TACKLING HOME INTERNET AFFORDABILITY CHALLENGES FOR LOW-INCOME AMERICANS

Marina George
Masters of Public Policy Candidate
Frank Batten School of Leadership and Public Policy

PREPARED FOR:

nten

University of Virginia
Batten School of Leadership and Public Policy

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Acronyms

NTEN: National Technology Enterprise Network

FCC: Federal Communications Commission

NTIA: National Telecommunications and Information Administration

IIJA: Infrastructure Investment and Jobs Act

BEAD: Broadband Equity Access and Deployment Program

ACP: Affordable Connectivity Program

USF: Universal Service Fund

ISP: Internet Service Provider

Disclaimer

The author conducted this study as part of the professional education program at the Frank Batten School of Leadership and Public Policy, University of Virginia. This paper is submitted in partial fulfillment of the course requirements for the Master of Public Policy degree. The judgments and conclusions are solely those of the author and are not necessarily endorsed by the Batten School, the University of Virginia, or any other agency.

Honor Pledge

On my honor as a student of the University of Virginia, I have neither given nor received unauthorized aid on this assignment.

Marina C. George

Dedication

I want to dedicate this work to my parents, who were always a phone call away through every step of this project. Thank you both for your support and tough love throughout this process.

Acknowledgments

First and foremost, I want to thank the Nonprofit Technology Enterprise Network and my point of contact, Maria Lara, for being supportive and kind throughout navigating the digital inclusion space. Her patience and understanding have helped me scope my topic and understand the intersection between internet affordability and digital literacy.

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Finally, I want to thank my friends and project groups throughout the process. I had fantastic group members to bounce ideas off of when I hit a wall or needed another set of eyes on my paper and wonderful friends to talk me through the late nights spent working through literature and ideas. For all of this, I am eternally grateful.

Executive Summary

The digital divide is an ongoing issue comprising three critical components, one of which is to close the gap between those who have access to the internet and those who do not (Louise, 2023). Many factors delve into understanding the digital divide and how to tackle barriers ranging from geographic challenges to income level disparities. Thus, critical barriers in the intersection between digital literacy and affordability stand in the way of closing this digital divide for low-income Americans. The Nonprofit Technology Enterprise Network (NTEN) and other entities within the digital inclusion space are working towards closing this digital divide – with NTEN's Digital Inclusion Fellowship addressing affordability and prioritizing digital literacy. With more than one in six people in poverty in the United States having no internet access, too many low-income Americans in the United States have high internet prices standing in the way of opportunities to improve their economic well-being (Swenson & Ghertner, 2020; Walter, 2020). This report examines the root causes of the lack of home internet services and provides viable alternatives for NTEN to consider.

I examine four alternatives that are possible for NTEN to pursue:

(1) Leveraging relationships with private entities to get more Americans access to internet resources.
(2) developing and holding workshops to raise awareness regarding Digital Equity Act Programs,
(3) advocating for the continuation of the Affordable Connectivity Program (ACP) in a more community-based way,
(4) developing an advocacy campaign for changes to be made to Universal Service Fund programs.

My evaluation criteria include equity, sustainability, and costs. These emphasize the importance of NTEN's dual focus on affordability and digital literacy in practical digital inclusion efforts and how to balance the proposed alternatives accordingly. Using an evaluation of each alternative with these criteria, I concluded that based on my client's equity focus, encouraging NTEN to engage the most with developing and holding workshops with their organizations to raise awareness for Digital Equity Act programs would be an ultimate recommendation for a first course of action. However, there is room for NTEN to continue building relationships with private sector partners for their digital inclusion fellowship, which would increase the number of people that NTEN can serve. In evaluating my alternatives and ultimate implementation strategy – I am simply providing a collection of potentially viable options for NTEN to consider with funding for internet affordability within their community networks running out.

Client Overview

NTEN - the Nonprofit Technology Enterprise Network is a 501c3 organization that focuses on advancing skillful and equitable use of technology for organizations working toward social change. One aspect of this organization that focuses specifically on digital inclusion efforts is its Digital Inclusion Fellowship (NTEN, 2023), which helps fellows develop digital literacy plans to bring back to their respective communities. NTEN is committed to ensuring that technology is utilized for positive social impact through their work overall – and the work they explicitly address through their digital inclusion fellowship (NTEN, 2023). By advocating for increased funding for digital literacy programs and proposing subsidies for devices, the research aligns with the client's specific interests and NTEN's broader mission of fostering strategic and equitable technology use for the betterment of communities that non-profit organizations serve. The NTEN is focused on promoting inclusion in the areas that NTEN can serve (see appendix A) – and supporting the non-profits it has connected to do the work on the ground in these communities (NTEN, 2023).

NTEN has shown strong interest in addressing not only the digital literacy challenges but also the affordability challenges, specifically the costs of desktops and laptops. Thus, the policy alternatives lie in affordability and how to pivot the focus toward advocating for increased funding for digital literacy programs. This shift aims to subsidize the expenses of acquiring devices and underscore the importance of fostering digital skills and literacy. Therefore, clarifying and streamlining the grant application process for non-profit organizations seeking federal funding is a viable, tangible item that the client could pursue based on cursory evaluation. By incorporating measures to alleviate device costs and streamlining grant applications for digital advocacy organizations with efforts to enhance digital literacy, NTEN will be able to establish a comprehensive approach that addresses immediate concerns and fosters a more inclusive and digitally proficient community. I will provide actionable recommendations and a holistic understanding of how technology can be leveraged to bridge the affordability aspect of the digital divide, reflecting the values upheld by NTEN and the Digital Inclusion Fellowship they have established.

Introduction

The digital divide is a multifaceted issue that often includes infrastructure rollout, affordability, and digital literacy (Louise, 2023). Ultimately, it stems from disparities in access to internet services and presents itself differently to various communities. Many communities face different barriers in terms of affordability, availability of broadband, and training opportunities (Graber & Piazza, 2022). The lack of broadband adoption that provides community access to economic and social opportunities such as work, education, and telehealth services is ingrained in efforts to close the digital divide– and will be explored further in synthesizing the existing literature (Graber & Piazza, 2022).

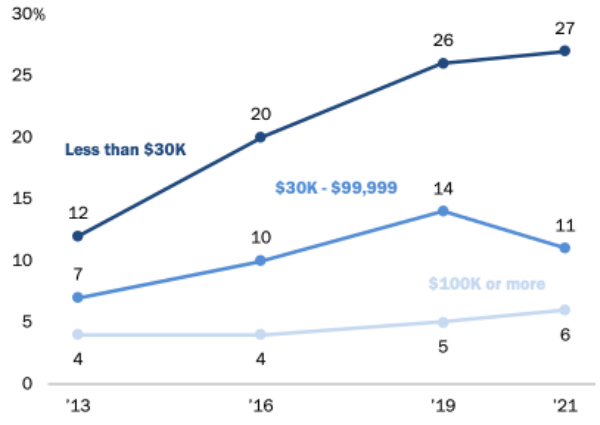
Digital inclusion efforts are nuanced in their approaches, often tackling affordability and digital literacy simultaneously. It takes financial support to help someone use a device, whether that includes having home internet or simply a device other than a mobile phone to do work. Thus, with internet affordability in mind, one study conducted in 2020 found that the United States was ranked 119th out of 206 countries (Chao & Park, 2020).

Without affordable and accessible internet services, it is tough for communities to utilize digital literacy skills effectively. Additionally, a report by the Congressional Research Service points to how affordability and adoption programs make up around a quarter of total spending – specifically for rural broadband expansion (Humphreys, 2019). Ultimately, many factors feed into digital inclusion challenges, such as geographical differences between rural and urban areas, lower income challenges, and a lack of competition between internet service providers. This showcases how, while the Federal government has focused much on the accessibility portion of Internet services, it has not done a strong job of streamlining programs associated with affordability and digital literacy. Ultimately, some programs are involved in making broadband internet services more affordable for consumers. However, there is still work to be done to navigate the effectiveness of these programs as the demand for the Internet continues to rise.

