KCIT-Seattle Regional Broadband Infrastructure and Digital Equity Local Action Report

King County, Washington

Updated March 2024

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Acknowledgements

King County Department of Information Technology (KCIT) and City of Seattle Department of Information Technology (Seattle IT) acknowledges the following organizations for their assistance in helping to create this report. The contributions to this report and commitment to broadband infrastructure and digital equity are appreciated.

Digital Equity Learning Network
Helping Link
Literacy Source
Workforce Development Council of Seattle-King County

Acknowledgement also goes to more than 71 local municipalities, community-based organization, community colleges, career and technical centers, libraries, individuals, and ISPs (i.e., stakeholders) that contributed to the report through surveys or real-time feedback sessions and focus groups. For a full list of local participating stakeholder organizations, see Appendix A.

Introduction

In an era marked by rapid technological advancements and increasing reliance on digital connectivity, KCIT, Seattle IT, and several community anchor institutions (Appendix A) have come together to develop a point-in-time report with recommendations for potential solutions focusing on the lack of broadband access, affordability, and adoption within the region.

About this report

The Washington State Broadband Office (WSBO) reached out to all 39 counties in the state of Washington in February of 2023 and requested a broadband infrastructure and digital equity report. This point-in-time report was developed to support Washington State's statewide planning effort for the WSBO five-year Broadband Equity Access and Deployment (BEAD) plan[1], Digital Equity Act Plan[2], and proposals to the US Department of Commerce National Telecommunications and Information Administration (NTIA) Internet for All program[3] to help secure broadband funding for the region.

This local action report called for by WSBO, consisted of a series of worksheets and a local action report template to be completed by each participating county. The worksheets helped identify existing broadband resources while the template combined all the information into a uniform format across all counties. KCIT partnered with Seattle IT to complete the worksheets and report and submit it to the WSBO. The City-County collaboration started in the first quarter of 2023, with the report submitted to the WSBO in June 2023. Notably, this is a point in time document that will be updated over time.

The identification of existing broadband adoption disparities, root causes, and potential actionable solutions included in this report represent the ideas of a small group of subject matter experts within KCIT and Seattle IT, along with feedback from more than 71 stakeholders in the King County region.

This report relies on a foundational understanding of the region, highlighted below, to contextualize the size, scope, and challenges with the current state of broadband access.

King County regional overview

- Population of 2.21[4] million, which is the largest county in Washington State and the 13th-most populous in the United States.
- Includes federally recognized Snoqualmie and Muckleshoot tribes.

King County regional labor market

The King County region is the largest labor market in the state.

- In 2021, King County-located businesses were responsible for nearly 42 percent of nonfarm jobs (nearly 1.41 million) reported in Washington state[5].
- From 2020 to 2021, average annual employment increased by 24,800 jobs or 1.8 percent.[6]

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1 WSBO "Internet for All in Washington" BEAD Planning: https://www.commerce.wa.gov/building-infrastructure/washington-statewide-broadband-act/internet-for-all-wa/
2 Internet for All Digital Equity Act Programs: https://www.internetforall.gov/program/digital-equity-act-programs
3 Internet for All: https://internetforall.gov/
4 American Community Survey, 2021: https://www.census.gov/programs-surveys/acs/news/data-releases.2021.html
5 Employment Security Department: https://esd.wa.gov/labormarketinfo/county-profiles/king
6 Employment Security Department, 2022: https://esd.wa.gov/newsroom/december-2022-monthly-employment-report

King County demographics

According to the U.S. Census Bureau[7], the five largest ethnic groups in King County are:

- White (not Hispanic or Latino): 55 percent
- Asian (not Hispanic or Latino): 21.7 percent
- Black or African American (not Hispanic or Latino): 7.4 percent
- Two or More Races: 5.6 percent

King County covered populations demographics

"Covered populations" is a term that references eight different populations, as defined by the Digital Equity Act of 2021[8], which overall have historically experienced lower rates of computer and internet use.[9] They are a critical element of BEAD and Digital Equity Act funding and foundational to the Digital Equity portions of this report. The following Digital Equity Act covered populations definitions were used to prioritize strategies in the report:

- Persons who are 60 years of age or older
- Incarcerated individuals
- Veterans
- Persons with disabilities
- Members of a racial or ethnic minority group
- Rural residents
- Individuals with a language barrier, including those who are English learners or have low literacy levels
- Individuals living in households with incomes not exceeding 150 percent of the poverty level

Washington State Revised Code of Washington (RCW) 43.330.530[10] identified two additional underserved populations:

- Children and youth in foster care
- Those experiencing housing instability

With the addition of the two populations identified by Revised Code of Washington (RCW) 43.330.530, 10 covered populations are addressed in this report.

Broadband deployment challenges

The diverse geography of King County poses distinct obstacles to implementing broadband infrastructure, due to its mixture of coastal areas, lowlands, rolling hills and mountains. As a result, deploying fiber to the premises (FTTP) to every home in the county is an exceptionally challenging task due in part to the costly construction required to navigate the geography.

Highlights and Findings

The information below highlights key findings and recommendations identified by KCIT and Seattle and provided to WSBO to inform the development of its broadband plans.

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[7] *U.S. Census Bureau Vintage 2022 Population Estimates Program:* *https://www.census.gov/quickfacts/fact/table/kingcountywashington/PST045222*

[8] *Congress.gov: https://www.congress.gov/bill/117th-congress/house-bill/1841*

[9] *Census.gov: https://www.census.gov/programs-surveys/community-resilience-estimates/partnerships/ntia/digital-equity.html*

[10] *Washington State Legislature: https://app.leg.wa.gov/RCW/default.aspx?cite=43.330.530*

Broadband and digital equity vision
As stated in the 2020-2023 King County Information Technology Strategic Information Plan[11], KCIT seeks to further promote and expand digital equity for not served and underserved communities through public and private partnerships and utilization of government assets.

This is a point in time document and will require updating over time
Because KCIT and Seattle IT's work on broadband is continually evolving, this is a point-in-time document. The primary objective is to identify current gaps with broadband internet access that can be addressed through upcoming federal infrastructure and digital equity funding opportunities.

County and City initial infrastructure projects identified
In 2020, KCIT published a Broadband Access Study[12] that identified areas within King County that were either unserved or underserved by broadband. Using this information, KCIT issued a request for information (RFI) in March 2023 for project cost proposals for the areas identified in the study. Private internet service providers (ISPs) responded by identifying projects that, when completed, would provide broadband connectivity to over 6,500 unserved/underserved locations in King County. These projects each bring an initial commitment of 25 percent matched funding from the ISP required by the BEAD notice of funding opportunity (NOFO[13]), amounting to over $21M in private investment for the region. KCIT will continue to identify potential project locations, working closely with ISPs to progress towards broadband connectivity for locations throughout in King County.

Building on initial research review and engagement
KCIT was notified of the WSBO broadband infrastructure and digital equity report request in February of 2023, with a delivery date of June 2023. This created an accelerated reporting timeline that led KCIT and the Seattle IT to combine efforts, including engagement efforts to solicit input from stakeholders already familiar with existing broadband and digital equity needs within King County.

The engagement period consisted of a three-month outreach effort that included bi-weekly digital equity conference calls between the KCIT and Seattle IT report team and stakeholders, online surveys, and ISP outreach calls to better understand the various broadband priority objectives. Prior KCIT and Seattle IT broadband work was leveraged as well and included local digital equity data[14], broadband planning[15], and existing community engagement meetings such as the Digital Equity Learning Network[16]. For details about the regional outreach process, please see Appendix C.

The infrastructure component of the plan relies heavily on the collaboration of private ISPs. King County has achieved a significant level of broadband connectivity, with approximately two to five percent[17] of locations in the county being unserved or underserved. To address this remaining two to five percent, it is necessary to upgrade or extend existing provider networks to reach locations that have traditionally been cost prohibitive to connect and subsequently overlooked in previous buildouts.

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[11] *Kingcounty.gov, KCIT Strategic Information Technology Plan: https://kingcounty.gov/~/media/depts/it/strategy/strategic-reports/KC_SITP_2020_-_2023_V8.ashx?la=en*
[12] *King County Broadband Access Study: https://kingcounty.gov/en/legacy/depts/it/services/cable-communications/broadband-access-study*
[13] *NTIA BEAD NOFO: https://broadbandusa.ntia.doc.gov/sites/default/files/2022-05/BEAD%20NOFO.pdf*
[14] *City of Seattle Digital Equity: https://www.seattle.gov/tech/initiatives/digital-equity*
[15] *King County Broadband Access Study: https://kingcounty.gov/en/legacy/depts/it/services/cable-communications/broadband-access-study*
[16] *DELN: https://delnofskc.wordpress.com/*
[17] *FCC Broadband Map: https://broadbandmap.fcc.gov/area-summary/fixed?version=dec2022&geoid=53033&type=county&zoom=7.50&vlon=-121.803803&vlat=47.433614&br=r&speed=25_3&tech=1_2_3_7*

A Preliminary Broadband Access Team (BAT)

The WSBO has been informally working with BATs since 2020. King County nor the City of Seattle had a BAT at the time the report request was sent from the WSBO. For the purposes of this report, a preliminary BAT was established. The purpose of the group was to gather feedback from stakeholders for the WSBO BEAD worksheets and develop the location action report. Membership was comprised of representatives of the following entities: KCIT, Seattle IT, Digital Equity Learning Network of Seattle and King County (DELN), Workforce Development Council of Seattle, and 71 organizations located in King County (see Appendix A). Outreach by the BAT included engagement with anchor institutions which are CBOs, community colleges, career and technical centers, libraries, and cities. Establishing a formalized BAT will be developed in the future.

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Broadband Infrastructure Abstract

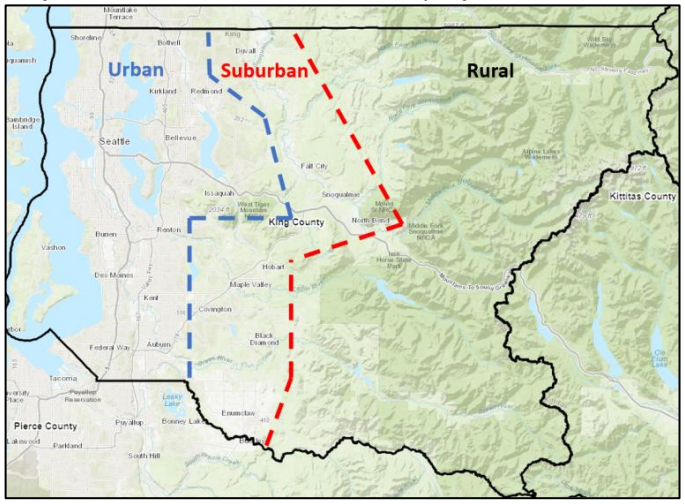
King County, spanning approximately 2,300 square miles, presents unique challenges in addressing the lack of broadband and infrastructure for those living in unserved and underserved locations. This is due to the size of the county and various geographical challenges like mountainous terrain or large parcels with a single-family home. These challenges result in expensive construction projects.

To streamline the process of identifying possible broadband projects in King County, the county has been divided into three distinct project areas: urban, suburban, and rural. These project areas serve as general guidelines rather than specific map boundaries. These areas are crucial for helping to focus on appropriate technologies while also maximizing the Broadband Equity, Access, and Deployment (BEAD)[18] funding potentially awarded to the county projects in 2024/2025.

The project areas are defined as follows in Map 1 below:

- Urban: Encompassing the I5/I405 corridor.
- Suburban: Covering the eastern region of cities such as Auburn, Kent, Renton, Sammamish, and Redmond, extending to the easternmost parts of Enumclaw, Black Diamond, Maple Valley, North Bend, Snoqualmie, Fall City, and Duvall.
- Rural: Encompassing everything east of the Suburban boundary, extending to the borders of Kittitas and Chelan Counties.

Map 1. Urban, suburban, and rural project areas[19].



[18] *Broadband USA BEAD Funding: https://broadbandusa.ntia.doc.gov/funding-programs/broadband-equity-access-and-deployment-bead-program-0*

[19] *NoaNet Map: https://noanet.maps.arcgis.com/apps/webappviewer/index.html?id=b1507f7dda304bff8f3fe4c468da6226*

Key Takeaways:

- As of May 30, 2023, there were over 5,990 unserved households in King County, according to Federal Communications Commission (FCC) broadband availability data.
- As discussed in Section V, the projected overall broadband infrastructure funding need across King County is projected to exceed $100 million once urban projects are identified. Notably, this doesn't address each unserved and underserved broadband serviceable location (BSL) in King County.
- In March 2023, KCIT published an RFI focusing on public private partnerships (PPP) with local ISPs already providing service in the county. The RFI asked respondents to provide estimated project costs in the King County area as well as any willingness to provide the required 25 percent required BEAD funding match.
- Key partners that responded to the RFI included Comcast, Ziply, Astound, and Lumen.
- Three out of the four providers responding to the RFI have committed to providing the 25 percent required BEAD funding match for each of their proposed projects. Lumen is the only provider yet to commit to the 25 percent match, pending final financial approval.
- At the time of the writing of this report (June 2023 and March 2024 update), King County does not own and operate any residential broadband infrastructure nor do available resources exist to do so.
- Each geographic project area requires a unique approach:
    - Urban areas require lateral extensions from existing providers.
    - Suburban areas need upgrades or extensions to existing infrastructure.
    - Rural areas call for fiber infrastructure construction for approximately 71 percent of locations, with the remaining areas deemed cost prohibitive and requiring a satellite solution.

Next actions include providing additional detail to the WSBO in 2024 and 2025, addressing:

- Collaboration with ISPs to determine the costs of lateral extensions (infrastructure that comes from the main internet service line in the road to a resident's home) to homes within their respective service areas in urban project areas.
- Refining of project proposals in all areas of the county that were submitted to KCITs RFI to build out to more unserved/underserved locations.
- Identifying a partner for the rural project area and developing a project proposal.
- Engaging with wireless carriers to better understand their desired involvement in BEAD funding.
- Continuing to update and improve the accuracy of the FCC Broadband map, particularly regarding missing locations and inaccurate broadband availability data.

Digital Equity Abstract

The lack of equitable digital access, or digital equity, is a critical issue for participation in everyday life. This finding is substantiated by the King County 2020 Broadband Access Study[20] and the City of Seattle's 2018 and 2023 Technology Access and Adoption Studies[21].

