andrena was strategic in addressing many of the needs of their resident population, the wireless nature of the two ISPs was particularly helpful in averting the potential infrastructural challenges associated with traditional, hardline broadband deployment. Moreso, the low cost of installation meant that the JCHA could focus their resources on addressing other aspects of digital inclusion.

Wireless Solutions for Infrastructure Challenges
The lack of infrastructure to support broadband internet access for residents in Jersey City and in the JCHA was one of the major contributing factors to the digital divide amongst their residents.[11] In order to address this, the JCHA realized that they would have to bring broadband services to their developments–either through traditional, hardline broadband or through wireless service.

While hardline broadband is generally thought of to be the most reliable technology available, the costs of hardline broadband remain prohibitive. [12] This is especially true for chronically under-resourced public housing authorities, who often grappled with the added challenge of aging infrastructure.[13] The process of hardwiring an existing building for broadband usually required walls being drilled into, or even opened, to run wire through existing cavities.

In older buildings that weren't constructed with modern technology in mind, the process tended to be more difficult and had the potential to expose previously unknown problems. In our interview, Hinton expressed that the age of the JCHA's buildings caused the largest setbacks and the longest delays to their projects: "When you're building out these projects, you think you know what you're going to find in these old buildings. A lot of times, the delays come in when you really start the construction projects and you start tearing down." All of the JCHA's largest developments–those with over 100 dwelling units–were completed before 1966, and most were completed in the 1940s, which would make the installation of wireline broadband significantly more difficult and more expensive. See Table 3.2.

In consultation with a vendor, the JCHA reported that the cost would be extremely high to hardwire one of their largest developments, Berry Gardens I & II at 92 Danforth Avenue.[14] This would not include the associated costs if additional issues were discovered during the wiring process. Given these high costs, along with the invasive nature of construction, RECE concluded that "the most significant action the agency [could] take to bridge the digital divide [was] to contract for the design and installation of wireless mesh networks and affordable, high-speed Wi-Fi services for residents."[15] Wireless broadband networks tend to be cheaper and non-intrusive, making them ideal.

Furthermore, while the JCHA offered to pay up to $10,000 in installation fees to incentivize ISPs in the bidding process, both Starry and Andrena covered the entire cost of installation for affordable-housing units.[16,17] Additionally, after installation, both companies interacted directly with the residents. This means that while the JCHA facilitated the initial relationship between their community and ISPs, they did not need to allocate significant on-going resources to installation or connection.

Table 3-2. Number of Dwelling Units and Year Completed of the JCHA's Developments

Development	No. Dwelling Units	Year Completed
Marion Gardens	228	1940
Booker T. Washington Apartments	307	
Buildings 1-7		1943
Buildings 8 & 9		1955
Hudson Gardens	221	1944
Holland Gardens	189	1944
Curries Woods		
Curries Woods - 3 New Heckman Drive	91	1957
Phase I Townhouses	46	1998
Phase II Townhouses	20	1998
Phase III Townhouses	18	2000
Phase IV Townhouses	40	2003
Phase V Townhouses	80	2005
Berry Gardens		
Berry Gardens I & II	285	1966
Berry Gardens III & IV - Danforth Hall	72	1982
Thomas J. Stewart	48	1888[18]
254 Bergen Avenue	36	ND
Arlington Gardens	90	ND

Source: Jersey City Housing Authority – Real Estate Portfolio.[19]

As of 2022, Andrena had begun broadband service in three JCHA developments: Berry Gardens, Booker T. Washington, and Curries Woods, with expected service to Marion Gardens by 2023. Starry had begun broadband service at one development, Hudson Gardens, with expected service to Thomas J. Stewart by early 2023.[20]

While the technical foundation was set, true digital inclusion would come from the integration of the three A's. This integration went beyond Internet service; the JCHA knew that to narrow the digital divide, they must offer their residents devices and digital literacy training. Moreso, they needed to design their programs to encourage close ties with local institutions, which Hinton referenced as a major tenet for ongoing programmatic support, to sustain adoption efforts.