Problem Statement

While there are federal programs that support low-income Americans with affordability challenges (Office, 2023), challenges for low-income Americans remain – manifesting themselves in high internet service costs, lack of affordable devices, and, in turn, the digital skills needed to succeed in a society that has become increasingly reliant on internet services. A PEW study conducted in 2021 showed that Americans with lower incomes rely more heavily on smartphones for internet access – forgoing broadband access at home. The figure to the left from PEW shows that the share of Americans who make less than $30,000 a year and are reliant solely on Smartphones for internet services has gone from 12% in 2013 to 27% in 2021. Therefore, there are concerns that smartphone tasks would generally be done on larger screens. Another report by PEW found that smartphone owners with lower incomes had a higher likelihood of using a

Figure 1: PEW Study on Smartphone Use by Americans with Lower Incomes



mobile device when looking for and applying for jobs (Vogels, 2021). Therefore, with more than one in six people in poverty in the United States having no internet access, too many low-income Americans in the United States have high internet prices standing in the way of opportunities to improve their economic well-being (Swenson & Ghertner, 2020; Walter, 2020).

Background

The Digital Divide encompasses the problem that arises between the gap between those who have internet services and those who do not. However, the digital divide looks different for many varied demographics. Various root causes for the lack of broadband adoption provide community access to economic and social opportunities such as work, education, and telehealth services. Multiple factors such as income level, lack of competition in certain areas, and lack of awareness of affordability programs contribute to challenges to affordability and digital literacy precisely regarding a home internet connection.

Income level

Those with higher household incomes are most likely to have broadband services at home (PEW, 2022). As seen in Table 1, attached to this document, there is an increase in U.S. adults who say they have a broadband connection at home – as income brackets increase (PEW, 2022). However, this table shows a divide among US adults who use the internet versus having a broadband connection at home. This highlights that having a personal connection to the Internet is somewhat associated with income levels–with cost again emerging as a significant reason for the non-adoption of Internet and broadband services on the phone (PEW, 2022).

Low-income residents who subscribe to broadband tend to be at an increased risk of canceling their subscriptions to afford other expenses. While broadband is considered a valuable resource, it will not be prioritized over essentials such as health care, food, and rent (PEW, 2022). Cost remains the most significant barrier to broadband service adoption in the home.

A study by the UW-Madison University Center involved a statewide survey of Wisconsin residents about broadband access and affordability. This study found that the typical household is willing to pay around $77.25 to shift from no internet services to 25 Mbps and $124.99 for 50 Mbps, but lower-income households (who are making around $35,000 or less) are willing to pay around $46.72 for 25 Mbps services. This same study found that families were willing to pay around $17.94 (Boyce et al., n.d.).

Challenges with low-cost device access. On a separate note, low-cost devices are essential – particularly for people in low-income communities. Some organizations provide technical support to residents needing technical and social assistance to get computers running and connected over time (Rhinesmith, 2016).

Lack of Competition

One challenge to broadband affordability stems from a need for more competition in broadband markets, which is a significant barrier to internet access. A study from Consumer Reports in 2022 found that consumers face high prices, confusing bills, and a need for more competitive choices (Consumer Reports, 2022). This finding from an analysis of consumer internet bills across the country discovered that greater competition and choice lead to more affordable broadband options. Americans, on average, were paying around $5 per month less for service in areas with three broadband competitors (as opposed to one or two) and lower prices still when local competitors increased (Consumer Reports, 2022).

Lack of awareness of existing programs

Lack of awareness for affordability programs is tied to households not adopting broadband. One major program available to Americans under the poverty line is the Affordable Connectivity Program (ACP), for which around 51 million households are eligible, according to a non-profit working to close the digital divide (Bolan, 2023). Only around 23 million households are currently enrolled in the program – which provides up to a $30 subsidy towards internet service in these eligible households (Bolan, 2023).

Currently, efforts are being made to work with local institutions, community-based organizations, and cities throughout the United States to understand the challenges of enrolling in this program. Thus, various programs are available to broadband consumers. Still, without a general understanding of the availability of these programs, consumers will either go without services or continue to pay high prices for internet services in the home.

Literature Review

Building on the root causes outlined above, policymakers have long focused on rural areas when promoting access to Internet services. Still, urban areas typically face challenges related to digital education and affordability, as they often already have broadband options within their communities (Trollip, 2021). Therefore, when understanding the general literature of the issue, it is essential to recognize geographical differences between rural and urban areas, low-income challenges, alongside general costs for internet services and

devices serve as significant barriers to the implementation of digital literacy education and use by low-income Americans in urban areas of the United States.

Geographical disparities

The discussion of the digital divide has long been centered around closing the gap between urban and rural areas. This has typically been centered around the physical infrastructure of internet adoption and how the Federal Communications Commission recognizes rural areas as unserved. According to the Congressional Research Service, adoption rates have leveled off, and even with federal subsidies being inserted in rural communities over the past decade, rural subscription rates continue to lag behind urban subscription rates (Humphreys, 2019).

One significant geographical challenge that influences broadband affordability, specifically in rural areas, is the expense of broadband installation costs, which drive up subscription costs for households. This is because the sparse population density involved with installing broadband access is expensive to internet service providers, who then, in turn, find it pertinent to drive up costs (Graber & Piazza, 2022). Urban areas typically face challenges rooted not in lack of accessibility to broadband infrastructure as rural areas do – but they may face affordability and digital literacy challenges to having internet services (Trollip, 2021).

However, while broadband infrastructure has a geographical component, urban areas considered served infrastructure-wise face a significant adoption challenge through affordability. Various studies show that these adoption challenges in urban areas are often tied to funding concerns, digital access gaps that need significant governmental pressure, and digital redlining in low-income urban areas. (Popiel & Pickard, 2022).

> *Challenges to urban areas.* In one study on the neighborhood-level inequity in internet connectivity explored across neighborhoods in Chicago, it was found that the neighborhoods with the lowest adoption rates were in majority-Black areas that are reflective of Chicago's historical patterns of racial residential segregation. Additional correlations in this study highlighted challenges with low-income individuals, the Hispanic population, those with lower education, and older adults. According to this study, there is a high correlation between income and adoption rates. This stresses the importance of subsidy programs to not only rural areas – but urban areas as well (Mangla et al., 2022).

Barriers to Internet Access in lower-income communities

Broadcast affordability challenges disproportionately affect lower-income communities (Dharma et al., 2010). Those with higher household incomes are most likely to have broadband services at home (PEW, 2022). According to a Pew study conducted in 2022, U.S.

adults say they have a broadband connection at home – as income brackets increase. However, this same study points to a divide in US adults who use the internet versus the proportion of US adults who have a personal internet connection in the home. This highlights that having a personal connection to the internet is associated with income levels somewhat – with cost once again emerging as a significant reason for non-adoption of internet and broadband services on the phone (Read, 2022)

> *Digital Redlining.* When considering geographic location intersecting with income challenges, another historical aspect that feeds into affordability is the lack of investment in lower-income neighborhoods through digital redlining. Digital redlining is the intentional lack of investment in broadband infrastructure and affordable service offerings to low-income communities. One study on broadband access in Milwaukee displayed inequities in which higher-income – and white – neighborhoods were more likely to have broadband access than historically redlined lower-income communities of color (McCall et al., 2022). Adoption rates are relatively low for other reasons, even close to areas with broadband connections. Studies show that communities of color and households with low socioeconomic status, even in urban areas, face higher broadband non-adoption rates (Diep, 2022).

Finally, low-income residents who subscribe to broadband tend to be at an increased risk of canceling their subscriptions to afford other expenses. While broadband is considered a valuable resource, health care, food, and rent tend to be prioritized above internet services (Read, 2022). Cost remains the most significant barrier to broadband service adoption in the home.

Cost of deploying Internet services

Current research points to broadband affordability related to providers' competitiveness in a particular community. When considering low-income or rural areas, which may often have fewer providers, the lack of competition may be related to affordability issues within these areas. Competition pressures providers to ensure their costs are lower and more affordable (Reddick et al., 2020). Due to cost purposes, it is clear that rural areas, despite various interventions at the federal level, rural areas still have fewer – specifically mobile – broadband providers than urban areas do, despite the desire for broadband being relatively the same (Prieger, 2013).