The significance of ensuring digital equality is underscored by its potential to narrow the digital divide, which is the gap between those with access to technology, skills, and devices and those without access. In addition, data from the American Community Survey (census.gov) reveals that American Indian/Alaska Native, Black, Hispanic, and other communities exhibit substantially lower home internet subscription rates compared to Whites, Asians, and Native Hawaiians households[22]. Notably, households with annual incomes under $10,000 face a staggering tenfold reduction in the likelihood of having home internet access compared to those earning over $75,000 annually[23]. "Without the Internet, people are likely to miss out on the ability to participate in telemedicine, work, find a job, do schoolwork, bank, navigate transport, maintain social connections with friends and family, and participate in culture and civic life."[24]

Quick facts about King County

Digital Equity Demographics

- King County is home to 2.2 million people[25].
- Nearly all households with incomes over $50,000 have internet access in King County.[26]
- One out of five households with incomes under $25,000 do not have internet access where they live.[27]
- 59 percent or 992,633 residents face intangible limitations to access & use of technologies[28]
- Half of residents who would qualify for low-income internet access programs are aware of these programs. Furthermore, only one-third are currently using such a program[29].
- Older adults (age 65+) are least likely to choose a smartphone as their primary device and are much more likely than younger residents to turn to desktop computers as their primary device[30].
- Younger residents are significantly more interested in training for advanced software and creation; while older residents resonate more with training for self-protection, basic software, job search, and email[31]

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[20] *2020 King County Broadband Access Study: https://cdn.kingcounty.gov/-/media/depts/it/services/cable/202002-Broadband-Access-Study.ashx?la=en&hash=C46354580D560F006CB3ED46375E906C*

[21] *City of Seattle Technology Access and Adoption Study: https://www.seattle.gov/tech/reports-and-data/technology-access-and-adoption-study*

[22] *Chart showing Percent of households without an internet subscription by household income: https://storymaps.arcgis.com/collections/7ea68c94642141a7810c0129ed76e86a?item=2.*

[23] *Chart showing Percent of households without an internet subscription by household income: https://storymaps.arcgis.com/collections/7ea68c94642141a7810c0129ed76e86a?item=2*

[24] *Broadband USA Digital Equity Outcomes: https://broadbandusa.ntia.doc.gov/sites/default/files/2023-04/Digital_Equity_Outcomes.pdf*

[25] *King County Profile U.S. Census - https://data.census.gov/profile/King_County,_Washington?g=050XX00US53033*

[26] *Pacific Market Research 2020 Technology Access and Use Study Slide #25: https://cdn.kingcounty.gov/-/media/depts/it/services/cable/202002-Broadband-Access-Study.ashx?la=en&hash=C46354580D560F006CB3ED46375E906C*

[27] *Pacific Market Research 2020 Technology Access and Use Study Slide #25: https://cdn.kingcounty.gov/-/media/depts/it/services/cable/202002-Broadband-Access-Study.ashx?la=en&hash=C46354580D560F006CB3ED46375E906C*

[28] *2020 Broadband Access Study – Pacific Market Research Technology Access Use Study – Page 4: https://cdn.kingcounty.gov/-/media/depts/it/services/cable/202002-Broadband-Access-Study.ashx?la=en&hash=C46354580D560F006CB3ED46375E906C*

[29] *Pacific Market Research 2020 Technology Access and Use Study Slide #69: https://cdn.kingcounty.gov/-/media/depts/it/services/cable/202002-Broadband-Access-Study.ashx?la=en&hash=C46354580D560F006CB3ED46375E906C*

[30] *Pacific Market Research 2020 Technology Access and Use Study Slide #85: https://cdn.kingcounty.gov/-/media/depts/it/services/cable/202002-Broadband-Access-Study.ashx?la=en&hash=C46354580D560F006CB3ED46375E906C*

[31] *Pacific Market Research 2020 Technology Access and Use Study Slide #114: https://cdn.kingcounty.gov/-/media/depts/it/services/cable/202002-Broadband-Access-Study.ashx?la=en&hash=C46354580D560F006CB3ED46375E906C*

- Workers possessing at least one digital skill can earn, on average, 23 percent more than those in jobs without such skills. Furthermore, transitioning from a job without digital skills to one requiring at least three can lead to an average pay increase of 45 percent[32].

Community Engagement and Digital Equity Framework

King County IT and Seattle IT have a long history of digital equity work. King County delivered its 2020 Broadband Access Study in February 2020[33], the City of Seattle began its digital inclusion work in 1996, delivering its first Technology Access and Adoption Study in 2018, and a planned update scheduled for release by the end of December 2023[34].

Between February and June 2023, King County IT, Seattle IT, and consulting firm PRR, Inc. engaged with community members including a King County Broadband Action Team (BAT)[35], the Digital Equity Learning Network of Seattle and King County (DELN)[36], Workforce Development Council of Seattle King County[37] and more than 71 total local stakeholders. Using a combination of online surveys, community meetings, findings from Seattle's Technology Access Study (2018 & 2023), and the King County 2020 Broadband Access Study helped identify barriers to technology access and use, community needs, and strategies to help reduce barriers to digital equities included as a as part of this report[38].

Feedback received from community stakeholders, King County Broadband Access Study and City of Seattle Technology and Adoption Access Studies all map to the elements of digital equity i.e., affordable access, devices, digital skills, and support, in alignment with the report path forward plans. The stakeholders also believe capacity building for community-based organizations is necessary to support deliver of programs, communications, data collection, measurement, coalition building, and ongoing community engagement.

Digital equity stakeholders in the county use a modified NDIA digital inclusion framework[39] provided by Seattle IT to define, plan, measure the implementation digital inclusion programs and investments. In this way, the local action report will inform and map to the Washington State Digital Equity Plan and the requirements of the Infrastructure Investment and Jobs Act (IIJA)[40].

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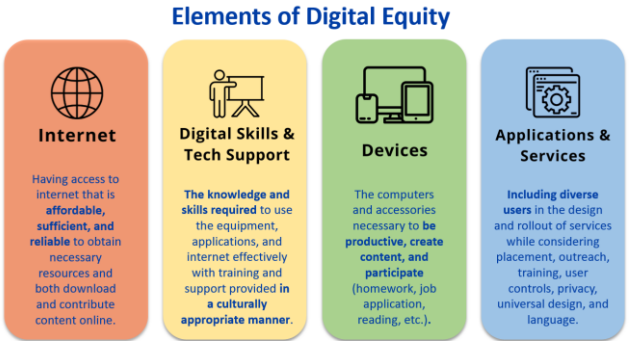
[32] See Appendix F Advancing Workforce Equity in Seattle Report
[33] King County Broadband Access Study: https://kingcounty.gov/en/legacy/depts/it/services/cable-communications/broadband-access-study
[34] City of Seattle Technology Access Study: https://www.seattle.gov/documents/Departments/Tech/DigitalEquity/TechAccessAdoptionStudy/City of Seattle IT Summary_Final.pdf
[35] Washington State Broadband Action Teams - https://deptofcommerce.app.box.com/s/iiiz3xzsnusiosdjuqio1e9mh43xxw8z
[36] Digital Equity Learning Network - https://www.digitalequitykc.org
[37] Workforce Development Council Seattle-King County - https://www.seakingwdc.org
[38] See Appendix C for "Community Engagement Process and Outcomes"
[39] NDIA Digital Inclusion framework - https://www.digitalinclusion.org/definitions/
[40] H.R. 3684 – Infrastructure Investment and Job Act https://www.congress.gov/bill/117th-congress/house-bill/3684

Digital Inclusion Framework for Program Implementation



Broadband Infrastructure Summary

I. Broadband Base Map Review

Northwest Open Access Network (Noanet[41]) was contracted by the WSBO to develop a broadband base map called the Statewide Broadband and Digital Equity Map[42]. This map illustrates the current state of several broadband measures across Washington State including speed tests, community anchor institution locations, socio-economic data, and other publicly sourced data sets. The WSBO tasked each BAT with reviewing the map and providing any feedback to improve its accuracy. This specific section of the local action report focuses on broadband infrastructure. Digital equity feedback will be addressed later in the report.

Upon review by KCIT, the Statewide Broadband and Digital Equity Map provides an accurate representation of the known situation in King County as it relates to infrastructure as of March 2023. In the urban and suburban areas, a concentration of ISPs offering broadband speeds exists. However, moving towards the rural parts of the county, the availability of such service diminishes. The rural areas not only consist of vast open spaces, but also mountainous terrain. BEAD funding prioritizes fiber as the deployed infrastructure in all funded projects, but the factors previously mentioned make a cost-effective fiber option available to every home in King County strategy infeasible. Consequently, wireless ISP solutions are the primary option for the scattered outliers in rural King County.

Speed test websites gather individual internet speeds based on users going to a specific website and clicking a button to measure the speed from the home to the internet. These speed tests are then aggregated into map layers that can give the viewer an understanding of internet speeds on a regional level. KCIT has concerns about the reliability of the two speed test layers (Ookla and State Broadband Office (SBO)) represented in the statewide map as they presented somewhat conflicting views on broadband availability. Ookla data, which aligns with known infrastructure, indicated faster speeds in urban areas and slower speeds in suburban and rural areas, reflecting a more accurate picture. On the other hand, the SBO speed test data portrayed the entire county as severely unserved or underserved. Ookla is recognized as one of the most accurate tests and resulting data[43]. The difference is visualized below in the comparison figure 1 below.

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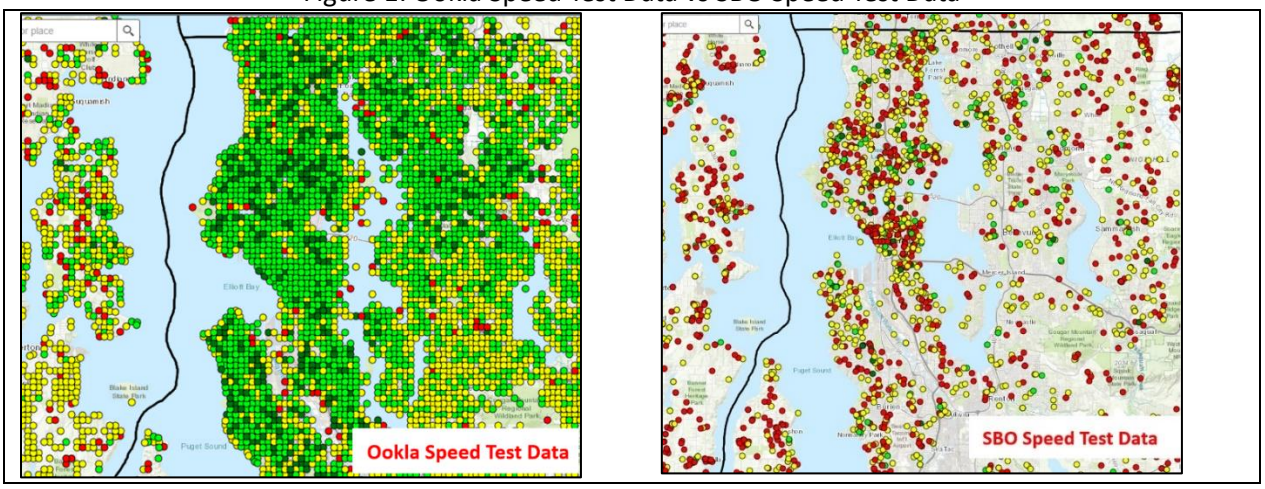
[41] Northwest Open Access network https://www.noanet.net/
[42] Statewide Broadband and Digital Equity Map: https://noanet.maps.arcgis.com/apps/webappviewer/index.html?id=b1507f7dda304bff8f3fe4c468da6226
[43] CNET: https://www.cnet.com/home/internet/best-speed-tests/

Figure 1: Ookla Speed Test Data vs SBO Speed Test Data



Data Source: Statewide Broadband and Digital Equity Map[44]

The service provider map layer on the Statewide Broadband and Digital Equity Map[45] generally corresponds with the county's knowledge of the operating ISPs. However, there are some providers missing from the "Service Provider (SBO)" layer, including NW Programming, TPx Comm., Talus Link, Fusion Cloud, Quantum Fiber, Cogent Comm., Net Fortris, Highlands Fiber Network, Syringa Networks, and Fatbeam, among others. Licensed fixed wireless providers such as T-Mobile, Verizon, US Cellular, Skynet Broadband, and Althea are present. All listed providers report speeds meeting or exceeding the minimum speed requirement of 25/3, with wireline providers offering faster speeds. Lumen, Comcast, Ziply, and Wave have a significant presence in King County and have been responsive and willing to engage with KCIT. It's important to note that the source data is from speed testing, so the absence of other providers could be due to either a limited user base or being enterprise ISPs that do not appear in the state's speed test data.

The most significant dataset missing from the state broadband map is FCC broadband data, which includes the CostQuest location dataset and broadband availability information from the FCC broadband map. This data layer is crucial for determining which project areas are eligible for BEAD funding. Its inclusion would enable more accurate broadband planning for both state and local governments. The allocation of BEAD funds would be directly tied to the eligibility of BSLs. This report recommends that the state investigate adding the FCC broadband data to the map as it provides the most accurate depiction of BEAD eligible locations within the state.

II. Local Broadband Asset Inventory

In addition to reviewing the base map, the WSBO asked the BATs to provide an asset inventory of all known broadband infrastructure so that the data could be added to the Statewide Broadband and Digital Equity Map later. In addition to the availability of assets, another challenge is the extensive time required to develop partnerships, negotiate contracts, establish governance structures, and define processes around reporting and sharing infrastructure plans. Table 1 below highlights organizations that possess

[44] *Statewide Broadband and Digital Equity Map:* https://noanet.maps.arcgis.com/apps/webappviewer/index.html?id=b1507f7dda304bff8f3fe4c468da6226

[45] [45] *Statewide Broadband and Digital Equity Map:* https://noanet.maps.arcgis.com/apps/webappviewer/index.html?id=b1507f7dda304bff8f3fe4c468da6226

broadband assets and some potential opportunities that need to be explored once the WSBO identifies potential project areas in 2024.