Fostering Community Engagement and Digital Literacy

While a robust broadband network lays the groundwork for digital inclusion, it does not stand alone. Hinton and Monserrate noted that a comprehensive broadband program should simultaneously address access to devices and digital literacy training alongside internet connectivity, given the intertwined nature of the three A's. Through close partnerships with national organizations and local institutions, the JCHA has been able to institute programs that exist at the intersection of access, affordability, and adoption.

One initiative focused on the JCHA's elderly residents. Roughly half of all residents aged 60 and above, and about two-thirds aged 75 and over, reside in the JCHA's designated elderly/disabled communities–Berry Gardens and Thomas J. Stewart. These initiatives, funded through the AARP Foundation's Connected Communities and Community Challenge grants, address a demographic that JCHA's Executive Director, Vivian Brady-Phillips, described as being among "the most digitally disconnected of all demographic groups."[21]

In addressing access and cost, the JCHA provided seniors with smart-home and other devices and established a computer lab. To bolster adoption, they offered free, on-site digital literacy courses. While aimed at addressing the three A's, this program also worked to foster stronger community ties. In our interview, Hinton emphasized the importance of establishing relationships with local institutions, to bolster both community integration and program success. One such collaboration was through a Community Challenge grant, where the JCHA partnered with the local Hudson County Community College (HCCC) and brought in students to train seniors on portable Amazon Fire Tablets. Monserrate highlighted the practical aspect of the program, mentioning how having residents practice the skills they learned both at home, on the tablets, and in the communal computer lab, helped foster learning.[22]

Both seniors and students benefited from the program. In exchange for twenty hours of tutoring over a six-week period, students were compensated at $17/hr., received a travel stipend, got customer service and digital literacy training, and were given a free laptop upon completion.[23] Dr. Christopher Reber, the President of HCCC, added a touching note on the students' experience stating that while they were rewarded with new laptops, their greatest reward was "working one-on-one with [their] most treasured community members."[24]

The importance of hiring the twelve student tutors, and having the funds to support their employment, made all the difference to the program, as former JCHA Chief of Staff, Allison Strobel explained: "We learned that we really needed more hands to support one-on-one tutoring for people who are not familiar with technology…well-paid internship opportunities are few and far between. Building that connection and giving something back

to the students while providing a necessary service to our seniors was one of the really great benefits of the funding from AARP."[25] As a result of the program, many of the HCCC students expressed a desire to re-invest in the JCHA community, and have stayed on as volunteers to work with the seniors.[26] The success of the senior program went beyond the tangible benefits of broadband connectivity, device access, and digital literacy training. It showcased the power of community collaboration and how bridging the digital divide also bridged generational and societal gaps, as well as encouraging wider community engagement.

Ongoing Challenges

Even with tangible successes, the JCHA faced two persistent obstacles to their digital inclusion goals: a deeply-rooted distrust of government programs amongst their residents, and the housing authority's low visibility in the larger regional context.

Lack of Resident Trust
Monserrate highlighted a lack of resident trust as one of the major on-going barriers to the housing authority's broadband initiatives. The inherent skepticism towards new programs was palpable, as Monserrate recalled questions he received as he attempted to sign residents up for the ACP; residents would ask him if they were going to be secretly charged, or if their other government benefits would be removed if they participated in the program. Overcoming this barrier was not straightforward, and concerns persist. Monserrate explained that organic and community-driven strategies have proven the most effective. He found that word-of-mouth, not direct advertising has been the best way to combat fears. Good experiences passed on from friends and neighbors have been the best way to validate programs.