Additionally, consumers are expected to navigate additional hidden costs and fees – such as installation and activation fees, equipment rental fees, contract termination fees, and data overage penalties, which can be substantial to many families. This points to challenges for consumers in comparing plans and understanding how much they can expect to pay (Chao & Park, 2020). When examining broadband adoption in Canada, one study points to how national and other governments have worked to push for affordable

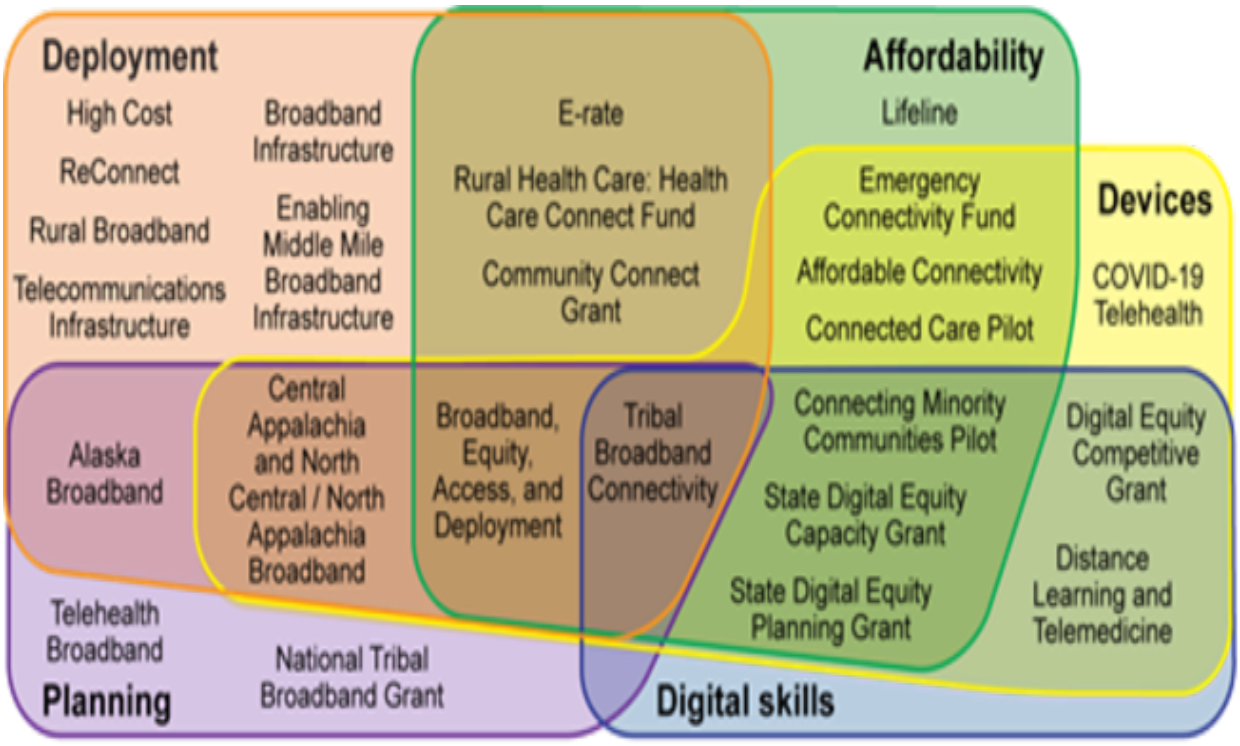
access for low-income and marginalized consumers – which includes pushing against hidden fees by sellers to make a price more appealing to a low-income buyer. This examination of broadband affordability showcases the importance of uncovering what goes into a consumer adopting a subscription other than a set monthly rate (Rajabiun et al., 2016).

> *Device affordability.* This also comes from costs stemming from device purchasing—one study found that the ConnectHome survey regarding a lack of access in the home stemmed from internet costs, with 37% of respondents focusing on device costs as a significant barrier for them.

Current consequences of the problem

When examining the status quo – around 15% of U.S. adults are smartphone-dependent – the share is more significant among those with lower incomes, according to a PEW research study on American use of mobile technology and home broadband services. However, this number jumps to around 28% when factoring in income (Gelles-Watnick, 2024). This showcases that around 28% of the population surveyed own a smartphone but are not subscribed to a high-speed home broadband service (Gelles-Watnick, 2024).

Figure 2: GAO Digital Service Funding Programs Image



Source: GAO analysis. | GAO-23-106818

This being considered, there are currently 133 funding programs administered by 15 federal agencies (Office, 2023). Based on the chart pulled from the GAO on federal funding programs above (see Figure 2), these funding efforts are all focused on various efforts to bridge the digital divide. Still, I am specifically looking at the affordability aspect of the digital divide for low-income Americans.

The primary funding source for low-income Americans can be seen below with the Affordable Connectivity Program (ACP) – which currently has around 23 million subscribers (Office, 2023). This being noted, the funding for the ACP, which is the most aggressive funding policy subsidizing costs for low-income Americans, is set to run out in April 2024 (Ngo, 2024). This COVID-19 relief program has not yet been extended, nor has a permanent funding plan been found. Thus, the reality is that these 23 million Americans will lose a significant subsidy for their home internet plans – challenging digital inclusion efforts and the ability of those working in the digital inclusion space to support those in their communities (Ngo, 2024). Thus, while more Americans are enrolling in home broadband services, there is a challenge on the horizon for those losing significant subsidies for this service.

Overview of Alternatives

Based on the literature, I decided to explore four alternatives that could be implemented by the Non-profit Technology Enterprise Network (NTEN) as they work on closing the digital divide. When navigating alternatives, I focused on initiatives already prevalent within the digital inclusion space that NTEN could implement. I set aside alternatives focused on digital literacy despite working with the Digital Inclusion Fellowship due to concerns about current funding for significant programs running out of funding in the digital inclusion space. These alternatives are focused on helping the organizations that NTEN serves directly help people with affordability concerns. These alternatives are listed below:

1. Leverage relationships with private entities to get more Americans access to internet resources.
2. Develop and hold workshops to raise awareness regarding Digital Equity Act Programs.
3. Mobilize the network to support the Affordable Connectivity Program (ACP).
4. Develop advocacy campaigns for changes to be made to Universal Service Fund programs such as the Lifeline program.

Criteria

The following criteria will be used to evaluate each of the four alternatives. These criteria will be scored based on their evaluation description below and then weighted overall based on their relevance to my client:

Criterion	Description	Weight
Equity	These alternatives all are working towards supporting low-income Americans with affordability challenges they are facing. This ties into the efforts by organizations that NTEN supports through the digital inclusion fellowship. When evaluating for equity, I am establishing a high, medium, and low equity scale. - For the purpose of this analysis, a *high-equity alternative* would reflect an alternative that would capture the bulk of the target population which is low-income individuals in the United States. - For the purpose of this analysis, a *mid-equity alternative* would serve a sub-population of the target population which is low-income individuals in the United States. - For the purpose of this analysis, a *low-equity alternative* would only serve a small proportion of the target population which is low-income individuals in the United States.	This criterion is weighted as 35% for client purposes.
Sustainability	Sustainability (OECD, 2021) through the lens of this project is looking at the continuing benefits of each alternative. It specifically will be examining the benefits present that may be connected to each alternative and how they will be continued in the future. This alternative will be using a high-medium-low scale. A high sustainability ranking will continue over time and has stakeholders that will invest in and support the alternative, and a low-sustainability ranking will stem from low stakeholder investment and volatility of the program. Sustainability was viewed over a 5-year period.	This criterion is weighted as 35% for client purposes.
Cost	Cost is being considered through the lens of the cost to the organization. I am evaluating costs to the organization as opposed to the broader digital inclusion ecosystem because the general costs of programs discussed relate more towards the sustainability piece than they do to actual cost of the alternative. However, my costs will be calculated over the course of five years as while some costs may	This criterion is weighted 30% for client purposes.

	be ongoing (such as hiring a new project coordinator), or developing materials (which would take a shorter period than five years) I wanted to keep them as uniform as possible.	