Table 1: Organizations currently serving community with broadband assets

Organization	Assets	Potential Opportunities/ Open Questions
King County	Unincorporated rights-of-way (ROW)	• Restoration requirement leniency, spare conduit, and vaults? • Upcoming projects that can be coordinated with conduit and vault placement? • Option for micro trench in roadway or direct bury alongside of roadway in soft scape?
Puget Sound Energy (PSE)	Pole Owner	• Confirm which project areas they own poles in, then seek out data on condition of poles and capacity to handle an additional communications attachment. Average make-ready work (MRW) cost? • Is there an opportunity to look at projects across the state, as opposed to just KCIT, to understand how much budgeting for pole restoration/replacement will be required.
Tanner Electric	Pole Owner	Same as above with PSE.
Lumen	Pole Owner	Same as above with Tanner Electric, but with addition of understanding which poles are joint ownership and single ownership.
Seattle City Light	Pole Owner	Same as above with Lumen.
Wireless Carriers	Cell Towers	Capacity available for wireless providers to utilize in those areas exceeding high-cost threshold?
Crowne and Castle	Shared communications infrastructure	What role do they see playing in the upcoming BEAD funding since their assets cover critical parts of broadband infrastructure?

Community anchor institutions (CAIs) being well served

The BEAD NOFO specifically lists CAIs without gigabit connections as eligible entities[46] for funding. The WSBO requested a list of all CAIs located in King County along with their current internet speed availability.

KCIT was not able to satisfy the WSBO request due to the following:

I. King County's size impacted ability to gather the data requested in the limited time allotted.
II. KCIT operates the King County Institutional Network (KC I-Net) that serves over 100 CAIs and can provide that data as a viable starting point.
III. A review of the Statewide Broadband and Digital Equity Map indicates that many Community Anchor Institutions (CAIs) are within areas well served by existing ISPs.

[46] *NTIA BEAD NOFO (page 7): https://broadbandusa.ntia.doc.gov/sites/default/files/2022-05/BEAD%20NOFO.pdf*

KCIT has identified and listed, specific customers or CAI types below, in Table 2, that have access to broadband internet which covered the main CAI institution types.

Table 2: Community Anchor Institution Internet Service List

Institution/Institution Type	Service Available	Current Provider
Eastside Catholic	Up to 10Gb	KC I-Net
Evergreen School	Up to 10Gb	KC I-Net
Green River College	Up to 10Gb	KC I-Net
Issaquah School District	Up to 10Gb	KC I-Net
Snoqualmie Valley SD	Up to 10Gb	KC I-Net
Young Men's Christian Association (YMCA)	Up to 10Gb	KC I-Net
King County Library System (KCLS)	Up to 10Gb	KC I-Net
Tahoma School District	Up to 10Gb	KC I-Net
Kent School District	Up to 10Gb	KC I-Net
Fire Departments	Up to 10Gb	KC I-Net, Comcast, Ziply
Hospitals	Up to 10Gb	Comcast, Astound
Police Stations	Up to 10Gb	KC I-Net

IV. BEAD money will likely not be available for CAIs based on the BEAD notice of funding opportunity (NOFO) explicitly stating:

"Eligible Entities that demonstrate they will be able to ensure service to all unserved and underserved locations will be free to propose plans that use remaining funds in a wide variety of ways, but National Telecommunications and Information Administration (NTIA) underscores its strong preference that Eligible Entities also ensure deployment of gigabit connections to community anchor institutions such as libraries and community centers that lack such connectivity."[47]

In several planning meetings with the WSBO it has been stated that the available BEAD funding will be insufficient to provide service to all unserved and underserved locations. As a result of the WSBO statement and the BEAD NOFO language, the county will prioritize alternative efforts to ensure connectivity for those CAIs identified as not having access to gigabit service.

[47] *NTIA BEAD NOFO (page 7): https://broadbandusa.ntia.doc.gov/sites/default/files/2022-05/BEAD%20NOFO.pdf*

ISPs currently serving community (potential partners for upcoming work)

Like the earlier inquiry about CAI lists, the WSBO has sought a compilation of ISPs actively delivering internet services in King County. In addition to providing the requested data, KCIT has requested via a request for information (RFI) aimed at gathering comprehensive data from these providers.

KCIT completed three forms of outreach to ISPs:

I. KCIT RFI
In March 2023, KCIT published a broadband RFI through King County procurement. Providers were to submit project-level cost estimates for upgrading existing infrastructure or extending the current infrastructure of providers in King County. These projects specifically aim to address unserved or underserved locations within the county. The following three providers responded: Ziply Fiber NW, Comcast, and LUMEN.

II. Washington State Broadband Office Round Two Grant Application
Astound submitted a response detailing a project area in the Kanaskat Washington located in southeast unincorporated King County. KCIT was unable to secure that project grant funding. However, considering the high number of unserved homes in that area within King County the project is added to the list of BEAD eligible projects.

III. Outreach to local wireless carriers.
KCIT reached out to three wireless carriers: T-Mobile, AT&T, Verizon, and Dish. KCIT received a response from AT&T.

In summary, several existing internet service providers have shown an interest in participating in the upcoming BEAD funding by extending, or upgrading, their existing networks to reach unserved and/or underserved locations in King County. Specific project information can be found in the "Potential Paths Forward for Broadband Infrastructure" section below.

Organizations providing data for community broadband map and details on current speeds/pricing

The WSBO requested ISPs provide their respective network maps to the State Broadband and Digital Equity Map to improve the accuracy for planning purposes. In the RFI that KCIT published, providers were asked if they were willing to share any information for the map. All responding providers (Ziply Fiber NW, Comcast, Lumen, T-Mobile, AT&T, Verizon, and Dish) declined the request.

III. Broadband Infrastructure Needs Assessment

Community anchor institutions that need improved services or where cost of services is too high

As mentioned above, it appears that most CAIs in King County are served either by ISPs or KC-INET. Consequently, KCIT doesn't view BEAD funding as a necessary to address CAI service concerns in King County. KCIT will work diligently to identify other possible infrastructure solutions for those in need.

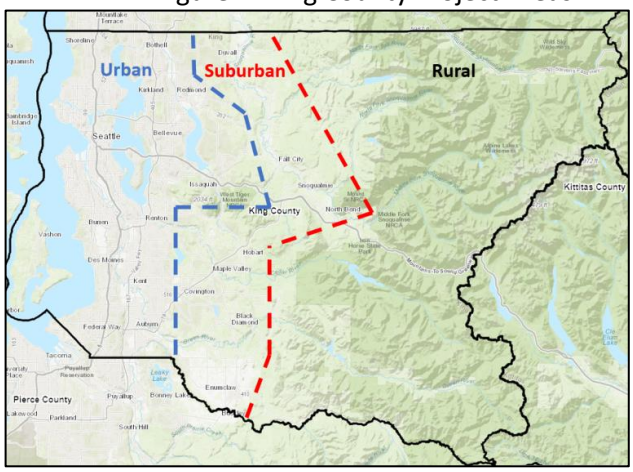
Areas lacking broadband

As noted above, King County, spanning approximately 2,300 square miles, presents unique challenges in addressing unserved and underserved locations. To streamline the process, KCIT divided the county into three distinct project areas: urban, suburban, and rural. These project areas serve as general guidelines

rather than specific map boundaries and are crucial for focusing on appropriate technologies while considering the overall costs and maximizing the utilization of BEAD funding awarded in the county. The project areas are defined as follows (reference figure 2 below for further clarification):

- Urban: Encompassing the I5/I405 corridor.
- Suburban: Covering the eastern region of cities such as Auburn, Kent, Renton, Sammamish, and Redmond, extending to the easternmost parts of Enumclaw, Black Diamond, Maple Valley, North Bend, Snoqualmie, Fall City, and Duvall.
- Rural: Encompassing everything east of the Suburban boundary, extending to the borders of Kittitas and Chelan Counties.

Figure 2: King County Project Areas



KCIT developed a map for internal use that utilizes both the CostQuest Broadband Serviceable Location Fabric[48] (updated January 2023) and the FCC Broadband Availability Data[49] (updated May 2023). This allows the county to research down to the Broadband Serviceable Location (BSL) level and determine where gaps exist along with identifying BEAD eligible projects. KCIT is a designated entity, as determined by the FCC, and has the licensing rights to utilize the map data for broadband mapping.

KCIT primarily focused on urban and suburban areas, while Breaking Point Solutions was relied upon to design the rural project area in the county. The main reason for this approach was that the urban and suburban project areas already have established providers who could either upgrade or extend their existing networks. This option proved to be more cost-effective compared to building an entirely new network in the same footprint as an existing provider and was identified in the 2020 King County Broadband Access Study[50] as a potential path forward for getting broadband to unserved/underserved homes in King County. Moreover, the BEAD funding does not permit overbuilding, making it financially impractical to target specific eligible locations within an existing provider's coverage area.
The county lacked sufficient expertise in pricing out and undertaking new construction projects, particularly in the context of rural King County where network connectivity was previously unavailable. Consequently, the decision was made to defer to the knowledge and experience of an external consultant with a proven track record in similar projects nationwide.

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[48] *CostQuest: https://www.costquest.com/broadband-serviceable-location-fabric/*
[49] *FCC National Broadband Map Data Download: https://broadbandmap.fcc.gov/data-download/nationwide-data?version=dec2022*
[50] *King County 2020 Broadband Access Study (page 24): https://kingcounty.gov/en/-/media/depts/it/services/cable/202002-Broadband-Access-Study.ashx?la=en&hash=C46354580D560F006CB3ED46375E906C*

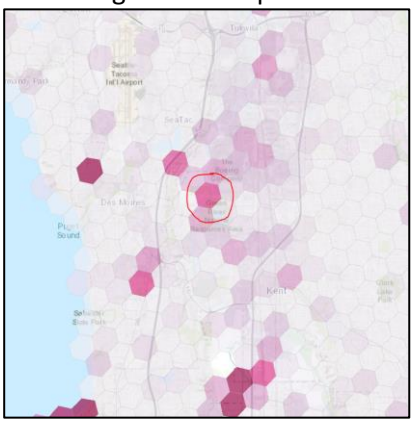
There are several available projects areas in the region. KCIT is approaching this with ISPs to address urban and suburban project areas utilizing responses from the KCIT Broadband RFI and the estimates provided from Breaking Point Solutions to address the rural areas of King County. Working with ISPs affords KCIT the opportunity to partner at scale for material resources, like fiber, which several providers have already stockpiled in anticipation of the upcoming funding. Simply put, the ISPs, have buying power that makes projects more affordable to complete and allow for more of the BEAD funding to be utilized on additional projects across the state.

Highlighted below is some of the analysis completed for each of the project areas. More detailed projects will be worked on over the course of the new few months as the WSBO puts together the Initial proposal for NTIA.

Urban King County

The urban project area has 80-100% coverage based on the FCC Broadband Map[51], but with individual locations and small pockets of BSLs that necessitate service extensions of varying length. A service extension is something the provider installs that extends existing infrastructure to a location requiring service. The length of these service extensions can vary dramatically depending on where the nearest connection point to existing infrastructure. KCIT will collaborate with the incumbent ISPs to assess the costs and tackle these targeted project areas. Comcast has already acknowledged that the engineering involved in such projects is more complex and time-consuming but expresses readiness to undertake them in anticipation of BEAD funding becoming available in King County by 2025.

Figure 3: Comparison of State Broadband Base Map and FCC Broadband Map



Data Source: State Broadband Base Map (FCC Hex)[52]

Data Source: FCC Broadband Map[53]

Figure 3 is an example of a common connectivity situation in urban King County, specifically in the City of Kent. The map on the left is from the State Broadband Base Map and use hexagonal shading to highlight areas where there are concentrations of unserved locations. The darker the shade of pink, the more concentration of unserved locations that exist in that hexagon. In this example of the neighborhood in

[51] *FCC Broadband Map: https://broadbandmap.fcc.gov/location-summary/fixed?version=jun2023&lon=-122.330062&lat=47.603832&addr_full=Seattle%2C+Washington%2C+United+States&zoom=8.14&vlon=-122.646194&vlat=47.442929&br=r&speed=25_3&tech=1_2_3_4_5_6_7_8*

[52] *Statewide Broadband and Digital Equity Map: https://noanet.maps.arcgis.com/apps/webappviewer/index.html?id=b1507f7dda304bff8f3fe4c468da6226*

[53] *FCC Broadband Map: https://broadbandmap.fcc.gov/home#/*

Kent, most of the area has connectivity (lighter pink in the image on the left), while there are small pockets of homes that lack connectivity scattered through the area. These unserved locations can potentially be resolved by implementing service extensions from nearby new developments. By utilizing the State Broadband Base Map along with the FCC Hex layers, one can identify darker spots indicating a higher concentration of BSLs in need.

The FCC Broadband Map, represented by the image on the right-hand side of figure 3, shows a satellite view of the neighborhood allowing further analysis of the exact situation in the area. In this specific case, it appears that a new development was recently established and equipped with broadband services as indicated by the green dots over the locations. Given the proximity to the red dots (indicating unserved locations), it should be possible to extend connectivity to the twelve unserved locations located just north of the development. Similar pockets with connectivity gaps can be found throughout urban King County, with this example representing just one instance.

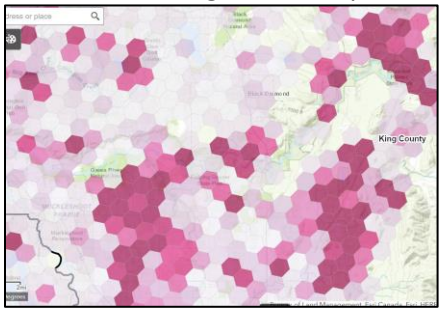
In certain urban areas, there are locations that appear to lack broadband service. However, providers have encountered difficulties in obtaining right of entry (ROE) to these areas. This situation often arises when private homeowner associations (HOAs) or similar organizations negotiate with telecommunications providers to secure service for their members. These arrangements can create challenges in expanding broadband coverage to these specific areas.

The analysis example of this area in the City of Kent highlights the primary reason KCIT developed an internal broadband map. Not having access to internal mapping tools would put a reliance on the two maps (State Broadband Base Map and FCC Broadband Map) mentioned above to identify specific problem areas within King County and they don't provide the granularity needed for effective planning.