Low Visibility and Funding
Tucked between the mammoth housing authorities of New York City and Newark, the JCHA has often found itself overlooked for funding opportunities and other resources. However, Hinton argued that what the JCHA lacked in size and visibility, they made up for in innovation and agility. Hinton credits much of JCHA's digital inclusion success to her team, whose ability to be creative and quick on their feet has allowed the smaller housing authority to become a leader in the field. Hinton also expressed the importance of local political buy-in, and strengthening community ties: "The greatest resource you can have," she says, "is that your community is supportive and knows that you've done the work, and that you're dedicated to it." When both the community and the local politicians stand behind the housing authority, recognizing its dedication, it amplifies the impact and reach of every initiative undertaken.

Conclusions

In the past couple of years, we have seen increased interest in closing the digital divide across America. New funding streams, through FCC programs like the Affordable Connectivity Program, have been created that offer housing authorities, which often lack the funds for large infrastructure projects, an opportunity to bring broadband to their residents, who are among the most disconnected. The JCHA, in particular, has stood out as an innovator, taking challenges in stride, and coming up with effective, creative solutions. The JCHA's holistic approach to digital inclusion addressed not only the technical aspects of broadband accessibility, but also supported their initiatives with community-driven adoption efforts. Their commitment to the three A's of digital inclusion–Access, Affordability, and Adoption–paired with their ongoing partnerships with national organizations and local institutions, ensured that their residents were not only connected to the Internet, but were ready and able to navigate it. The JCHA's efforts remind us that digital inclusion is not only an effort for technological improvement, but for low-income Americans to have the opportunity to participate in their communities and wider society, as a whole.

Appendix C
List of interviewees
Trena Hinton, Assistant Director of Resident Empowerment and Community Engagement, Jersey City Housing Authority
Devin Monserrate, Digital Inclusion Coordinator, Jersey City Housing Authority

About the project
This case study report is part of a broader research effort at Cornell on Broadband and Digital Inclusion, directed by Professor Mildred E. Warner. This set of case studies focused specifically on broadband deployment in publicly supported housing.

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Case Study#3
Promoting Digital Inclusion by a Local Housing Authority:
The Case of Seattle, Washington

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Introduction

Access to the internet has become increasingly crucial in recent years. However, even in 2023, many people still lack access to reliable internet. In the Pacific Northwest City of Seattle, Seattle Housing Authority (SHA) is working to change that, targeting the low-income individuals in their housing units. SHA seeks to meet a diverse range of broadband needs for all people in their units, including people of color, seniors and the elderly, and disabled individuals.

This report will discuss the work of the SHA in bringing broadband services to the diverse low-income residents whom they serve across Seattle. It will discuss the organization's efforts in broadband deployment, including in-unit WiFi and the creation of local computer labs. It will then highlight some of challenges that SHA has faced, like lack of funding and the need for data. It will conclude with recommendations for moving forward.
The report is based on expert interviews conducted by the Cornell City and Regional Planning Broadband Research Team in 2023, as well as a review of public documents from SHA and other partners involved in the distribution of broadband in King County. A list of interviewees can be found in Appendix D.

About Seattle Housing Authority
Seattle Housing Authority (SHA) manages multi-family, low-income units in the City of Seattle. SHA is a national leader as a housing authority in providing digital broadband to the members of its community and beyond. Through the years, SHA has committed to bringing broadband to city residents; it was a pioneer in the digital broadband space, with a dedicated Digital Navigation Team and a Digital Equity Subcommittee. This Committee has established computer labs in their public housing communities. Seattle is the first city in the nation to have a program like this[70] and SHA has worked hard to make the program a success. In the beginning, outside funding for broadband work was hard to find, so the program began simply with existing SHA staff. Since COVID-19, more federal funding became available, and SHA could expand its programming. It now provides internet to individual housing units via subsidies, has free WiFi in its building's lobbies, runs several community computer labs, and continues to grow its Digital Navigation team that helps to support residents in connecting to the internet.