Evaluation of Alternatives

Alternative #1 – Build stronger relationships with private-sector entities

Strengthening public-private partnerships in digital inclusion is crucial to closing the digital divide. A lack of digital skillset is tied to a lack of economic opportunity, with digitally skilled jobs seeing rapid employment growth and higher incomes (Kendall et al., 2023; Bergson-Shilcock et al., 2023). However, the main work being done by the private sector is upskilling its own workforce, as opposed to bridging the digital divide for all Americans (Kendall et al., 2023). For example, Amazon has a five-year plan to upskill its workforce for the 'digital age,' committing around $200 million. This alternative is centered around encouraging private sector firms to invest more in community development projects driven by community non-profits already doing the work (Kendall et al., 2023). *Thus, a policy alternative for NTEN to pursue would be to actively engage more with existing and new private sector donors and sponsors to invest in community-led digital equity initiatives.*

Expanding upon the policy alternative above would benefit NTEN by actively engaging more with existing and new private sector donors and sponsors to invest in community-led digital equity initiatives. This would involve contacting significant telecommunications companies and ISPs operating in geographical areas where NTEN has partnered with organizations through their digital inclusion fellowship. NTEN's digital inclusion fellowship is currently being supported by three partners: the Cleveland Foundation, Digitunity: A Digital Opportunity Network, and Google Fiber as a founding partner (NTEN, 2023). While it has not directly partnered with for-profit entities, private-sector companies such as the ones listed above could be open to partnerships as they have taken significant initiatives in the digital inclusion space.

Most of the literature I found on public-private partnerships focused on international development. However, one example of digital upskilling focus in the business realm, a study conducted in Australia on digital uptake for community and business sectors, showcased that training did build confidence and learning skills development for organizations. Therefore, framing digital inclusion in a workforce context has shown success in Australia, and there is a possibility that some lessons can be gleaned from this study (Ollerenshaw et al., 2021).

There is further evidence that there are programs that bring together public-private partnerships to build digital skills in the United States. For reference, some groups, such as

the National Fund for Workforce Solutions, that partner with communities within their network focused on digital upskilling. However, it is unclear if these community-centered programs are centered around bringing solely digital skills to potential workers or if they are supporting communities through accessibility to the internet as well (whether through internet support or device provision) (Kendall et al., 2023). A specific example of partnerships that have shown success can be seen in the Digital Empowerment Center in Fresno, California, which is an example of a locality working to grow its broadband infrastructure to meet the needs of the community and has partnered with a private company to advance digital equity initiatives in the area (Edinger, 2023). Moreover, most research on public-private sector partnerships is centered around digital upskilling. Therefore, when searching for and leveraging a public-private partnership, centering discussions about the success of a grant or relationship with a private sector partner should tie in digital upskilling and examine the community's access to internet and device services. Community organizations can work to build that knowledge, and NTEN can utilize its network and existing connections (as well as create new ones) to encourage more private sector investment in its member organizations and their respective locations.

Therefore, NTEN would develop training for fellows on engaging with private sector companies working on digital inclusion to expand resources to the communities they serve. Additionally, NTEN would directly interface with companies to build support in the private sector for their digital inclusion fellowship. This alternative ideally targets the building and leveraging of public-private partnerships to make the work of particular organizations more readily able to reach more people within their respective communities. An analysis of equity, sustainability, and costs is included below:

Equity

This criterion evaluation for equity is ranked as medium in terms of ranking. There are equity challenges with this particular alternative in that while building out public-private partnerships would increase resources that non-profits could potentially utilize for their mission of building digital literacy efforts – private sector companies may have their competitive views of other companies within a particular area (maybe a tension between service to communities to increase digital equity or to increase consumers in the area). In a recent Federal Communications Commission report, advice suggested that non-profits and community anchor institutions can partner with industry and government funding to provide internet service options in a community. This report pointed to this recommendation as being one that would focus on the mission of *"advancing equity in the provision of access to digital services and products to the people of the United States without discrimination based on race, color, religion, national origin, location, sex, or disability (FCC, 2023)."*

Based on the assumption that this recommendation was encouraging industry partners to work with non-profits at the community level, it can be assumed that there is success in private entities working with non-profits such as NTEN in equitably reaching communities. Therefore, this would rank medium in equity as the private sector has invested directly in digital inclusion and supporting organizations' work on digital inclusion. For example, a company called Equinix is working to address inequitable access to connectivity specifically tied to historically Black colleges and is working with Fisk University in Nashville to address funding for tech education and racial technology disparities. The private sector is working to address structural inequalities (Spencer, 2023). However, this alternative is not ranked higher because private sector entities are looking to champion digital inclusion – they also have to factor in profit – and thus are constrained in the support they give to areas with infrastructure.

Sustainability

The sustainability of this alternative warrants a medium-high rating as whether certain partnerships continue over time once developed has a level of risk involved. Additionally, there may be stipulations involved with partnerships that may pose challenges, but ultimately, private sector organizations are already willing to commit to digital inclusion. Moreover, for stakeholders supporting this alternative, the grant space for public-private partnerships must be treaded carefully – as there is competition in this space. One risk generally associated with public-private partnerships is the misalignment of objectives that may arise between public and private partners. This may pose a challenge to sustainability because the private sector is profit-driven, while the public sector in the digital space focuses on social goals.

To frame where NTEN is currently – their digital inclusion fellowship currently has three partnerships, with Google Fiber being the founding member of the fellowship (NTEN, 2023). However, I want to highlight the general efforts by internet service companies and other private sector stakeholders in this space to holistically show investment in digital inclusion. When exploring current initiatives by private sectors, one private sector example that has seen success has been through Comcast – with Project UP, a commitment to advance digital connectivity that has committed around $1 billion to reach millions of people for the next ten years. This has been set up to directly develop public spaces that provide families with access to high-capacity WIFI for free (Comcast, 2021). While these private sector entities are not taking the initiative with NTEN precisely – one specific case when examining the success of the digital inclusion fellowship currently is that it has served around 106 fellows over nine years (the fellowship was established in 2015 and has served around 12 fellows per year since) with only three partners (NTEN, 2023).

Costs

When examining costs, I calculated labor and material costs for the next five years. Thus, in terms of the expenses over five years, I am considering marketing material costs – which tend to be around $5,000 per year, adding up to around $25,000 over five years (Social Tables, 2020). These costs included material development for setting up meetings, including paper materials and networking meetings. I also decided that meetings with the private sector would stay constant and high over five years, considering costs such as meeting with private sector partners – or facilitating discussions between the private sector and organizations looking for funding from private sector partners in their area. This cost allocation would be high for NTEN, an organization with a limited budget. Thus, with a project coordinator salary of about $35 untaxed hourly, including benefits, I concluded that the cost for this alternative would be around $92,701, which is reflected within Appendix C and my outcomes matrix.

Alternative #2 – Workshops for Digital Equity Act Programs

When examining opportunities to build digital inclusion and combining key affordability and digital literacy efforts, the Digital Equity Act of 2021 (McNerney, 2021), which is administered through the National Telecommunications and Information Administration (NTIA), has around $2.75 billion that is establishing digital equity and inclusion grant programs (NTIA, 2023). These two grant programs ensure that communities have the technology, capacity, and skill sets to benefit from the digital economy. However, one of these programs filters through the states and territories, so it will be critical to help non-profits doing digital inclusion work across the country capitalize on this funding (NTIA, 2023). Thus, a policy option for NTEN to pursue would be to develop a deeper understanding of this available funding and raise awareness about how non-profit organizations within their network can apply for grant funding to support their communities.

NTEN, through this alternative, would develop a general understanding of how the Digital Equity Act funding is being rolled out to states and then would build out a series of workshops for their Digital Inclusion Fellowship for fellows to understand how to communicate what funding is available to support digital literacy opportunities. Currently, NTEN offers a total of four courses that are dedicated to digital inclusion (NTEN, 2023). I expect NTEN to add two more courses, which would serve around 20 fellows per year, who will then serve individuals in their communities. An estimate of this number is provided in Appendix B.

For example, while two of these three grant programs are specifically for state-centered solutions, the Digital Equity Act of 2021 created an annual $125 million grant program to help fund individual groups' digital inclusion projects (NTIA, 2023). Currently, the State Digital Equity Planning Grant Program is focused on creating community-centric solutions

and projects concentrating on the meaningful adoption of high-speed internet services (NTIA, 2023). While this focuses on state-community partnerships, it could be very beneficial for NTEN to explore this option, as they are currently partnered with a few city- and state-sponsored organizations. There is an opportunity for organizations to push for a say in the implementation of state digital equity plans, and as organizations connected through the digital inclusion fellowship attempt to navigate funding options, working with state entities that are receiving funding to work on digital equity could be beneficial in getting help to the individuals that these community organizations are serving at the local level.