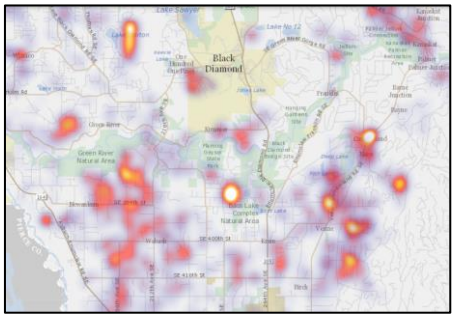
Suburban King County

In this project area of the county, connectivity is available; however, the existing internet technologies, such as digital subscriber line (DSL), fall short in providing broadband speeds and are considered underserved as defined in the Washington State Bead Initial Proposal Volume I[54]. Providers are present in the area but require infrastructure upgrades or extensions to reach nearby locations. The responses received for the KCIT RFI in March 2023 focused on projects in the suburban area, aiming to upgrade approximately 6,500 locations to broadband speeds.

Figure 4: Comparison of Black Diamond, Cumberland, and Kanaskat Area



State Broadband Base Map (FCC Hex)



King County Heat Map of Unserved Locations

King County BSL Level (Cumberland)

[54] *Washington State Bead Initial Proposal Volume I: https://deptofcommerce.app.box.com/s/qaq0q6j5myr4ebnxjj9wvcp1ac3ppqfk*

Figure 4 provides a side-by-side view of the data in the State Broadband Base Map. In the first image, on the left, the location data doesn't allow for individual locations to be shown, but instead relies on a hex shaped layer known as H3[55]. These H3 layers allow for a map to display a relative concentration of the underlying data in aggregated hex shapes without needing to show precise locations on a map. In the middle image KCIT's map uses a heat map based on number of eligible BSL's to creates a similar aggregated view to the FCC broadband map and easily identifies areas in need. Both options provide a high-level view of areas in need that can then be drilled down to a more granular project level detail on the KCIT broadband map. KCIT has BSL level data and can drill into the exact BSL eligible location. The image on the right shows the zoomed in BSL level data of locations in the area that are labeled as unserved. With this type of macro to micro analysis of King County, KCIT can pinpoint specific areas and locations to identify and develop specific BEAD projects.

Rural King County

In addition to certain areas of Vashon Island, most unserved and underserved locations are concentrated in eastern King County, specifically in areas beyond Duvall, Carnation, Redmond, Sammamish, Snoqualmie, Maple Valley, Auburn, Black Diamond, and Enumclaw. Furthermore, isolated unserved or underserved BSLs exist further east and within the Alpine Lakes Wilderness area.

While the FCC broadband map indicates unserved areas, it is important to note that BSLs marked in green due to DSL or fixed wireless should be further investigated as they likely indicate underserved conditions. This area also presents difficulty due to the terrain and cost to deliver fiber infrastructure. As part of the BEAD NOFO, the WSBO needs to identify a threshold that will be to cost prohibitive to provide broadband internet, which is termed an "extremely high cost per passing threshold". Once this threshold is determined, those BSLs that are above the threshold may be serviced by alternative technologies instead of fiber-to-the-premises (FTTP), where they are less expensive but still meet BEAD broadband speed requirements. Some examples of these alternative technologies are satellite and wireless 5G internet. The high cost per passing threshold has not been published yet, but KCIT is assuming a percentage of the rural area will be above the extremely high cost per passing threshold and will be relying on alternative solutions.

The rapid study conducted by Breaking Point Solutions, depicted below in Figure 5, revealed the significant challenges posed by the terrain, making traditional wireless solutions impractical due to limited line-of-sight between towers. Additionally, fiber-optic connectivity is necessary for most towers and the terrain provides cost-prohibitive construction challenges. Breaking Point Solutions proposes a hybrid solution, combining fiber-to-the-premise (FTTP) and wireless technologies, estimated to cost approximately $12 million for this area.

Additionally, Breaking Point Solutions suggests that Comcast, given their existing presence in the area, is the most suitable provider for this expansion. Although KCIT has already received project proposals from Comcast, the rural project area was not included. Over the next few months, discussions will be initiated to explore the possibility of Comcast expanding into the rural project area, in addition to the existing projects.

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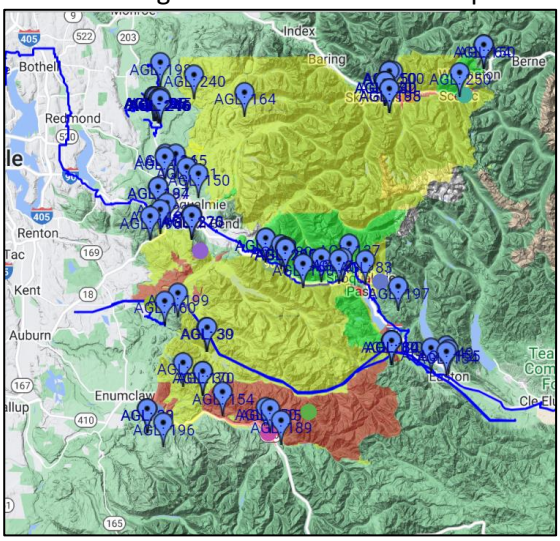
[55] *Esri.com: Use H3 to create multiresolution hexagon grids in ArcGIS Pro 3.1: https://www.esri.com/arcgis-blog/products/arcgis-pro/analytics/use-h3-to-create-multiresolution-hexagon-grids-in-arcgis-pro-3-1/*

Figure 5: Breaking Point Solutions Rural Proposal Area



Green area is fiber, red area is wireless, and yellow is satellite

KCIT will continue to analyze the BEAD eligible project areas and work with ISPs to develop projects that address the unserved and underserved in all three project areas of King County. This work will occur over the next 18 months. At present, there are potential areas within the urban project area that may qualify for broadband infrastructure improvements. However, providers have not yet assessed these project areas due to the complex and costly engineering process that needs to be undertaken.

Areas where the cost of services may be too high for the average household

KCIT's current approach of assessing affordability of internet services is based on households at or below 200 percent of the Federal Poverty Level (FPL), household participation in Lifeline[56] (FCC subsidy program for phone and internet service), and other government subsidy programs. This approach is consistent with the FCCs Affordable Connectivity Program (ACP) program. The ACP program is a U.S. government program administered by the FCC to help low-income households pay for internet service and connected devices.

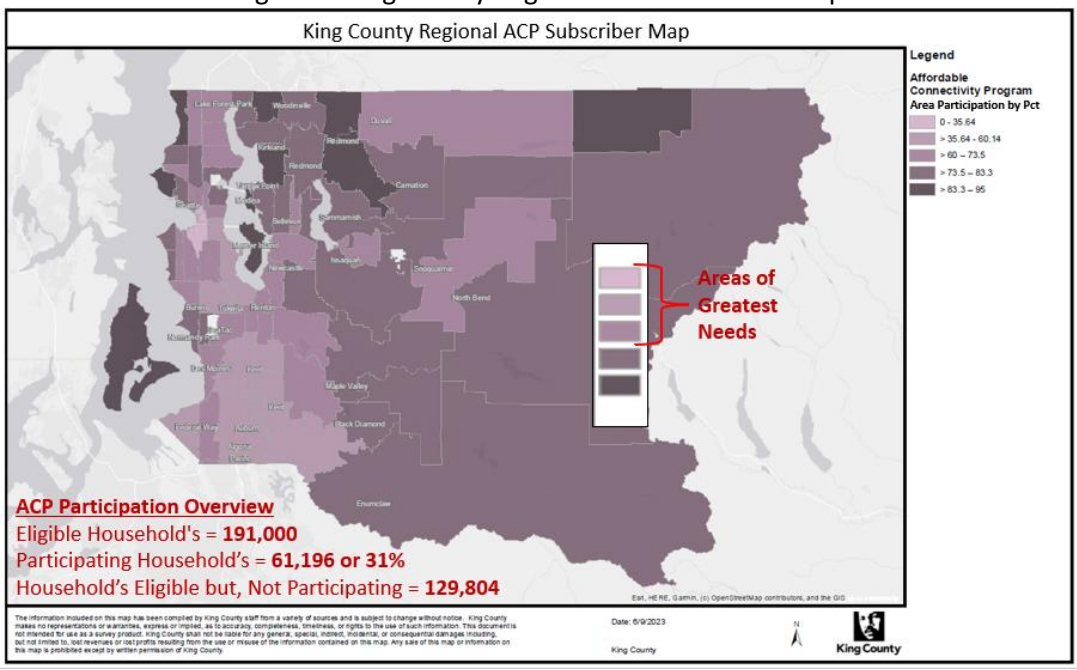
Using the ACP program criteria, KCIT estimates approximately 190k households across 69 zip codes in King County[57] where the cost of internet services may be too high for the average household.

Figure 6 is a screenshot of the interactive map that KCIT developed to illustrate ACP participation across King County. The map below associates a specific color to an area based on overall ACP participation levels. The lighter color indicates low participation, while the darker color indicates high participation. With this understanding, the lighter areas of the map highlight the areas in King County that have more opportunity for increased ACP participants. KCIT is currently developing an ACP Awareness campaign that will be launched in 2024 with the purpose of getting more eligible households signed up to the program.

[56] *Federal Lifeline Program: https://www.lifelinesupport.org/*

[57] *King County Regional ACP Subscriber Map: https://kingcounty.maps.arcgis.com/apps/webappviewer/index.html?id=76e727009e374f9385e2667d97079612*

Figure 6: King County Regional ACP Subscriber Map



IV. Obstacles And Barriers to Broadband Infrastructure Deployment

Challenges to broadband deployment

The main challenges to broadband deployment fall into the following categories:

Permitting: process, cost, and lengthy permitting timelines

Concerns regarding the permitting process for broadband projects emerged as a major concern during KCIT discussions with ISPs. Providers shared a concern that each jurisdiction or pole owner has its own adopted standard and this lack of a universally adopted process impacts timeliness of project completion. Permitting procedures can introduce significant delays, potentially ranging from three months and up to twelve months or more in certain instances.

The current state of permitting raises concerns regarding the timely completion of projects required for BEAD funding. Failure to meet the project completion deadline, which is set at four years after funding is awarded, puts the state at risk of losing the allocated funding. It is imperative to address the permitting challenges to ensure efficient and expeditious project execution.

KCIT acknowledges the need to address permitting processing timelines. It is committed to exploring ways to streamline timelines and facilitate expedited approvals for providers when possible, understanding that resourcing permitting entities is outside of KCIT's purview.

Pole Make Ready Costs:(National Electric Safety Code compliance and/or pole replacement

The unpredictable and high costs associated with fixing and replacing utility poles is another area that came up during discussions with ISPs. To construct broadband facilities on utility poles, providers must first request what is needed to "make the pole ready" for their proposed construction while ensuring compliance with the owners adopted standards – often the National Electric Safety Code (NESC).

In practice, if there isn't space for the new communications attachment, then work needs to be performed to create the needed space which can involve rearranging other communications attachments on the pole or putting in a taller pole. This is a common situation as poles are either at capacity or undersized to begin with.

Another issue arises in instances where the poles are an appropriate size and there is sufficient space, but compliance and/or pole condition issues exist. If a service provider applies to construct broadband facilities on a pole that is not compliant with the NESC, then the provider must pay to bring the pole into compliance. This includes fixing safety issues related to the pole owner's facilities such as low hanging power service "drip loops" that impede the safety space. In the same fashion, if the pole is at end of life and in need of replacement, the service provider must pay the pole owner the cost of replacing the pole before it can proceed with construction. The alternative is to wait for the pole owner to complete the pole replacement on their own schedule, which can be several months or years.

As owners of critical infrastructure that is necessary for broadband deployment, the state should incentivize pole owners to make their infrastructure ready in advance of deployments would aid in timeliness. If infrastructure is not ready, it is likely that broadband projects will experience delays while make-ready work is identified and performed. Notably, delays will impact BEAD funding, likely impacting the number of BSLs served.

Financial gaps preventing infrastructure investment

The lack of County matching funds required for current broadband funding and future BEAD funding impacts the County's ability to provide for broadband infrastructure. Currently, King County's flexible funding source, the General Fund, is deeply constrained which is necessitating program reductions and staffing cuts.

Because the County cannot independently and solely fund broadband projects, KCIT has adopted a public private partnership (PPP) strategy, wherein ISPs contribute the necessary matching funds to satisfy the 25% local match required by the NTIA BEAD NOFO. Historically, areas lacking broadband connectivity have not presented a favorable internal return on investment for service providers. The BEAD funding program helps bridge this gap in financial calculations.

Workforce gaps

Along with many sectors, the infrastructure industry currently faces a shortage of qualified labor, as most skilled individuals are already employed. This shortage is projected to be further exacerbated by the significant investment under BEAD and subsequent growth of construction projects. To address this challenge, it is crucial for the state increase recruiting and training of more individuals to work in the infrastructure sector. Investing in educational partnerships with technical colleges and ISPs can be a worthwhile endeavor to foster workforce development in support of BEAD objectives.

Policy barriers

KCIT has engaged on the broadband topic for several years, partnering with providers where possible as well as other public entities such as Seattle IT on Digital Equity. However, broadband is not a service provided by King County to residents. Without an additional dedicated funding allocation, any efforts require partnership. KCIT is continuing to educate around the topic and with the upcoming funding will be more engaged with public and private partners in the region.

KCIT is looking at County policies impacting permitting and will engage with other King County departments around potentially streamlining the permitting process and timeline. King County currently has a "dig once" policy (KCC Title 14, Chapter 14.44.0202 B)[58], which allows for the "installation of vacant conduit reserved for the future installation of fiber optic cable". KCIT will explore developing guidance for the execution of that policy to further broadband connectivity in the region.

Another policy barrier impacting broadband projects is the deferred maintenance of poles and ROW, which results in increased time and costs for deploying broadband infrastructure. A considerable portion of the BEAD funds will be allocated to address and enhance this critical infrastructure, which may cause delays to the overall project timeline.

While King County does not have regulatory oversight of broadband service, it is granted the authority to manage its ROW and services offered within its borders under state law. All service providers must have some legal authorization to place facilities in the ROW and be required to comply with King County Code. Some providers have statewide franchises but still must comply with local code, while others have local telecommunications or cable TV franchises that require the same. King County's existing providers already have franchises in place that allow for network expansion in areas currently not served and new entrants can obtain a franchise under the King County code. KCIT is willing to engage with a new entrant on a franchise agreement that complies with applicable law and works for both parties.

Workforce

As discussed above, during KCIT's discussions with providers, it became apparent that there is a shortage of the skilled labor needed to ramp up expansion on the grand scale envisioned under BEAD. In short, everyone who is qualified to work in this space is working. An effort and funding to support the workforce training programs needed to meet demand is a worthwhile consideration. Perhaps partnering with technical colleges and/or industry to stand up training programs has merit. Not only would this partnership satisfy a workforce need, but it also prepares people for good paying jobs for the future.