Demographics and Geographics
Seattle is located in northwest Washington state, along the Eastern shore of the Puget Sound, an inlet of the Pacific Ocean. It is the largest city in the Pacific Northwest. Downtown Seattle is bordered by water on two sides, which can influence travel routes in and out of the city. Seattle is the city seat of King County, the most populous county in the state of Washington.[71] Because of this, Seattle plays an important role in the Washington economy and as a policy leader in the Pacific Northwest.

Seattle has a population of around 725,000, and the Seattle Housing Authority serves 38,306 of those individuals annually.[72] According to the SHA team, their digital initiatives have brought broadband access to over 5,000 of their residents so far. Of the households Seattle Housing Authority serves, 93 percent have incomes at or below 50 percent of the Area Median Income, and 81 percent are at or below 30 percent of the Area Median Income.[73] SHA serves a range of populations, but housing units are primarily located in areas that are low-income and have a high percentage of people of color.

Past Broadband Projects
SHA was interested in broadband for many years before getting involved in projects. It first started with internal SHA staff support, but then, in 2015, the City of Seattle was brought on in the first cohort of the ConnectHomeUSA program.[74] While the program does not provide direct funding, it does provide a support group to talk with other housing authorities who are doing similar work. These are connections that SHA still uses today. ConnectHomeUSA help facilitate partnerships and find grants. The program first helped Seattle get a grant from Google to provide families with up to three years of free connectivity.

During the first two years of the program, the City of Seattle IT Department provided over 200 laptops. In later years, ConnectHomeUSA continued to help SHA find local broadband providers to connect with, like Comcast Internet Essentials, to support low-income individuals with gift cards for $120 for participating in the program and an entire free years' worth of broadband. While it has been a challenge for SHA to distribute these benefits, the team has worked to educate their community on the advantages of in-unit broadband and helped to enroll them in this program. In addition, ConnectHomeUSA was able to provide SHA with staff through its AmeriCorps VISTA program.

Over the years, SHA continued to grow its programs that started with support from ConnectHomeUSA. In 2018, the City of Seattle's Department of Information Technology launched a survey targeted at Seattle residents to understand the current state of technology access, literacy, and involvement. SHA worked with Seattle Information Technology to understand the results of the survey as they related to SHA's units, and the organization learned that 22% of SHA households sampled in the survey lacked internet access.[75] This sparked a greater desire for SHA to take action to address the digital divide in