In terms of implementation, organizations such as the National Skills Coalition are also working to bridge the workforce gap, recognizing the opportunity to build the digital workforce with the Digital Equity Act (Bergson-Shilcock et al., 2023). It could be advantageous for NTEN to follow suit and hold digital workshops for its member organizations to reach the various locations across the country that it can serve. Since the funding is just starting to be distributed, there is an opportunity for NTEN to raise awareness about how organizations in their network can capitalize on Digital Equity Act program funding. Lessons about how to hold workshops on closing the digital divide have been held through the Digital Equity Education Roundtables (DEER) initiative, holding discussions on how to drive dialogue on the adoption of high-speed internet as well as ways to remove barriers to digital skills learning (Office of Educational Technology, n.d.).

While this initiative is more focused on how states can develop their digital equity plans to capitalize on Digital Equity Act capacity-building funds, there is an opportunity for NTEN to prepare its community organizations to examine how they can benefit from this funding on the non-profit, community-focused side (Office of Educational Technology, n.d.). One example of an entity that held a workshop to bring community leaders together to build an understanding of the available digital equity funding was the Federal Reserve Bank of Richmond. While this workshop was an in-person, two-day event, NTEN currently holds workshops for both member organizations and non-member digital equity organizations. Thus, through this alternative, it will develop a digital seminar and a workshop presentation for its summit every year. These steps will help organizations that are members of NTEN's network, as well as those who are looking to join, learn how they can benefit from grant funding that will aid in getting local communities the support they need to build digital skillsets and also navigate if funding can be used to get devices into the hands of those who need them to bolster their digital learning as well (Sansone, 2022). An analysis of equity, sustainability, and costs is included below:

Equity

Developing workshops for Digital Equity Act programs would be beneficial and equitable as this alternative would teach organizations that NTEN partners with to connect with state

and local entities and share how best to use the funding to benefit low-income beneficiaries of this funding. For the first part of this rollout, the states allocated funding specifically to develop digital equity plans. These plans focus specifically on low-income individuals within the state and where there are specific equity gaps. However, since the program itself is novel – it is difficult to forecast that this program will serve the groups that it has set out to serve. The only challenge I foresee in terms of equity is that there is a possibility that despite the positive outcome of preparing many organizations for the task of applying for grant funding – they are still competing with private industry that could win out on some of these grants.

Sustainability

Around $2.75 billion is currently dedicated to this fund for digital inclusion programs. It will roll out to states and community organizations in increments, making it sustainable until funding runs out. It has been set for around five years of grants. Thus, there are benefits of getting funding out to low-income Americans through this program, such as helping organizations educate states on how to use Digital Equity Act federal funding and how to apply themselves for Digital Equity Act federal funding eventually. The sustainability of this alternative does not receive an entirely high rating, as organizations in the digital inclusion space see advocating for this act as the beginning. For example, NDIA executive director Angela Siefer frames the Digital Equity Act, which created these grant program opportunities as a start, stating, "We cannot build and scale up amazing digital inclusion programs just to see it disappear when federal funding runs dry " (Siefer, 2024)." Thus, with this in mind – there is room for stakeholders in the digital inclusion space to support this alternative, but this grant program funding may run out in the next five years. Therefore, this alternative receives a medium to high sustainability rating.

Costs

Costs have been constrained to the cost specifically to NTEN as an organization. NTEN offers professional development courses that assist members and non-members on topics such as equitable program design, product management strategies, or creating cybersecurity plans, among other opportunities. The average class that NTEN offers is around 2 hours (NTEN, 2024a). Therefore, when considering costs – workshops should be centered around this 2-hour time block. With this in mind – the cost to deliver extra workshop material centered around Digital Equity Act Program Grant opportunities is around 49 (low estimate) – 89 (high estimate) (Kapp & Defelice, 2017) hours of program development per 1 training hour. Therefore, the cost of developing this material would range from 98 hours – 178 hours. Thus, considering the salary of a Project Coordinator at NTEN – who works 32 hours a week at $45,000 annually – would make around $27 per hour of effort on developing the course. Multiplying this would get us to an estimated cost of $2,650 (low estimate) to $4,814 (high estimate) just for the development of a 2-hour

program (NTEN, 2024b). I accounted for two 2-hour courses to be developed. These estimates are reflected in Appendix C.

When considering costs, I calculated the net number of hours committed over five years, then multiplied it by a project coordinator's salary, including benefits. I added this to consistent material costs (including advertising and physical products). I ended up with $60,678, the second highest cost of all of my alternatives, and thus ranked 3 in my outcomes matrix.

Alternative #3 - ACP continuation Advocacy through network mobilization

Currently, the Affordable Connectivity Program (ACP) through the Infrastructure Investment and Jobs Act (IIJA) has allocated $65 billion towards addressing gaps in broadband access across the nation (Crenshaw, 2022; Scavette, 2022). Around 23 million Americans are enrolled in the program (The White House, 2024). This program provides low-income households up to $30 monthly broadband subsidies and a benefit of around $100 to help buy a computing device. This COVID relief program received around $14.2 billion of funding, which will run out around mid-2024. The funding for this program, should it continue, is estimated to be around 35 billion dollars over the next five years (Garnett, 2022). *Therefore, another policy option would be to recenter the advocacy for continuing the Affordable Connectivity Program with a community-centric campaign*.

This program has a finite time frame with only a set amount of funding allocated. However, this program has increasingly raised concerns as its funding is set to run out as soon as April or May of 2024, which raises concerns about what will happen to Americans after this program runs out (The White House, 2024). Thus - NTEN has advocated for the continuation of the ACP alongside other organizations working on digital equity concerns and should build up their advocacy campaign in a more targeted way. This policy option remains relevant in the digital inclusion space for broadband providers and community non-profits as it provides subsidies for internet services and devices (e.g., mobile devices, laptop computers, desktops). Therefore, while it is a tall order as a policy option considering the amount of funding that would likely need to come from appropriations – it has been present on the minds of many in the digital inclusion space – from private sector companies to advocacy groups to even the current President's administration (The White House, 2024).

While there is limited literature on the impact of the Affordable Connectivity Program, this program is being heavily advocated for by private sector and public organizations alike. Cost is a significant barrier in urban areas, both on the device and monthly broadband subscription front (Graber & Piazza, 2022). The Affordable Connectivity Program works to tackle both the device and cost barriers, and advocating for its continuation alongside

various other entities in the public and private sectors would be beneficial to explore as an alternative.

One example of the effectiveness of the ACP can be seen in a study tracking participation in the ACP overarchingly by Rural LISC, down to the zip code of the area (*ACP et al.* | *LISC Rural LISC*, 2022; Scavette, 2022). However, while the findings were that many individuals who are qualified for the ACP do not know about the program – and while the FCC has asked for partners across the country to push for further participation in the ACP, with funding running out the window to enroll has now closed (Scavette, 2022). Thus, the ACP subscribership window is closed. There is room for grassroots efforts for NTEN to mobilize its nonprofit network to highlight the dependence upon the Affordable Connectivity Program by local communities.

This alternative would include an advocacy campaign focused on showing support for the Affordable Connectivity Program Extension Act (H.R. 6929/S.3525) (Panettierie, 2024) – and then the extension of the ACP into a permanent program. This would all be done over five years. NTEN would mobilize its current fellows, their respective digital inclusion organizations, and previous fellows and their organizations to advocate for this legislation. While the overarching target of the campaign would be legislators – NTEN, as a 501c3 organization, would only be developing materials to promote the continuation of the Affordable Connectivity Program by mobilizing their particular network. Furthermore, this campaign would be focused on sharing the ACP's impact on the work these digital inclusion organizations have done –to showcase community voices and this program's impact.