Community awareness issues

There are no barriers in terms of community awareness inhibiting broadband infrastructure deployment. Communities that lack adequate broadband internet express a strong desire and need for it. However, there is a need to provide more information to individual residents about how they can engage to get broadband service installed in their neighborhood. For instance, with the BEAD funding, there is a specific focus on addressing broadband availability challenges as reported by individuals at the household level. The NTIA will utilize this information for the initial allocation of funds, meaning that the more households are unserved, the more funding the state will receive. However, the awareness campaign for this effort was initiated only a couple of months before the cutoff date due to lack of clarity about the process from the FCC. This could have been improved by starting it 6-12 months earlier, thus identifying more homes/neighborhoods inadequately served. This could have resulted in a higher allocation of funds once the campaign was completed In June 2023.

Geographic and environmental issues

Critical areas such as rivers/streams/wetlands often require additional permitting and review which increase timelines. These critical areas should be identified as early as possible so that necessary permits can be obtained. Hills and mountains are an issue for wireless due to the required line of sight between

[58] *KCC Title 14 Roads and Bridges: https://kingcounty.gov/en/legacy/council/legislation/kc_code/17_Title_14.aspx*

towers for the technology to work effectively. Line of sight means each tower needs to see the other to pass the internet signal.

The rural project area in King County poses distinct challenges due to its terrain and scattered BSLs. The combination of these factors makes it financially impractical to achieve a comprehensive solution solely through FTTP and wireless technologies. Breaking Point Solutions has estimated that approximately 88 percent of the rural project area can be served with a hybrid solution combining fiber and wireless technologies, in collaboration with ISPs. However, the remaining 12 percent of BSLs would still rely on satellite internet service for connectivity.

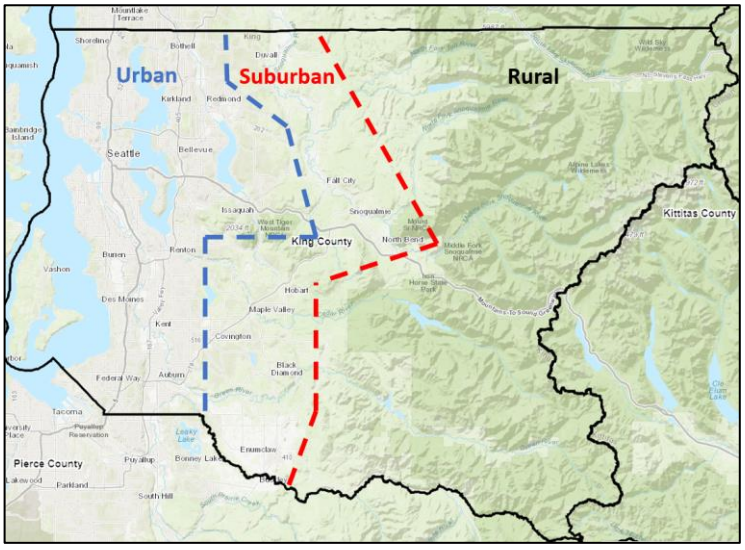
V. Potential Paths Forward for Broadband Infrastructure

Based on the information collected in the previous sections of this local action report, the WSBO asked each BAT to come up with proposals for improving broadband infrastructure in their respective areas. KCIT is approaching the paths forward based on the previously mentioned project areas: urban, suburban, and rural. Each of the project areas presents different challenges, but primarily the same solution of partnering with ISPs to either upgrade or expand their networks to reach the unserved and underserved.

The high-level methodology for each area is listed below and the detailed projects, solutions, and costing are provided in the "Planned Expansion Areas" section. Details around the development and use of an internal KCIT broadband map to develop a strategy are highlighted below.

Figure 7 shows the project areas used for this report and highlights the three identified areas: urban, suburban, and rural. Proposed projects will be referencing these areas throughout this report.

Figure 7: King County Project Areas



Urban Project Areas

Upon reviewing the Broadband RFI responses, KCIT identified a lack of project submissions from providers in the urban project areas. Comcast, being the primary provider in these areas, indicated that there are indeed opportunities for broadband expansion. However, the unserved and underserved Broadband Service Locations (BSLs) are not concentrated in specific neighborhoods but rather scattered throughout

the region. These areas require individual lateral drops, as opposed to comprehensive neighborhood-wide deployments making it a more difficult to identify and estimate costs under the time constraints of the RFI. Due to the unique engineering requirements involved, an assessment on these specific areas will be conducted in the coming months with all urban project area providers.

Suburban Project Areas

KCIT published a RFI in March 2023 asking ISPs to provide potential projects for unserved and underserved locations in King County.

Projects submitted by ISPs included:

- Map layer of project area
- Total cost of project including service drops
- Number of passings
- Type of technology proposed (i.e., fiber, coaxial, etc.)
- Willingness of ISP to provide 25 percent match for BEAD funding

The information provided by respondents to the RFI outline specific projects in the suburban project area of King County, shedding light on the factors hindering ISPs from submitting projects in the urban and rural areas. This information should be treated as a high-level estimate and requires additional work to identify more refined numbers for the actual BEAD funding application.

Rural

In the case of the rural project areas, Breaking Point Solutions was engaged to conduct a rapid design study, enabling a better understanding of the necessary technologies and associated costs to bring broadband internet to the area.

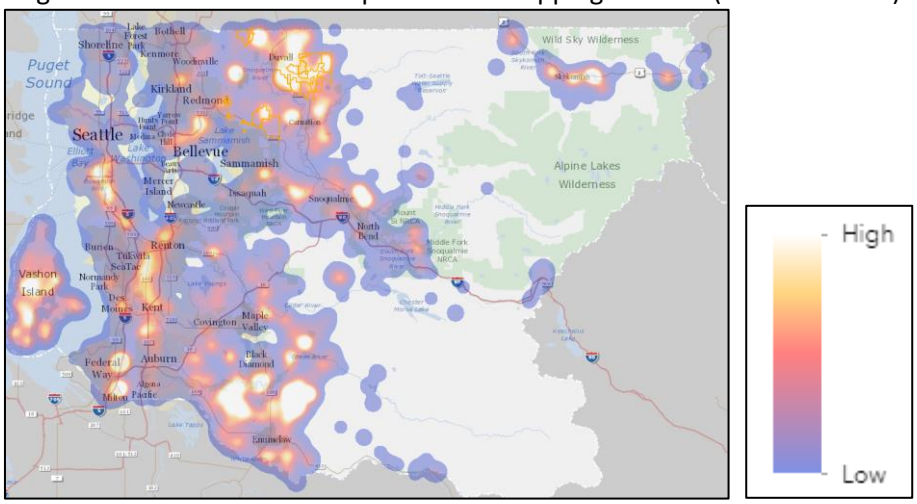
KCIT Broadband Map

KCIT developed an internal broadband map referenced throughout this entire report. The core datasets are CostQuest Fabric V2 (December 2022) and FCC Broadband Availability data (December 2022).

Several other cited datasets are utilized to drive analysis of broadband including: heatmapping of unserved and underserved, RFI response project areas, Percent of Population at or below 150 percent of poverty line (Census), Median Household Income, King County Council Districts, and King County Community Service Areas.

Heatmapping will be used in the next section to show the areas with high numbers of BEAD eligible BSLs (white) to low numbers of BEAD eligible BSLs (purple) depicted in Figure 8. Below is what the entire county looks like with heat mapping enabled for unserved BSL locations.

Figure 8: KCIT Broadband Map with Heatmapping Enabled (unserved BSLs)



Planned expansion areas

KCIT Project Summary and BEAD Funding Requests

- Suburban Project areas:
- Private partners have committed 25 percent BEAD funding match
- Projects: 21
- Total unserved locations: 3,944
- Total underserved locations: 2,563
- Total project cost: $85,661,887
- Total provider contribution: $21,415,472
- BEAD funding request: $64,246,415
    - BEAD funding per passing: $9,873.43

- Rural Project areas:
- Private partner has not been identified yet
- Projects: 1
- Total locations: 1,737
- Total project cost: $11,988,000
- Total provider contribution (assume 25 percent): $2,997,000
- BEAD funding request: $8,991,000
    - BEAD funding per passing: $5,176.17

- Urban Project areas and BEAD funding request: TBD

Total KCIT BEAD funding request (as of June 2023): $73,237,415

All project details are broken down further by project area and provider in the following section.

Suburban Project Areas

KCIT received responses from three providers (Comcast, Ziply, and Lumen) to the Broadband RFI posted in March 2023 for suburban areas.

Comcast

- Projects: 16
- Total unserved locations: 3,061
- Total project cost: $52,915,095
- Provider contribution (25 percent): $13,228,774
- BEAD funding request: $39,686,321
- Technology used:
    - EPON (ethernet passive optical network): 9 projects
    - EPON/HFC: 2 projects
    - HFC (Hybrid fiber-coaxial): 5 projects
- Max speeds available upon project completion: 1.2Gbps download and 35Mbps upload

Table 3 provides information on the number of unserved locations, the total project cost, and the amount contributed by Comcast, along with the dollar amount funded by BEAD.

Table 3: Comcast Project Proposal Financial Contribution Details

Project Area	# of Unserved locations	Total Cost of Project	Provider $ Contribution	BEAD Funding Request
Vashon Island	506	$ 11,125,820.00	$ 2,781,455.00	$ 8,344,365.00
Fall City Park	108	$ 1,477,904.00	$ 369,476.00	$ 1,108,428.00
North Bend	54	$ 1,044,338.00	$ 261,084.50	$ 783,253.50
SE of Snoqualmie	81	$ 1,486,227.00	$ 371,556.75	$ 1,114,670.25
Snoqualmie Falls	211	$ 3,096,420.00	$ 774,105.00	$ 2,322,315.00
NE of Fall City	31	$ 485,623.00	$ 121,405.75	$ 364,217.25
NE Carnation	49	$ 1,480,241.00	$ 370,060.25	$ 1,110,180.75
Cherry Valley	118	$ 3,025,693.00	$ 756,423.25	$ 2,269,269.75
Pleasant Hill	110	$ 2,518,550.00	$ 629,637.50	$ 1,888,912.50
Kanaskat	72	$ 1,399,619.00	$ 349,904.75	$ 1,049,714.25
Wabash-Cumberland	1381	$ 19,578,310.00	$ 4,894,577.50	$ 14,683,732.50
Arcadia-Maple Valley	74	$ 730,279.00	$ 182,569.75	$ 547,709.25
N of Pac Raceway	18	$ 231,165.00	$ 57,791.25	$ 173,373.75
S of Hobart	116	$ 2,169,882.00	$ 542,470.50	$ 1,627,411.50
W of Norman Grier Field	34	$ 381,167.00	$ 95,291.75	$ 285,875.25
SE Green Valley Rd	98	$ 2,683,857.00	$ 670,964.25	$ 2,012,892.75
	3061	$ 52,915,095.00	$ 13,228,773.75	$ 39,686,321.25

Table 4 provides a breakdown of the projects, indicating the cost per passing based on the 25 percent contribution from Comcast, to better understand the BEAD funding contribution:

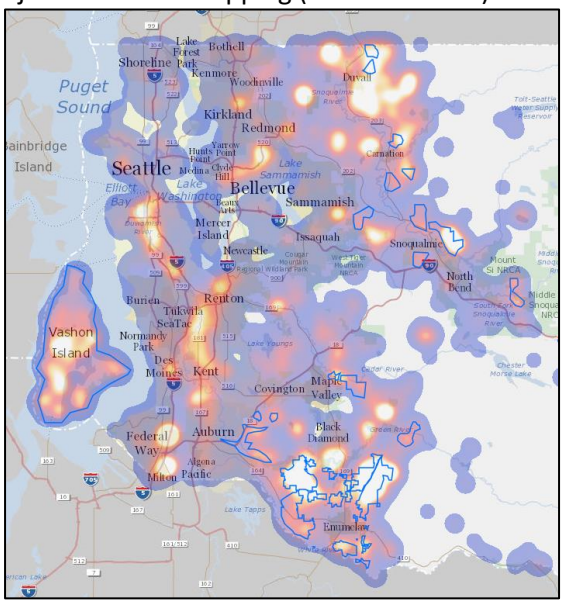
Table 4: Comcast Project Proposal Cost per Passing Breakdown

Project Area	Total locations	Cost per Passing (Project)	Cost per Passing (Provider)	Cost Per Passing (BEAD)
Vashon Island	506	$ 21,987.79	$ 5,496.95	$ 16,490.84
Fall City Park	108	$ 13,684.30	$ 3,421.07	$ 10,263.22
North Bend	54	$ 19,339.59	$ 4,834.90	$ 14,504.69
SE of Snoqualmie	81	$ 18,348.48	$ 4,587.12	$ 13,761.36
Snoqualmie Falls	211	$ 14,674.98	$ 3,668.74	$ 11,006.23
NE of Fall City	31	$ 15,665.26	$ 3,916.31	$ 11,748.94
NE Carnation	49	$ 30,209.00	$ 7,552.25	$ 22,656.75
Cherry Valley	118	$ 25,641.47	$ 6,410.37	$ 19,231.10
Pleasant Hill	110	$ 22,895.91	$ 5,723.98	$ 17,171.93
Kanaskat	72	$ 19,439.15	$ 4,859.79	$ 14,579.36
Wabash-Cumberland	1381	$ 14,176.91	$ 3,544.23	$ 10,632.68
Arcadia-Maple Valley	74	$ 9,868.64	$ 2,467.16	$ 7,401.48
N of Pac Raceway	18	$ 12,842.50	$ 3,210.63	$ 9,631.88
S of Hobart	116	$ 18,705.88	$ 4,676.47	$ 14,029.41
W of Norman Grier Field	34	$ 11,210.79	$ 2,802.70	$ 8,408.10
SE Green Valley Rd	98	$ 27,386.30	$ 6,846.57	$ 20,539.72
	3061	$ 17,286.87	$ 4,321.72	$ 12,965.15

Comcast has provided estimates for project areas in King County that have historically lacked broadband access. These projects are focused on upgrading or expanding the existing Comcast infrastructure in the vicinity of those areas and are highlighted in Figure 9. In the image on the left the proposed Comcast projects are outlined in blue while the image on the right overlays the heat map of unserved BSLs. The maps show project areas overlap the high concentration of unserved locations as indicated by the white heat map.