the community. This was when SHA founded a cross departmental group for digital initiatives, including subcommittees focused on emergency communications, data collection, and digital equity. The survey was conducted again in 2023, and while the technology data is not yet available, SHA's initiatives have already helped a significant number of residents gain internet access.
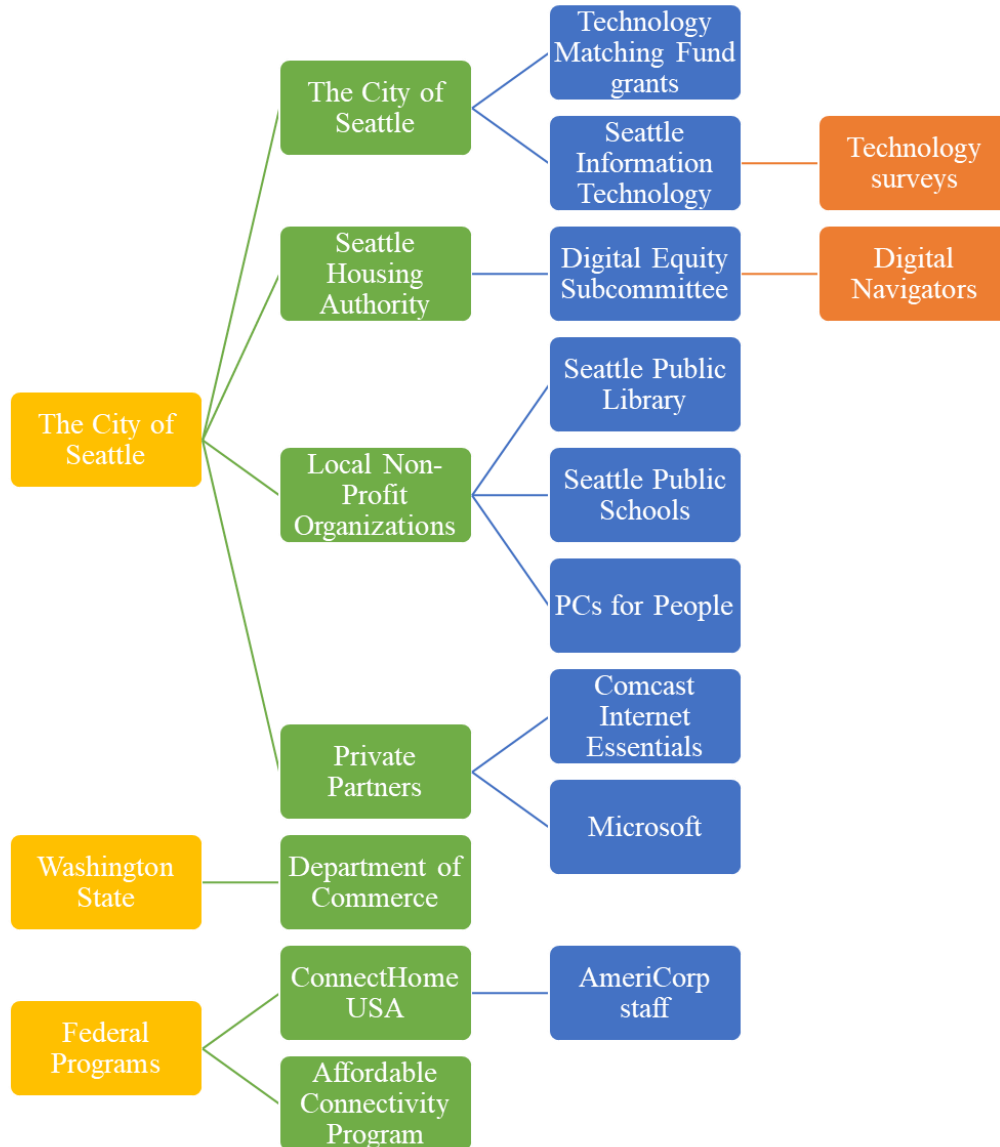

Figure 4-1. Connectivity Projects of Seattle Housing Authority

These projects have been successful through partnerships and various sources of funding. Through city, state and federal support, the SHA along with local non-profit and private providers (outlined in blue), was able to launch a series of initiatives in Figure 4-1 above. Of special importance to project design were the surveys and Digital Navigators (shown in orange).

Broadband Funding
After participating in the initial ConnectHomeUSA program and as a result of the Seattle Information Technology 2018 survey, SHA wanted to more broadband initiatives and expand beyond the basic programming it had begun with ConnectHomeUSA. However, SHA struggled to secure funding for many of their desired initiatives. When the COVID-19 pandemic brought Congress's attention to the country's digital divide, funding become more available for many communities. SHA utilized the federal government's Affordable Connectivity Program (ACP) for many of their programs in 2021, prior to receiving state funding.

In addition to federal funding, SHA has also received state funding for their programs. In the latest round of state funding, Washington State Department of Commerce awarded $1.8 million to fund SHA's Digital Navigator program from the start of 2022 through June 2022, and SHA received another $3.6 million from the state to extend the program into 2023.[76] The SHA team notes that this funding has been essential for them to continue their broadband work.

Seattle Housing Authority's Current Programs

Through SHA's digital programs, the organization provides community computer labs, laptops, communal Wi-Fi, apartment and home connectivity, and support to individuals through its Digital Navigation team. With these initiatives, over 5,000 residents have been reached, and the SHA team continues to grow that number.

Common Room Wi-Fi
As a result of Seattle Information Technology's survey, SHA began installing Wi-Fi in the common rooms of 61 of their properties in 2019.[77] This was one of SHA's first initiatives and the program is still going strong. It enables residents to access the Internet without leaving their building. However, it requires that individuals have access to a personal device with Internet capabilities. Because of this, SHA also explored other options to further broadband access in their communities, as described below.