As for the implementation of an advocacy campaign, this would be focused on the locations currently being served through current fellows – but could also involve the connections that NTEN has through the fellows that have been a part of the digital inclusion fellowship since 2015 (founding). NTEN would be targeting organizations within its network – with the inclusion of all present and past digital inclusion fellows (106 fellows total and running), and then would use efforts in this Building community stories about the impact of the ACP at the local level could be a way to push for more widespread support for this program, to continue accessibility of internet services to people across the United States – allowing them access to services providing them with economic opportunity that digital inclusion organizations such as NTEN work to uphold. An analysis of equity, sustainability, and costs is included below:

Equity

The Affordable Connectivity Program (ACP) is a program that serves low-income Americans in both rural and urban areas. It fits under the equity criterion as it serves around 23 million low-income Americans or qualify for other social welfare services. Additionally, this

program serves the target demographic and matches the views of my client, who is running out of funding. There is a significant challenge for organizations that have developed digital literacy plans to be successful when the affordability of internet and digital services hangs in the balance for many that are dependent upon digital literacy enrollments that they may have to cancel internet subscriptions due to the lack of affordability (Turner Lee, 2024). Therefore, the equity of continuing this program would be high because the expectations for those enrolled benefit low-income urban Americans.

Sustainability

The program that this alternative is showing support for is currently set to run out of funding in April 2024, with little plan for it to continue, earning it a low rating in terms of continuing over time about where it is at currently. The volatility of this alternative and the number of people who are currently enrolled in this program have led me to give it a medium ranking in terms of how this alternative will impact those who are currently enrolled in the program and are soon going to face adverse outcomes should this program fail to continue. However, many have received widespread support regarding this program – specifically from the non-profit digital inclusion space, alongside private sector proponents such as internet service providers, large telecommunications companies, and cable companies (House, 2024). With one more organization mobilizing its members, I expect that the impact of one organization – NTEN – will lend its material development for organizations to mobilize all organizations involved in their digital inclusion fellowship, which I outline in the following paragraph.

As each fellow represents an organization and there are 106 fellows associated with the digital inclusion fellowship overall – mobilizing all of them in their communities to push for ACP continuation could have an impact. Therefore, the sustainability program that this campaign advocates for would be rated relatively low and not sustainable. This solution would be temporary, allowing time to find a permanent solution. Moreover, based on a review of digital equity plans submitted to the National Telecommunications and Information Administration, when discussing affordability for low-income Americans, there is evidence that states view the ACP or a potential successor as a means of handling affordability concerns. For example, Maine's broadband digital equity plan to improve the affordability of internet service is to *"Increase enrollment in the Affordable Connectivity Program (or its successor) by 84,000 households by 2029, increasing the enrollment percentage to 62% (Maine et al. Plan, 2023).* Therefore, when examining sustainability – while there is limited literature on the success of the ACP, it does have support at the state level.

Cost

When examining costs, I keep in mind that my client is already working on informational materials regarding the Affordable Connectivity Program, so in terms of costs, this is a low-cost alternative. However, I am considering marketing material costs over five years – which

tend to be around $5000 per year (Social Tables, 2020). I chose an overly ambitious number of hours working on content and coalition mobilizing as this is a time-sensitive effort. I calculated around $44,423 total when combining labor and marketing material costs, which ranks high as it is the lowest of four of my expenses to NTEN. NTEN would not be lobbying directly as they are a 501(c)3 and have limited capacity; instead, costs would fall onto the organizations within their networks. In Appendix C, I have calculated costs to be $44,423 and ranked highly on the outcomes matrix.

Alternative #4 – USF program advocacy through network mobilization

The Universal Service Fund is a program in the US that transfers around $7.5 billion per year to telecommunications companies from telephone subscribers. *One alternative for NTEN to pursue would be to advocate for changes to be made to underlying programs that fall under the Universal Service Fund* (Wallsten, 2011). One policy option would be to address the need for a plan to be put in place to provide continuous support to those benefitting from the ACP. This could be done through an advocacy campaign for changes to be made to Universal Service Fund programs such as Lifeline or E-Rate. To implement this alternative - NTEN could push forth efforts to understand current proposals for Universal Service Reform and how it will benefit low-income individuals – as well as advocate through meeting with other digital inclusion groups on how to amend this fund to provide support to low-income individuals in the United States, as well as working with member organizations to understand how to raise awareness about these programs within the community locations of the digital inclusion fellowship.

Lifeline Program

> One major program that falls under the Universal Service Fund is the FCC's Lifeline program. This program explicitly targets broadband adoption by residential subscribers and has been amended to allow the subsidy to be applied toward internet services (Taglang Tepper, 2023b). This subsidy's criterion is households earning less than 135% of the federal poverty level. By subsidizing a selected service provider by the subscriber, this program subsidizes enrollees to cover the recurring monthly service charges that come with broadband subscribership (Humphreys, 2019).

Highlighting the importance of this program, one policy option would be addressing the necessity for a plan to be in place to provide continuous support to those who are benefitting from the ACP. To implement this alternative could take shape through meeting with officials on how to amend this fund to provide support to low-income individuals in the United States, as well as working with member organizations to understand how to raise awareness about these programs within the community locations of the digital inclusion fellowship. However, with the ACP winding down and the FCC having put an

official date on the stoppage of signups - which was February 7, 2024 - supporting Congressional initiatives such as the *Reforming Broadband Connectivity Act of 2023* could be a viable alternative to be considered when expanding access to telecommunications services (S.975 and H.R. 1812) (Congressional et al., 2023). However, despite calls for change, there are challenges, and advocating for changes to be made to these programs would be beneficial. Expanding the Universal Service Fund could require higher fees for carriers and, thus, for consumers.

This would specifically manifest when considering the development of materials. It would not be tailored towards lobbying as NTEN operates in a 501(c)3 capacity (NAEYC, n.d.), drastically limiting lobbying capabilities. However, this alternative would have NTEN develop materials that would get into the hands of their fellows through the digital inclusion fellowship – as well as their broader membership network. With the ACP winding down and the FCC had put an official date on the stoppage of ACP signups - which was February 7, 2024 - supporting Congressional initiatives such as the *Reforming Broadband Connectivity Act of 2023* could be a viable alternative to be considered when expanding access to telecommunications services (S.975 and H.R. 1812) (Congressional Research Service, 2023). However, despite calls for change, there are challenges, and advocating for changes to be made to these programs would be beneficial. It would be in that expanding the Universal Service Fund could require higher fees for carriers and, thus, for consumers. An analysis of equity, sustainability, and costs is included below:

Equity

The 1996 act (Congressional Research Service, 2023) that established the Universal Service fund states that all providers of telecommunication services must contribute to federal universal service in an equitable and nondiscriminatory manner – and that there should be sufficient Federal and State mechanisms to preserve and advance universal service. However, schools, libraries, and even consumers do not receive direct funding from this program (Universal Service Fund, 2010); instead, they receive discounts on the costs of services provided by vendors paying into the fund. Additionally, the Universal Service Fund funding mechanism is not sustainable as it is primarily based on telecommunication provider contributions, which places a financial burden on those looking to maintain fixed-line service. When the program is expanded to include internet and cellular service, the contributions should not continue to fall on these groups. Therefore – while equity considerations are present (Rebholz, 2023) – this alternative does not serve consumers equitably. Hence, this alternative ranks low in terms of equity. Additionally, in a report by CRS on reform options for the Universal Service Fund, reform proposals for the Universal Service Fund primarily included limiting eligibility criteria and controlling the amount of disbursed funding, which points to current reform efforts potentially having adverse effects on consumers (Gilroy, 2011).

Sustainability

The sustainability of this alternative warrants a low rating as the benefits of getting funding out to low-income Americans through this fund will continue over time – but there are concerns that this fund in the way that it is going is unsustainable, as the fund is currently dwindling (contributions by telecommunications companies are going down). Moreover, this fund has multiple programs that it supports – with the Lifeline program being the specific program that promotes affordable internet services for Americans. Additionally, stakeholders may be hesitant to support this legislation as it does ask for more internet service providers to contribute to the fund – which providers may be reluctant to do. For example – in recent legislation, "Lowering Broadband Costs for Consumers Act (S. 3321)," it was estimated that providers such as Apple, Microsoft, Netflix, and other large digital enterprises would add around $5 billion in annual USF contribution revenue. (StrandConsult, 2023).