Figure 9: KCIT Broadband Map with Comcast Projects and Heatmapping (Unserved BSLs)

Comcast project areas are outlined in blue



Comcast project areas outlined in blue with high number of eligible BSL's indicated with white

While only nine out of the 16 projects meet the criteria for being classified as "Priority Broadband Projects" under the BEAD NOFO, the deployed technologies in the remaining projects will meet or exceed the speed requirements set by the state broadband office in RCW 43.330.536[59] and offer significant cost savings. The upcoming data over cable service interface specification (DOCSIS) 4.0, also known as 10G, will enable Comcast to offer multi-gig symmetrical services over HFC starting in 2023.

Comcast operates a closed network and does not offer open access to their infrastructure. This is not a requirement for BEAD funding, it is merely a preferred approach. The cost of implementing an alternative solution in the specific project areas where Comcast already has infrastructure is prohibitively high, based on information provided to KCIT. If another provider could have provided service in these areas, this would have been completed already. Therefore, KCIT supports the Comcast build-out as it is the most realistic path for residents in these project areas to gain access to broadband connectivity.

Ziply

Another ISP in King County that provided a response to the KCIT RFI was Ziply Fiber NW. KCIT already has an existing partnership with Ziply on a state funded infrastructure grant in the Duvall area.

- Projects: 1
- Total unserved locations: 259
- Total underserved locations: 1,969
- Total project cost: $21,363,623
- Provider contribution (25 percent): $5,340,906 (both cash and in-kind)
- BEAD funding request: $16,022,717
- Technology used:
    - XGS Passive Optical Network FTTP: 1 project
- Max speeds available upon project completion: 10Gbps download and 10Gbps upload

Project Details:

Table 5 provides information on the number of unserved and underserved locations, the total project cost, and the amount contributed by Ziply, along with the dollar amount funded by BEAD.

Table 5: Ziply Project Proposal Financial Contribution Details

Project Area	# of Unserved locations	# of Underserved locatio	Total Cost of Project	Provider $ Contribution	BEAD Funding Request
Bellevue, Sammamish, Lake Marcel-Stillwater, Ames Lake, Duvall, Union Hill	259	1969	$ 21,363,623	$ 5,340,906	$ 16,022,717
	259	1969	$ 21,363,623.00	$ 5,340,905.75	$ 16,022,717.25

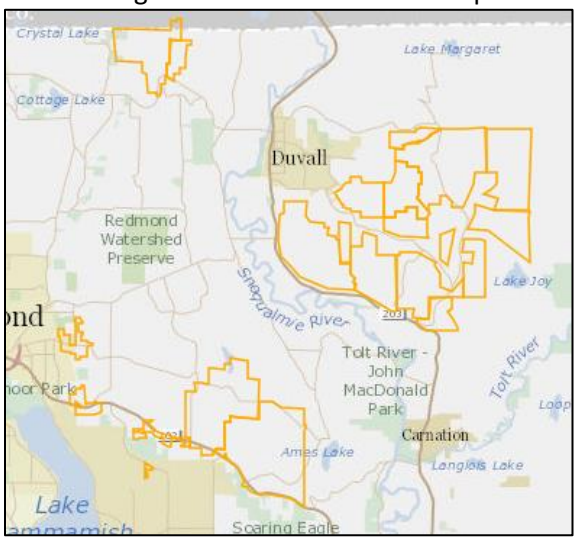
Table 6 provides a breakdown of the project, indicating the cost per passing based on the 25 percent contribution from Ziply, to better understand the BEAD funding contribution.

Table 6: Ziply Project Proposal Cost per Passing Breakdown

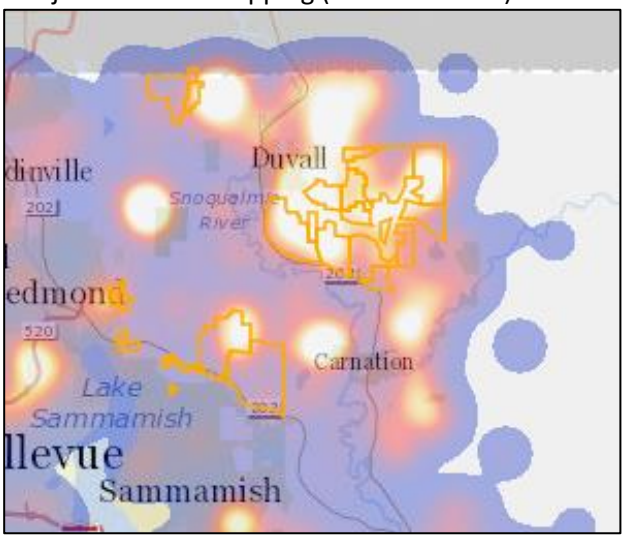
Project Area	Total locations	Cost per Passing (Project)	Cost per Passing (Provider)	Cost Per Passing (BEAD)
Bellevue, Sammamish, Lake Marcel-Stillwater, Ames Lake, Duvall, Union Hill	2228	$ 9,588.70	$ 2,397.17	$ 7,191.52

[59] *WA State Legislature: https://app.leg.wa.gov/RCW/default.aspx?cite=43.330.536*

Figure 10: KCIT Broadband Map with Ziply Project and Heatmapping (Unserved BSLs)



Ziply project areas outlined in orange



Ziply project areas overlapping with high number of eligible BSL's indicated with white

Ziply's network is located on the King and Snohomish County borders in the Duvall, Redmond area. The area it is proposing has historically been left behind with slower bandwidth availability. Ziply is proposing a full fiber infrastructure upgrade that would immediately have the capacity to deliver 10Gbps symmetrical speed. This project would immediately be classified as a "Priority Broadband Project" per the BEAD guidelines and eligible for priority funding.

Ziply will be satisfying the 25 percent match with a combination of cash ($4.3M) and the remainder in in-kind contributions which are eligible per the BEAD NOFO[60].

KCIT has partnered with Ziply on two WSBO grants already which will result in ~1,600 homes having fiber broadband connectivity in the Duvall area by the end of 2025.

Lumen

Lumen is the incumbent provider in most of King County and retains "first-right-of-refusal" on most projects in King County. Historically Lumen has not been upgrading its infrastructure given the high cost and low ROI. In conversations with Lumen, it was interested in participating in BEAD funding to upgrade some of the infrastructure that currently prohibits broadband speeds. Below are three projects that Lumen identified in the King County suburban project area. One important note is that Lumen has not secured approval for the 25 percent fund matching required for BEAD funding.

- Projects: 3
- Total unserved locations: 66
- Total underserved locations: 276
- Total project cost: $383,169
- Provider contribution (25 percent): $95,792.25 (Pending final financial approval)
- BEAD funding request: $287,376.75
- Technology used:
    - Fiber to the premise: 1 project

[60] *NTIA BEAD NOFO (page 20): https://broadbandusa.ntia.doc.gov/sites/default/files/2022-05/BEAD%20NOFO.pdf*

- Max speeds available upon project completion: 1Gbps download and 1Gbps upload

Project Details:
Table 7 provides information on the number of unserved and underserved locations, the total project cost, and the amount contributed by Lumen, along with the dollar amount funded by BEAD.

Table 7: Lumen Project Proposal Financial Contribution Details

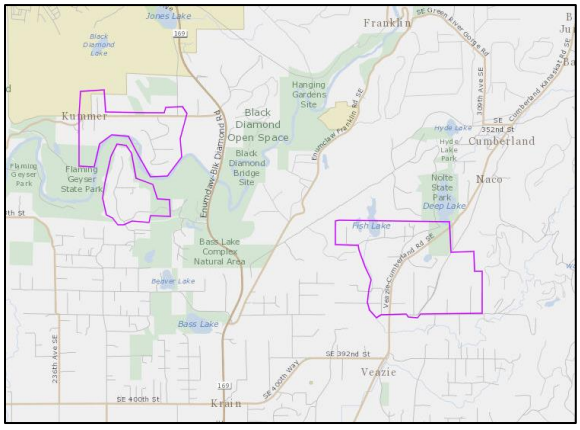
Project Area	# of Unserved locations	# of Underserved locations	Total Cost of Project	Provider $ Contribution	BEAD Funding Request
DA115181	66	148	$ 128,907	$ 32,226.75	$ 96,680.25
DA112081	0	47	$ 177,569	$ 44,392.25	$ 133,176.75
DA310781	0	81	$ 76,693	$ 19,173.25	$ 57,519.75
	66	276	$ 383,169.00	$ 95,792.25	$ 287,376.75

Table 8 provides a breakdown of the project, indicating the cost per passing based on the 25 percent contribution from Lumen, to better understand the BEAD funding contribution.

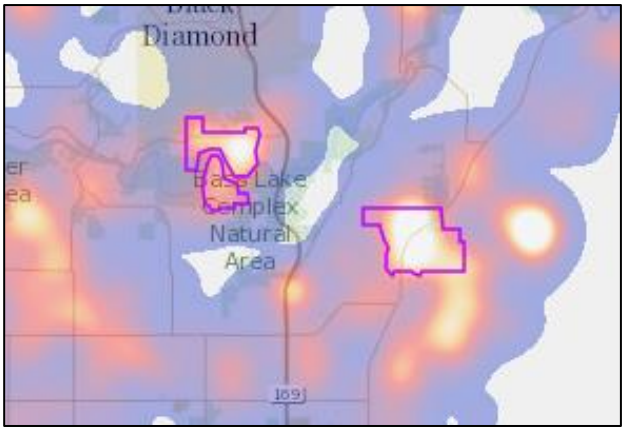
Table 8: Ziply Project Proposal Cost per Passing Breakdown

Project Area	Total locations	Cost per Passing (Project)	Cost per Passing (Provider)	Cost Per Passing (BEAD)
DA115181	214	$ 602.37	$ 150.59	$ 451.78
DA112081	47	$ 3,778.06	$ 944.52	$ 2,833.55
DA310781	81	$ 946.83	$ 236.71	$ 710.12
	342	$ 1,120.38	$ 280.09	$ 840.28

Figure 11: KCIT Broadband Map with Lumen Projects and Heatmapping (Unserved BSLs)



Lumen project areas outlined in purple



Lumen project areas overlapping with high number of eligible BSL's indicated with white

Lumen was limited in its ability to respond to the KCIT RFI. This resulted in a smaller project area, but still presented an impactful project that would be an upgrade of their existing copper infrastructure to fiber that would immediately provide 1Gbps symmetrical speeds upon project completion.

Lumen has expressed interest in additional projects once the FCC broadband map and state broadband map are finalized. Lumen specifically called out the following areas of interest: Kanaskat, Snoqualmie, Auburn, Maple Valley, Enumclaw, Seattle, Bellevue, Renton.

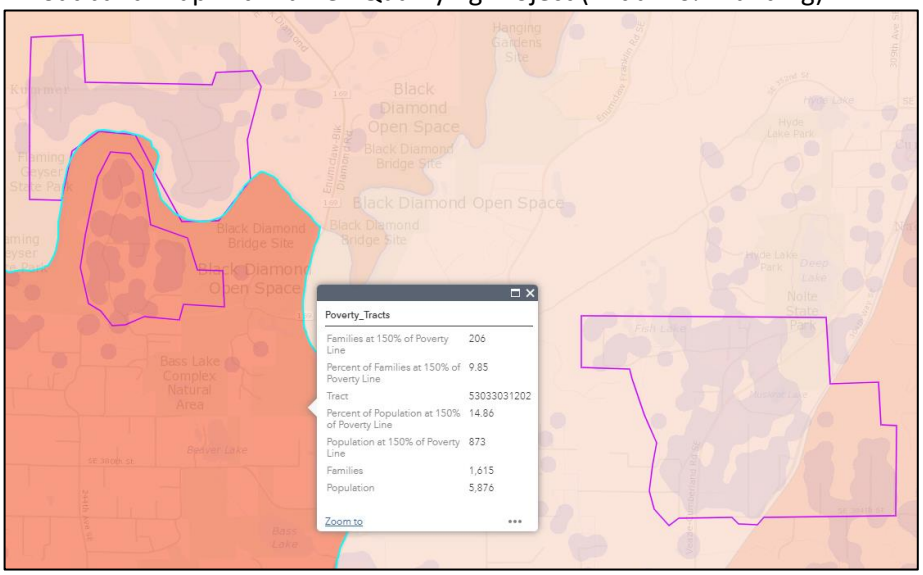
BEAD funding is comprised of several different proposals that are due from the WSBO over the next two years. The first of these proposals is called the Initial Proposal and is due to the NTIA by December 23, 2023. When the NTIA approves the Initial Proposal not less than 20 percent of funding will be eligible for

the state to distribute. This portion of the funding can only be for projects that adhere to the following two rules[61]:

1. Consist of at least 80 percent unserved locations; and
2. Are in a location in which the percentage of individuals with a household income at or below 150 percent of the poverty line applicable to a family of the size involved (as determined under Section 673(2) of the Community Services Block Grant Act (42 U.S.C. § 9902(2)) that is higher than the national percentage of such individuals.

A portion of the project that Lumen proposed potentially qualifies for the initial 20 percent release of funds from BEAD due to the population at 150 percent of the Poverty Line. The portion of the project is approximately 41 BSLs.

Figure 12: KCIT Broadband Map with Lumen Qualifying Project (Initial 20% Funding)



Astound

KCIT also has a project from an application that was jointly submitted with Astound for the second round of WSBO Broadband Infrastructure-ARPA Capital Grants in January 2023. Those funds were not awarded, but KCIT still sees that as a viable opportunity for the BEAD funding.

- Projects: 1
- Total unserved locations: 558
- Total underserved locations: 318
- Total project cost: $11,000,000
- Provider contribution (25 percent): $2,750,000
- BEAD funding request: $8,250,000
- Technology used:
    - Fiber: 1 project
- Max speeds available upon project completion: 1Gbps download and 1Gbps upload

Project Details:

[61] *BEAD NOFO (page 46): https://broadbandusa.ntia.doc.gov/sites/default/files/2022-05/BEAD%20NOFO.pdf*

Table 9 provides information on the number of unserved and underserved locations, the total project cost, and the amount contributed by Astound, along with the dollar amount funded by BEAD.