Community Computer Labs
One of these initiatives has been to create community computer labs so that individuals do not need to have their own personal devices. SHA created nine computer labs in their communities, including one specifically designed for seniors and another specifically designed for individuals with disabilities. SHA also uses computer classes to increases computer literacy through their Digital Navigation program. The City of Seattle has provided matching grants for the computer labs, so that SHA can create a new lab every couple of years in communities where labs do not currently exist. Community members

have also volunteered to support these initiatives, and ConnectHomeUSA has helped by providing AmeriCorps positions to support this work.

Dedicated Digital Navigators
With the latest round of Washington State broadband funding in 2022, the SHA team has been able to expand to eighteen Digital Navigators and skill instructors, possibly the largest dedicated team for this specific work in any city in the nation. The SHA team describes the work of the Digital Navigators almost like social workers; they work to support the residents to gain necessary skills to become comfortable using technology, in addition to helping community members access technology benefits. SHA has two dedicated team members who simply help individuals with computer set up and distribution. Some of the Digital Navigators work with the computer lab team and a roster of volunteers who help to support the computer labs. This is a really unique program and important in helping connect community members.

Seattle Housing Authority's Challenges

Funding
Funding continues to be a challenge for SHA, and the team worries about sustaining the work when some of the funding opportunities that came out of the COVID-19 pandemic are no longer available. Federal funding and the funding that SHA receives from Washington state supplement what the City can provide. SHA has been utilizing federal Affordable Connectivity Program (ACP) funding, and the team hopes this funding source will continue to be available. SHA continues to seek funding for digital navigation. To supplement funding gaps, SHA utilizes a team of volunteers from the community with technology expertise, as well as AmeriCorps positions, to help support the computer labs and supplement the Digital Navigators team. The SHA team noted, "The City of Seattle has provided a lot of technology matching fund grants for the computer labs...Only really in increments of $15,000 to $30,000, so kind of one lab every couple of years or so, and more with existing staff and residents kind of forming their own coalition. So, it is very grassroots."

Data Collection
Understanding residents and their exact needs is always a challenge, as it involves extensive outreach. SHA has partnered with the City of Seattle on their Technology Access surveys to help overcome this barrier. Before the City of Seattle surveys, the SHA team struggled to understand the baseline data of which residents had access to technology. Their internal surveys received limited responses from SHA residents. Data underpins all of SHA's work, so it is vital. With the 2018 survey, the SHA team learned that low-income individuals had less access to technology than those of higher incomes. In addition, low-income individuals primarily accessed the internet via mobile devices. This information helped SHA decide to create community computer labs. Data continues to be a challenge,

and the team is looking forwards to gaining new insights from the 2023 survey. SHA cannot adequately communicate with their residents if they do not have their data, so the data collection team has "really focused on getting updated email addresses and phone numbers for our tenants" to allow SHA to be able to communicate their services.

Subsidies for Digital Adoption
SHA has faced challenges in trying to get residents to participate in some of the digital broadband initiatives. One struggle has been getting people to simply understand that it is free. In working with other non-profit organizations and private partners, such as PCs for People and Comcast, SHA learned that they needed to change their messaging. The navigators started communicating that their subsidies were a "benefit," instead of saying "free." By telling people that they were missing out on a benefit that they were entitled to, more people signed up for the subsidies for in-home broadband connectivity. Subsidies for in-apartment Wi-Fi can be challenging for residents to navigate, and many residents rely on the Digital Navigators for external support. The process involves several steps and is complex. There is an online portal to sign up, but individuals will need to access the Internet to enroll that way. This can prevent people from signing up, even if the program does provide free internet. In addition, some people may be locked into existing contracts or bundles with service providers, so it might not be easy for them to switch carriers.