However, there is concern that this would be taxing internet services, which would fall on consumers as it has fallen on telecommunications consumers – which could be unsustainable as it could push companies pushed by the FCC to contribute to the fund to raise a tax on consumers (Engebretson, 2020). Telecommunications companies must contribute their revenues – and many have decided to include a "Universal Service" line item on their phone bill – which means that the company has decided to pass on contributions to customers. However, companies are restricted from collecting fees from Lifeline (low-income qualifying) program participants, so there are protections for low-income Americans, which fits more into the equity category (FCC, 2019).

Cost

When calculating costs, I am operating under the consideration of the salary of a project coordinator at NTEN, who works 32 hours a week at $45,000 annually, meaning they make around $35 an hour, including estimated benefits (NTEN, 2024b). I assume this coordinator would spend around 2 hours weekly working to prepare for meetings and hold weekly 2-hour meetings to mobilize around Universal Service Reform. Another cost element would be the time spent collecting information on the dependence of Lifeline in low-income areas, alongside time spent developing resources for the campaign. I am making assumptions regarding how much time will be spent over five years advocating for universal service fund reform through the fellows. In terms of costs over five years, I am considering marketing material costs – which tend to be around $5000 per year, adding up to around $25000 over five years (Social Tables, 2020). After calculating these numbers, I ended up with $59,805, which ranks second in cost (see Appendix C).

Unweighted Outcomes Matrix

Alternatives	Equity	Sustainability	Costs to organization	Unweighted Rating
Build stronger relationships with Private Sector entities	Low-medium (3*)	Medium-High (1)	$92,701 calculated over a 5 year period with a 3% discount rate. (4)	2.667
Workshops for Digital Equity Act Programs	Medium-high (2)	Medium-high (1)	$60,678 calculated over a 5 year period with a 3% discount rate. (3)	2
Affordable Connectivity Program continuation advocacy	High (1)	Low (4)	$44,423 calculated over a 5 year period with a 3% discount rate. (1)	2
Universal Service Fund program reform advocacy	Low (4)	Low-medium (3)	$59,805 calculated over a 5 year period with a 3% discount rate. (2)	3

*Ranking of alternatives on a 1- 4 ranking, with one being higher and 4 being lower.

Weighted Outcomes matrix

Alternatives	Equity (35%*)	Sustainability (35%)	Costs to organization (30%)	Weighted Rating
Build stronger relationships with Private Sector entities	Low-medium (3**)	Medium-High (1)	$92,701 calculated over a 5 year period with a 3% discount rate. (4)	2.6
Workshops for Digital Equity Act Programs	Medium-high (2)	Medium-high (1)	$60,678 calculated over a 5 year period with a 3% discount rate. (3)	1.95

Affordable Connectivity Program continuation advocacy	High (1)	Low (4)	$44,423 calculated over a 5 year period with a 3% discount rate. (1)	2.05
Universal Service Fund program reform advocacy	Low (4)	Low-medium (3)	$59,805 calculated over a 5 year period with a 3% discount rate. (2)	3.05

*Weighted rating of each criterion. Each ranking was multiplied by this weight to create an ultimate ranking.

Recommendation

Based on my findings, I recommend that NTEN pursue alternative two first, which is developing workshops for Digital Equity Act programs. I made tradeoffs on costing, focusing on equity and sustainability more than the cost outlined in the outcomes table. When unweighted, it ranked highest but was close to the Affordable Connectivity Program advocacy alternative that NTEN is already engaging in. Therefore, to trade-off between these alternatives when looking at the unweighted matrix – the sustainability of the advocacy of the Affordable Connectivity Program is ranked as low. In contrast, workshops for Digital Equity Act programs are ranked as medium-high. Therefore, while a viable option to continue pursuing, the recommendation came down to tradeoffs between my sustainability criteria (and how it compared to the status quo) and my calculated costs.

Thus, in my weighted matrix, developing workshops for Digital Equity Act grant programs have the lowest score when weighted, which, as outlined, means lower scores are better. As aforementioned, tradeoffs were made in that the Affordable Connectivity Program and Universal Service Program advocacy campaigns ranked higher in the cost category (meaning they were lower in costs to the organization). The difference manifested in the heavier weighing towards equity and sustainability – creating a gap between program advocacy for the Affordable Connectivity Program and the Digital Equity Act workshop alternative. Thus, my recommendation would be to pivot the direction to developing Digital Equity Act workshops and continue to advocate for the continuation of the Affordable Connectivity program.

For further context, this recommendation is focused on an Act that will provide grant funding to nonprofits for the next five years, and developing resources to help organizations already within my client's network will ultimately allow them to get resources for their communities. Even though creating these kinds of workshops will take time, this funding opportunity will serve organizations in the network well, which is my

client's priority. However, with consideration to how close in rating building stronger relationships with private sector entities and Affordable Connectivity Program reform advocacy are, there is room to consider these alternatives further on down the implementation road – as developing Digital Equity Act workshops would span five years with the bulk of the work done in the first two years. Thus, through my ultimate recommendation, I suggest that NTEN develop workshops around the Digital Equity Act and explore other options close to the final rating.

Implementation

With this recommendation in mind, NTEN would develop a general understanding of how the Digital Equity Act funding is being rolled out to states and then would build out a series of workshops for their digital inclusion fellowship for fellows to understand how to communicate what funding is available to support digital literacy opportunities. Since the funding is just starting to be distributed, there is an opportunity for NTEN to raise awareness of how organizations in their network can capitalize on Digital Equity Act program funding. This will require a close focus on Digital Equity Plans rolled out by states. However, this program development leaves room for NTEN to continue mobilizing its network to support the ACP and explore expanding its relationships with private sector entities further down the road.

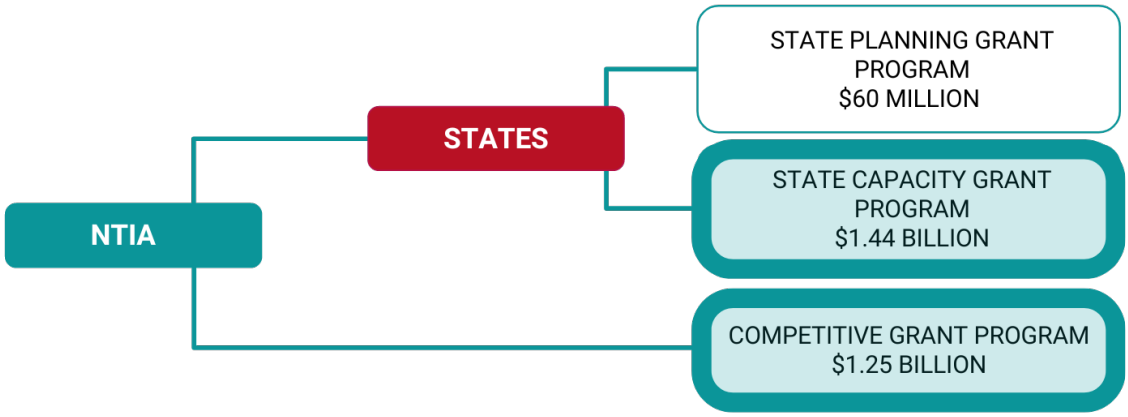
To move implementation forward, NTEN should establish who they want to work with regarding content development around the Digital Equity Act. Various stakeholders are involved in the rollout of funding associated with this recommendation, which should be discussed. First and foremost, since NTEN is a digital inclusion network, it would be beneficial for them to coordinate with other digital inclusion associations to check for potential overlap and to pursue best practices. For example, the National Digital Inclusion Alliance has recorded content related to the Digital Equity Act grant funding rollout. According to the NTIA, states' digital equity plans will include stakeholders' objectives, such as those of regional government entities, local government entities, and community-based organizations (NTIA, 2023a).

Additionally, they assumed they would assign a project coordinator already a part of the organization to work on content, so they may want to hire someone else to take on the responsibility. In addition, this decision will influence what the content will look like. The initial stages will be workshop development (2 courses and speaker preparation at an in-person summit NTEN holds annually). NTEN will also need to address various risks with implementing this alternative, such as a potential cost risk, scoping challenges which would be mitigated by communicating with organizations within the NTEN network or overlap with other organizations within the digital inclusion space – which could be reduced through the building of coalitions.