Table 9: Lumen Project Proposal Financial Contribution Details

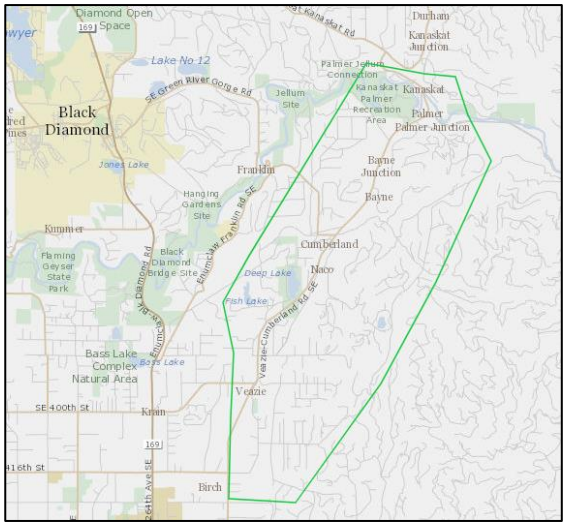
Project Area	# of Unserved locations	# of Underserved locations	Total Cost of Project	Provider $ Contribution	BEAD Funding Request
Cumberland/Kanaskat	558	$ 318.00	$ 11,000,000.00	$ 2,750,000.00	$ 8,250,000.00

Table 10 provides a breakdown of the project, indicating the cost per passing based on the 25 percent contribution from Astound, to better understand the BEAD funding contribution.

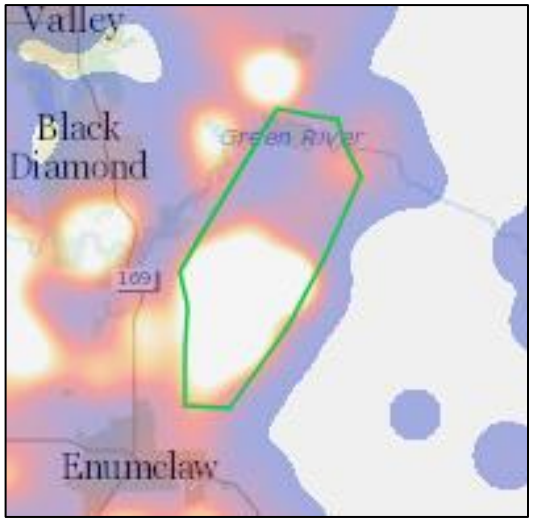
Table 10: Ziply Project Proposal Cost per Passing Breakdown

Project Area	Total locations	Cost per Passing (Project)	Cost per Passing (Provider)	Cost Per Passing (BEAD)
Cumberland/Kanaskat	876	$ 12,557.08	$ 3,139.27	$ 9,417.81

Figure 13: KCIT Broadband Map with Astound Projects and Heatmapping (Unserved BSLs)



Astound project areas outlined in purple



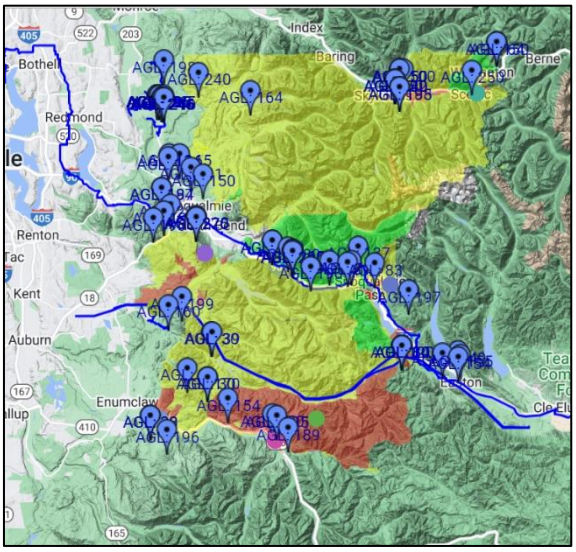
Astound project areas overlapping with high number of eligible BSL's indicated with white

Rural Project Areas

- Projects: 2 (Hybrid fiber and fixed wireless)
- Total locations: 1,737
- Total project cost: $11,988,000
- Total provider contribution (assume 25 percent): $2,997,000 (Partner has not been identified yet)
- BEAD funding request: $8,991,000
    - BEAD funding per passing: $5,176.17
- Technology used:
    - Fiber to the premise: 1 project
    - Fixed Wireless: 1 project
- Max speeds available upon project completion: 1Gbps download and 1Gbps upload

Breaking Point Solutions conducted a Rapid Study (below in its entirety) for the rural project area of King County, as commissioned by KCIT through the WSBO. To provide cost estimates for the project, KCIT utilized information from previously approved projects and grant applications submitted to the Washington State Broadband Office (WSBO) during recent funding rounds. The cost estimates considered various factors, including aerial over lash and the construction of new fiber infrastructure.

Breaking Point Solutions recommendation[62]:



The King County rural project area is unlikely to be a candidate for the 1st of 5 rounds of BEAD funding. It lacks any of the three poverty measurements, has no tribal content, but it does meet rural criteria with an average of 1.42 households per square mile, well below the minimum of 6.

Despite being rural, the study area is a reasonably good candidate for fiber expansion, while a poor candidate for fixed wireless. Our recommended hybrid model would deliver fiber to about 71 percent of the projected un/underserved households at an average cost of $7,800 per household. Even though fixed wireless it not a good solution, it could bring in an additional 17 percent of the households. The caveat on fixed wireless is that although we believe there is fiber adjacent to projected tower locations, if it is inadequate or unavailable, bringing in new fiber to cover a dozen or two households would be extraordinarily expensive and should be avoided.

An attempt to bring fiber to every household would not be an outrageous ask and would come in at about $23 million or $14,600 per household. However, 173 households would be separated by more than 10,000 feet and each would add an incremental cost of about $300,000 to the project total.
It should be noted that at this time there is a vast discrepancy between the FCC fabric reporting of un/underserved and our best estimate. We estimate for the study area, there are 1,737 households, whereas the FCC fabric data indicates 99 households. Historically our error range is ± 30 percent so the actual number forecast is 1,737 ± 512, yet still higher than the FCC's data. This issue may seriously impede the county's ability to bring grant $ to the project.
Comcast is the best situated provider for expansion, although that may turn out to be cable rather than fiber. They have modest penetration through the center of the target region albeit actual implementation rates of about 15 percent. If they could expand north and south of where they are, that should be encouraged.

Bluespan wireless claims decent coverage in the same Comcast footprint and claims to be using fiber in their implementations. If true, they would also be a good candidate partner.
CenturyLink appears to only have DSL in this area and would have to replace their existing equipment. Since they already have some rights-of-way, they may be a more inexpensive option if they could switch to fiber.

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[62] *Breaking Point Solutions (https://sites.google.com/site/breakingpointsolutionsllc/home) provided a rapid study design that was performed using its internal tool designed to estimate broadband costs within specific geographical areas. KCIT provided estimated construction costs from previous projects as inputs to the tool. The resulting recommendation from those costs and other proprietary factors resulted in the recommendation for the rural area of King County.*

At this time, we are unable to recommend additional middle mile in that what has been placed has been placed properly for future expansion. If wireless is chosen as a possible option, middle mile would probably be required, but as discussed previously, probably not cost effective.
We do not recommend that the county attempt to own any new infrastructure. The margins available to prospective ISPs in this area are marginal and adding lease costs to their maintenance and support costs could drive them out of considering the project.

KCIT acknowledges and generally agrees with the assessment provided by Breaking Point Solutions. The proposed solution aims to cover 88 percent of the rural project area, with the remaining 12 percent shaded in yellow relying on satellite providers. Given KCIT's positive relationship with Starlink, a satellite internet provider headquartered in the county, efforts will be made by KCIT to ensure sufficient capacity to serve the rural project areas and address the needs of the remaining 12 percent.

Urban Project Areas
KCIT recognizes the distinct difficulties associated with the urban project areas. The scattered distribution of eligible locations poses significant challenges for providers when developing projects. These situations often involve a small number of extensions within a neighborhood, requiring intricate engineering considerations. To address these complexities, an assessment will be conducted over the coming months. Estimating the costs for these individual extensions is extremely challenging, as they can range from as low as a few hundred dollars to potentially tens of thousands of dollars, depending on the specific location and proximity to existing network infrastructure.

Possible funding sources

KCIT has crafted this report with a specific focus on securing BEAD funding and utilizing a public-private partnership approach. KCIT has engaged in ongoing communication with various providers and is pleased to announce that all listed provider projects have received commitments of the required 25 percent match funding (pending final financial approval). As a result, these projects are well-funded and ready to commence without delay, ensuring swift progress towards bridging the digital divide. As soon as BEAD allocation and funding information is provided, KCIT will focus on other existing funding sources like: RDOF, USDA, and RUS grants to address any remaining locations.

KCIT also participates on a regional/national level with broadband groups to learn of future funding opportunities including the WSBO, NTIA, FCC, and WSAC.

Local leadership

KCIT is part of a few local coalitions/groups focused on broadband:

- Community Connectivity Consortium (C3)[63], which consists of 27 member cities and agencies.
- I-Net customer base (38 of the 39 cities in King County), KCLS, YMCA, and other non-profits.

During KCIT's outreach efforts, there was a greater response from various groups regarding the digital equity aspects of broadband connectivity rather than the infrastructure itself. Cities that already have existing connectivity are directing their resources towards digital equity initiatives, while more rural cities lacking connectivity face resource limitations in addressing broadband infrastructure. Recognizing these contrasting requirements and resource availability, KCIT has made it a priority to focus on the entire county from an infrastructure perspective, aiming to find solutions that benefit as many cities as possible.

[63] *C3: https://communityconnectivity.org/*

As of this report, the establishment of the formal KCIT Broadband Action Team (BAT) has not yet taken place. The plan is to set up a more structured group that will convene regularly once there is more guidance on the BEAD funding from the WSBO. The increased clarity surrounding both the BEAD funding and the Digital Equity Act funding will facilitate more productive discussions and garner local support where needed.

Workforce solutions

KCIT's emphasis on public private partnerships extends to its approach to workforce investments as well. Currently, KCIT is unable to independently establish specific programs, but it is supportive of any initiatives that are developed. KCIT maintains a close working relationship with the Workforce Development Council of Seattle-King County[64].

Furthermore, KCIT is open to creating awareness campaigns for other programs that may be established at the state level or within the educational system. The County possesses various channels through which it can raise awareness, including Metro (public transportation), social media platforms, voting pamphlets, library systems, and numerous other outreach avenues. These resources could potentially be utilized effectively to disseminate information and increase awareness about workforce development programs in collaboration with relevant partners.

Upcoming municipal projects & conduit placement

Currently, there is a lack of centralized governance for broadband projects throughout King County proper, including the deployment of projects and the establishment of conduit usage agreements. While it is an area that warrants attention and improvement, achieving centralized governance for the entirety of King County's geography would necessitate substantial political support and local coordination. KCIT acknowledges the importance of streamlining the processes and enhancing collaboration at the county level with other agencies.

[64] *WDC: https://www.seakingwdc.org/*

Digital Equity Summary

I. Demographic Base Map Review

Network Open Access Network (NoaNet) stands as a public-benefit telecommunications organization, dedicated to providing comprehensive solutions and resources for all facets of broadband and telecom ventures, with a primary focus on serving the state of Washington[65]. In the subsequent segment of this report, our attention turns towards the KCIT and Seattle IT's appraisal and utilization of the NoaNet map.

The NoaNet map seamlessly integrates with the overarching demographic data of King County. Notably, the Workforce Development Council of Seattle-King County submitted a digital equity asset inventory to NoaNet, a valuable addition to the NoaNet Map database.

However, KCIT's examination of the NoaNet map has brought to light certain gaps in sub-population data, particularly in areas related to income levels, race, and ethnicity. The absence of comprehensive population data poses a challenge in comprehending the intricate landscape of digital equity within King County. KCIT and Seattle IT are optimistic that the NoaNet map will undergo continuous updates, in sync with the Washington State Digital Equity Dashboard, ensuring its sustained relevance and accuracy.

KCIT and Seattle IT advocate for the inclusion of the following data in the NoaNet map:

1. Disaggregated race and ethnicity data.
2. Data depicting the actual number of households or residents, rather than percentages, which provides a more practical basis for decision-making.
3. An intersectional analysis that recognizes the geographic relationships and historical disparities among low-income households and communities of Black, Indigenous, and People of Color (BIPOC). Acknowledging the multifaceted nature of social identities and economic inclusion can lead to more equitable outcomes and more effective programs.

This local action report relies on additional data sources, not included in the NoaNet base map, including data derived from the King County census, the American Community Survey (ACS), surveys conducted by KCIT and Seattle IT, insights gleaned from City of Seattle focus groups, feedback gathered from the Digital Equity Learning Network (DELN) virtual feedback meetings, an inventory of resources by the Workforce Development Council, and a survey administered to internet service providers.

II. Digital Equity Asset Inventory

The request made by the WSBO to King County IT and the City of Seattle IT entailed the collection of comprehensive information from an extensive network of over 71 local stakeholders. This information encompassed essential details on the locations where community members could access resources and programs for digital skills training, access affordable devices, obtain information on low-cost internet service programs, receive technical support, and benefit from the services of digital navigators. In Appendix A, you will find an inclusive list of the organizations that contributed to this effort, while Appendix E offers a summarized inventory of digital equity projects and upcoming events.

[65] *Information about NoaNet: https://www.noanet.net/*

III. Digital Equity Needs Assessment

The request made by WSBO to KCIT and Seattle IT included gathering survey information from community stakeholders, including those with lived experience, related to barriers community members face and community needs related to digital equity.

During the review of data from previous reports and recent outreach, KCIT and Seattle IT recognized the importance of meeting the needs of residents and households and the needs of organizations, agencies, and ISPs to assist residents. As a result, the digital equity needs are categorized into population-level, and systems-level needs.

Population level needs

Demographics/populations that face barriers or lack access to digital equity services

Neighborhoods with lower broadband adoption include north and south Seattle, south King County, unincorporated areas of King County, and neighborhoods where there are higher percentages of low-income and BIPOC residents. A more granular investigation into residents of south King County report significantly lower rates of internet access, specifically those living in Council District 5 (93 percent) and Council District 7 (91 percent).