Community Connections
SHA has worked to create capacity to connect with residents. Much of this work requires one on one contact with residents, and having on-the-ground staff to do this work has been very important. Sometimes, residents form connections with workers, and then only want to deal with that person. This helped SHA realize the importance of the Digital Navigators to be out in the community to form those connections. The SHA team noted that many of their residents do not speak English as their primary language, so it also helps to have Digital Navigators who can communicate in different languages and work to overcome language barriers. To this end, SHA seeks to hire local community members who have lived in the area for many years and are familiar with the residents.

Partnerships
SHA largely partners with state and local government agencies and other local non-profits, including Seattle Public Schools, Seattle Public Library for their technology expertise, and PCs for People, an organization which helps provide residents with refurbished computers for affordable prices[78]. The SHA team noted ConnectHomeUSA is a great national resource for their work, helping to connect them with similar organizations around the country. SHA has managed to get support from some small, local technology businesses to provide them with technical support and devices, but they have not been overly successful in building or sustaining larger partnerships. For example, SHA has been able to secure laptops for a one-off donation from Microsoft and provide Microsoft Office for free with the laptops

purchased by SHA. However, more support is needed in terms of large, ongoing partnerships is needed.

Mission

One challenge for SHA is that digital equity is not their primary mission. Digital services are expensive and can be hard to justify because they are additions to SHA's main function, which is providing affordable housing. It is sometimes unclear which organizations are responsible for digital equity, particularly given that SHA is a housing authority. People might assume that they should go directly to the City of Seattle, or even a technology non-profit like PCs for People. This means there can be a lot of confusion as to which agencies provide which services. Residents also struggle to understand digital services, which is why the Digital Navigator program has been so important.

Moving Forward

With its large Digital Navigator team, SHA has been a national leader in the digital equity space. However, there is more work to be done in their community. Going forward, SHA will be seeking more funding opportunities to continue to expand their programming. Funding will always be a challenge, and the team may need to adapt their size or their focus, but the important thing is for a dedicated team to always exist. One of the SHA staff members noted, "[it] is difficult to win [over the community] when the funding is temporary. If people see that it's more of an ongoing [program] or part of benefits for low-income people who can't afford broadband, I think they'd be more inclined to do that, so that's one big push for us is to make the ACP an ongoing benefit like...the nutrition programs for families, or SNAP benefits, things like that." An ongoing program would mean that more people could rely on these benefits. SHA will continue to explore partnerships with business and non-profits, to further their reach and secure funding. Overall, SHA's case offers examples of success which hopefully could be replicated in other communities across the nation.

Conclusion

In conclusion, while Seattle Housing Authority has been a leader in local broadband distribution and digital equity, it still has many opportunities for growth and program improvement. SHA has formed local partnerships with the city and other non-profit organizations which have been advantageous to expand their broadband services and understanding their community, but there are many private partners that SHA still seeks to build relationships with. SHA operates in a unique space as a housing authority and would improve community relations and program understanding with better marketing of their digital work. While the City of Seattle has been a broadband leader, there are now many cities across the country pioneering new broadband service expansions and community

engagement strategies, and SHA has the opportunity to partner with and learn from these other communities.

Appendix D

List of Interviewees
SHA Housing Operations
Patrice Davis, Strategic Advisor of Housing Operations
William Green, Computer Lab & Volunteer Coordinator
Asfaha Lemlem, Strategic Advisor, Digital Equity
Rachael Steward, Deputy Director of Housing Operations
Maria Ursua, Supportive Services Coordinator
SHA Communications
Kerry Coughlin, Director of Communications
Susanna Linse, Communications Manager

About the project
This case study report is part of a broader research effort at Cornell on Broadband and Digital Inclusion, directed by Professor Mildred E. Warner. This set of case studies focused specifically on broadband deployment in publicly supported housing.

Links to this report and other reports from the Cornell Broadband Research Team can be found at https://labs.aap.cornell.edu/node/881.

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