After considering potential risks - NTEN should ideally center their timeline around parts ii and iii with an overview of bullet point a listed below:

1. Currently, states are working on their State Digital Equity Act planning. The first part of the act commits around $60 million to a grant program for states, territories, and tribal governments to develop digital equity plans. This planning stage is reaching its conclusion, which will spark the second stage, which is still state-centric but will indirectly assist community digital inclusion efforts (NTIA, n.d.).
2. The second grant program established through this act is the Digital Equity Capacity Grant Program. It dedicates around $1.44 billion to helping states, territories, and tribal governments implement digital equity plans. Local organizations in the NTEN network will need to understand this, as they will be doing the on-the-ground work that this act financially supports (NTIA, n.d.). NTEN must establish a workshop that addresses this grant program differently than the next seminar outlined below.
3. Finally, the Digital Equity Competitive Grant Program is a $1.25 billion grant program that will fund annual grants for the next five years to implement digital equity projects (see Figure 3 below). This funding has yet to be released, but non-profits must be ready as they are eligible to apply for funding (as are private sector entities) (NTIA, n.d.; (Taglang Tepper, 2023a). Currently, NTIA is administering the program, but it has not begun promoting or informing audiences. This provides a window of opportunity for NTEN to capitalize on preparing its network early to receive funding.

Figure 3: A figure pulled from the National Digital Inclusion Alliance depicts the three-step implementation of this program—to show who is disbursing funding and showcase the programs that NTEN can develop workshops about (Huffman, 2023).



Overarchingly, the implementation of this alternative would have a projected two-year turnaround when considering research and content development. Various stakeholders must be consulted, such as present and past organizations participating in NTEN's Digital

Inclusion Fellowship. Other digital inclusion organizations should also be coordinated to avoid overlap and to increase the impact of raising awareness for funding. This will look at how many more people organizations in the NTEN ecosystem will be able to serve people in their communities. A metric for this would be examining how many people are being served – and if these workshops and the grant funding potentially gained from this increase the number of people served by these community organizations.

Conclusion

Bridging the digital divide is a complex policy issue that ties accessibility, affordability, and digital literacy challenges together. While efforts are being made to address the accessibility aspect of the digital divide in getting Americans access to the internet through funding in the Infrastructure Investment and Jobs Act – affordability programs still hold gaps for low-income Americans, which poses a challenge to organizations such as NTEN in their mission to address digital literacy.

After evaluating all four alternatives, I recommend that NTEN focus its attention on developing content and workshops specifically around the Digital Equity Act grant programs that are currently underway. This recommendation performed sustainability and equity-wise, and while it was ranked third in costs – it performed well even when the matrix was not weighted. However, I also encourage NTEN to continue to develop resources for organizations in its network to advocate for the continuation of the Affordable Connectivity Program. This alternative performed well also, and while it did not have a strong sustainability ranking, it is ranked high in costs and equity. Thus, while pursuing these alternatives may not solve the complex challenge of bridging the digital divide for low-income Americans, they are actionable steps to take when working towards this goal.

Appendix A: Locations that the NTEN Digital Inclusion Fellowship currently serves

Location
Atlanta, Georgia
Austin, Texas
Cache County, Utah
Charlotte, North Carolina
Cleveland, Ohio
Des Moines, Iowa
Kansas City, Missouri and Kansas
Nashville, Tennessee
Omaha, Nebraska
Pocatello, Idaho
Portland, Oregon
Raleigh/Durham, North Carolina
Salt Lake County, Utah
San Antonio, Texas
San Francisco (focused on Chinatown), California
Utah County, Utah
Utah (anywhere in the state)

Appendix B: NTEN Digital Inclusion Fellowship Partnership Costs

Pricing Options: Fellowship partnership (for a sponsor to the Digital Inclusion Fellowship) is customized based on goals, interest area, and location. Price is dependent on this accordingly. This estimate by NTEN is focused on digital literacy training, but the assumption made is that this can also reflect the general people served. Pricing options are listed below:

Price	Impact
$400,000	Support 20 fellows nationally who will train 5,000–15,000 people in their communities with up to 30,000 hours of instruction.
$60,000	Support three fellows in one city who will train 1,500–3,000 people in their communities with up to 6,000 hours of instruction.
$20,000	Support one fellow who will train 300–1,000 people in their community with up to 2,000 hours of instruction.

This option was chosen as it streamlines the number of fellows served by $20,000 for alternative 1.

Appendix C: Cost Calculations

APP Cost Analysis Link

Assumptions Page

Cost	
Discount rate	0.03
2021 NTEN Net Assets	2,089,197
Labor costs	
Salary of Project Coordinator (Annually)	$45,000
Hours worked per year	1664
Paid work-days off	24
Hours off per year (paid)	192
Hourly salary for a Project Coordinator	$31
Health insurance cost	$5
Hourly salary with insurance cost and PTO	$35
Fellowship Costs	
Partnership support for 1 fellow (Annually)	$20,000
Partnership support for 3 fellows	$60,000
Partnership for 20 fellows	$400,000
Material costs	
Digital Marketing	$5,000
Branded elements (per item)	$170
Estimated amount to spend on marketing (low end estimate)	5%
Estimated amount per 2021 calculation	104459.85
Estimated amount to spend on marketing (low end estimate)	12%
Estimated amount per 2021 calculation	250703.64
Private Sector Meeting Estimates	
Identifying partners (in hours)	104
Pitches (in hours)	208
Negotiation structuring (in hours)	104
Total hours estimated (annually)	416
Digital Equity Development Estimates	
Coordinating with digital inclusion partners (hours)	104
Digital Workshop development (hours)	356
In-person presentation preparation (hours)	30
Total hours estimated (for years 1 and 2)	490
ACP Advocacy Estimates	
Meeting preparation (hours)	52
Meetings with coalition/fellows (hours for years 1 and 2)	104
Communication time (hours)	20
Total hours estimated (for years 1 and 2)	176
Meetings with coalition/fellows (years 3+ in hours)	12
USF Advocacy Estimates	
Meeting preparation (hours)	104
Meetings with coalition/fellows (hours)	104
Communication time (hours)	10
Total hours estimated (hours)	218
Effectiveness	
Total number of fellows	106
Number of years of digital inclusion fellowship	9
Number of fellows per year	12
Number of people each fellow serves (average estimate)	650
Average number of people reached per year by digital inclusion fellows	7656

	Year 1	Year 2	Year 3	Year 4	Year 5	Total cost over 5 years	CEA ratio (dollar per community member served)
Alternative #0: Status Quo	$445,005	$432,043	$419,460	$407,242	$395,381	$257,607	
Alternative #1: Private sector	$19,652	$19,080	$18,524	$17,984	$17,461	$92,701	$12.11
Alternative #2: Digital Equity Act	$22,259	$21,610	$5,770	$5,602	$5,438	$60,678	$7.93
Alternative #3: ACP Advocacy	$11,199	$10,873	$7,672	$7,448	$7,231	$44,423	$5.80
Alternative #4: USF reform	$12,678	$12,309	$11,951	$11,602	$11,264	$59,805	$7.81

Private Sector	Year 1	Year 2	Year 3	Year 4	Year 5		Cost to organization
Private Sector labor costs	$14,652	$14,225	$13,811	$13,409	$13,018	$69,116	$92,701
Material costs (advertising; physical products)	$5,000	$4,854	$4,713	$4,576	$4,442	$23,585	

Digital Equity Act	Year 1	Year 2	Year 3	Year 4	Year 5		Cost to organization
Digital Equity Act Labor Costs	$17,259	$16,756	$1,057	$1,026	$996	$37,093	$60,678
Material costs (advertising; physical products)	$5,000	$4,854	$4,713	$4,576	$4,442	$23,585	

ACP Advocacy	Year 1	Year 2	Year 3	Year 4	Year 5		Cost to organization
Labor costs	$6,199	$6,018	$2,959	$2,872	$2,789	$20,837	$44,423
Material costs (advertising; physical products)	$5,000	$4,854	$4,713	$4,576	$4,442	$23,585	

USF Reform Advocacy	Year 1	Year 2	Year 3	Year 4	Year 5		Cost to organization
Labor costs	$7,678	$7,455	$7,238	$7,027	$6,822	$36,219	$59,805
Material costs (advertising; physical products)	$5,000	$4,854	$4,713	$4,576	$4,442	$23,585	

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