> "When we look at key demographic groups without internet in their home, we see those who are low-income, household members living with a disability, English is not their primary language, those with less formal education, Seattle Housing Authority households, older adults, and BIPOC (Black, Indigenous, and People of Color). COVID-19 has magnified the impact for these key groups and families requiring internet for work and schooling purposes." - Seattle Internet for All Report[66]

Determining whether a location is fully digitally served is challenging given that there is no standard metric for "fully served" along with the fact that what is specifically needed for a given population (e.g., training services in all languages needed) is not known. Services are distributed across the county but not necessarily within reach for some areas and communities. For instance, not all senior centers have digital navigators who are trained to provide Affordable Connectivity Program (ACP) enrollment or have staffing and computers to meet training needs. Some training in languages other than English may be a long bus ride away.

Affordable internet access

The ACP is a federal benefit program that ensure eligible households can afford the broadband they need for work, school, healthcare and more. The benefit provides a subsidy of up to $30 per month toward internet service for eligible households and up to $75 per month for households on qualifying Tribal lands. The digital divide is a term used to describe the gap between people who have access to affordable, reliable internet, skills, and support to effectively engage online and those who lack it[67]. One of the main issues is the cost of monthly broadband service, which can be as high as $182 and often

[66] *City of Seattle Internet for All Seattle Report (page 3): https://durkan.seattle.gov/wp-content/uploads/sites/9/2020/09/Internet-for-All-Seattle-Report-FINAL.pdf*

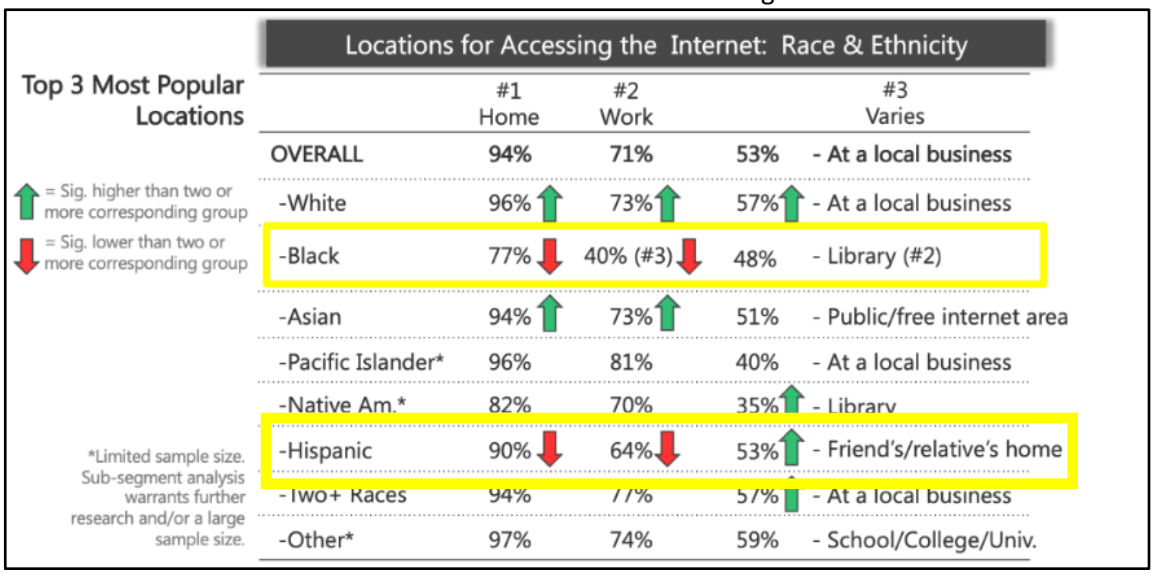
[67] *National Digital Inclusion Alliance (NDIA) - https://www.digitalinclusion.org/definitions/*

bundled with cable TV services[68]. This is where the FCC Affordable Connectivity Program (ACP)[69] can support households with connectivity challenges.

Locations for accessing the internet

The King County 2020 BAS[70] estimated 4 percent or 82,390 residents have no internet or rely on limited data plans or free/public internet access. Table 11 illustrates that Black and Hispanic residents are significantly less likely than others to access the internet from home and rely on friend's/relatives and libraries for free internet access.

Table 11- Locations for Accessing Internet



Locations for Accessing the Internet: Race & Ethnicity

Top 3 Most Popular Locations	#1 Home	#2 Work		#3 Varies
OVERALL	94%	71%	53%	- At a local business
-White	96% ↑	73% ↑	57% ↑	- At a local business
-Black	77% ↓	40% (#3) ↓	48%	- Library (#2)
-Asian	94% ↑	73% ↑	51%	- Public/free internet area
-Pacific Islander*	96%	81%	40%	- At a local business
-Native Am.*	82%	70%	35% ↑	- Library
-Hispanic	90% ↓	64% ↓	53% ↑	- Friend's/relative's home
-Two+ Races	94%	77%	57% ↑	- At a local business
-Other*	97%	74%	59%	- School/College/Univ.

↑ = Sig. higher than two or more corresponding group
↓ = Sig. lower than two or more corresponding group
*Limited sample size. Sub-segment analysis warrants further research and/or a large sample size.

Source: King County 2020 Broadband Study Pacific Market Research Technology Access and Use Study

In addition to inequities around race and ethnicity, several other vulnerable or covered populations, as defined in the Digital Equity Act[71], are significantly more likely not to have internet at their place of residence. These include people who are insecurely housed, people who rent in multi-dwelling units and households where languages other than English are spoken at home.[72]

- When comparing download speeds by race and ethnicity, Black and Hispanic residents have slower internet speeds (up to 25 Mbps), while White, Asian, and Native Hawaiian/Pacific Islanders residents report faster connectivity of up to 100 Mbps.
- Households with Native Hawaiian/Pacific Islander, Black, and Hispanic residents are also more likely not to have internet access at all, or if they do, to not know the speed.

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[68] *2020 King County Broadband Access Study, Pacific Market Research 2020 Technology Access and Use Study (Slide #44):* https://cdn.kingcounty.gov/-/media/depts/it/services/cable/202002-Broadband-Access-Study.ashx?la=en&hash=C46354580D560F006CB3ED46375E906C

[69] *The Affordable Connectivity Program (ACP):* https://www.fcc.gov/acp

[70] *2020 King County Broadband Access Study, Pacific Market Research 2020 Technology Access and Use Study (Slide #56):* https://cdn.kingcounty.gov/-/media/depts/it/services/cable/202002-Broadband-Access-Study.ashx?la=en&hash=C46354580D560F006CB3ED46375E906C

[71] *U.S. Census Bureau National Telecommunications and Information Administration Department of Commerce (Quick Guide):* https://www2.census.gov/programs-surveys/demo/technical-documentation/community-resilience/state_total_covered_populations_quick_guide.pdf

[72] *2020 King County Broadband Access Study, Pacific Market Research 2020 Technology Access and Use Study (Slide #26):* https://kingcounty.gov/depts/it/services/cable-communications/broadband-access-study.aspx

Devices - affordable and sufficient

Devices are essential in addressing the digital divide, as they empower individuals with the tools needed to access online resources, education, telehealth, government services, and economic opportunities, ultimately reducing the disparities in our digitally driven society as highlighted below:

- While 92 percent of all households report having a desktop or laptop, only 61 percent of low-income households with internet at home have laptops**,** which have become the most valuable, versatile device for use at home and on the go[73].
- The ratio of device to number of household members is significantly lower for covered populations. Seattle's most recent 2023 survey found that 20 percent of households below 150 percent of poverty level have fewer devices than household members as compared to 5 percent of overall population.
- 37 percent of households below 150 percent of poverty level reported having no devices with adequate screen size. [74]

Digital skills training needs

Digital skills training (i.e., the ability to use technology effectively), continues to be a high need in 2023, especially among covered populations. Over half (57 percent) of those under 200 percent of poverty level were very interested in specific training. This number was even higher (70 percent) for Blacks/African American/African Descent households as well as households with people with disabilities and Native American/Alaska Natives.[75]

Digital literacy and resilience are of urgent importance to adults and youth across their full lifespans and careers

Digital skills are not a "one and done" activity that will be completed at the end of a person's K-12 education or a single job-training course. Digital skill building and upskilling enhance employability, and help people adapt to evolving technologies. The WSBOs future investments in this area should be guided by the principle that digital skills should be incorporated at every stage of education and workforce development.

Digital skills are dramatically more relevant and powerful when interwoven with other skills

As educators know well, contextualizing a new skill within the real-world context that a person will be using the skill is a highly effective learning modality**76**. Learners are energized and motivated when they see a clear connection to their daily activities and their greater aspirations. The WSBO should ensure that its investments emphasize this context rather than supporting isolated, stand-alone digital skills classes.

System level needs

Community Digital Navigators

Digital Navigators are municipal employees and/or community members working to address the whole digital inclusion process — home connectivity, support ACP application sign-up, device acquisition, and digital skills development — with community members through repeated interactions. Typically, digital navigators are familiar with their community's resources that relate to digital equity, and they help

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[73] *City of Seattle Information Technology, 2023 Technology Access and Adoption Survey, to be published by December 2023*
[74] *City of Seattle Information Technology, 2023 Technology Access and Adoption Survey, to be published by December 2023: https://seattle.gov/tech/initiatives/digital-equity/technology-access-and-adoption-study*
[75] *City of Seattle Information Technology, 2023 Technology Access and Adoption Survey, to be published by December 2023: https://seattle.gov/tech/initiatives/digital-equity/technology-access-and-adoption-study*
[76] *The Times Higher Education: https://www.timeshighereducation.com/campus/contextual-learning-linking-learning-real-world*

residents learn to use critical online services. They recommend resources and check back with the client over time to ensure they can reach their goals.

Municipal agencies and community-based organizations need resources to hire and train local trusted community members to be navigators and digital helpers in their communities, particularly where language and digital literacy play roles, as an example 28.9 percent of households in King County speak a language other than English[77].

Workforce Development

The availability of skilled tech labor will be essential for Washington State's successful implementation of more than $1.2 billion in Broadband Equity, Access, and Deployment (BEAD) projects across Washington State. The WSBOs support of a collaboration of private providers, state workforce agencies, and local workforce development organizations will help ensure workforce labor is available as:

- Trained staff to expedite the deployment of broadband networks, meeting the project's goals and deadlines, and enabling communities to access high-speed internet sooner.
- Labor needed to design, build, and maintain the broadband infrastructure effectively. This includes engineers, network architects, technicians and administrators who can ensure the deployment is efficient and reliable.
- Skilled resources will ensure the quality of the broadband infrastructure, reducing the likelihood of costly rework or maintenance issues down the line.
- Trained and skilled staff (after the infrastructure becomes operational), can troubleshoot and address technical issues promptly, minimizing downtime and disruptions in community broadband services.

In summary, a $42.5 billion investment is planned for U.S. states, territories, and tribal reservations through BEAD funding. This investment is likely to result in supply chain backlogs and shortages of skilled labor. A collaborative effort between the public and private sectors will help ensure the availability of skilled labor to support the deployment and maintenance of broadband infrastructure in Washington, thereby delivering reliable, high-speed internet access to unserved and underserved communities.

Capacity building needs in community-based organizations

Government agencies and community-based organizations lack resources for necessary capacity building to deliver services and to implement and manage programs, set baselines, measure, evaluate, and report progress. As an example, during COVID-19 King County's Office of Equity, Race and Social Justice launched a Technical Assistance and Capacity Building program to provide technical assistance and capacity building for community organizations. King County has allocated $400,000 through 2022 to contract with organizations and businesses that have the expertise to provide services to potential applicants and grantees[78].

Building capacity for community-based organizations to administer programs is essential for addressing digital equity. By equipping these organizations with the necessary resources, skills, and knowledge, they can deliver services and programs to bridge the digital divide. Capacity building efforts can include

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[77] Households where other than English is spoken: https://www.census.gov/quickfacts/fact/table/kingcountywashington/PST045222

[78] King County Technical Assistance and Capacity Building Program for nonprofits and community based organizations: https://kingcounty.gov/en/legacy/elected/executive/equity-social-justice/technical-assistance-capacity-building#:~:text=King%20County%20and%20our%20partners%20can%20provide%20technical,federal%20COVID%20funding%20and%20continues%20to%20do%20so.

training staff on digital literacy, providing access to technology infrastructure, and fostering partnerships with other stakeholders to improve impact of digital equity activities within communities.

Coordination for a regional collaboration

Increased coordination and cross-sector solutions that match the scale of inequities are needed. KCIT and Seattle IT are committed to advancing a regional collaboration on equity with partners for greater and more sustained change. Jurisdictions, coalitions, and partner community-based organizations (CBOs) play a vital role in implementing digital inclusion programs. A small group of municipal, state and community organizations, led by state representatives are working to identify funding sources to continue digital inclusion work currently funded by Washington State.

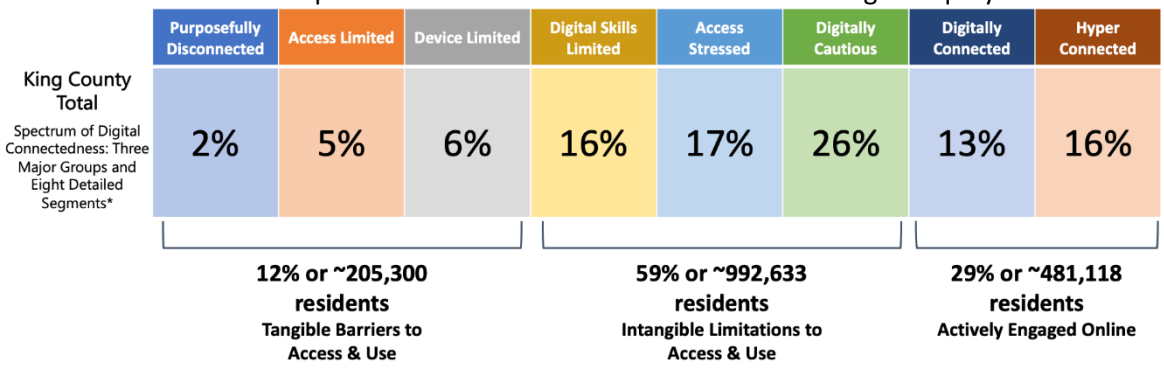
IV. Barriers to Digital Equity

The 2020 King County Broadband Access Study and City of Seattle Technology Access and Adoption Studies have pinpointed key populations and digital equity barriers within King County, WA. The studies unveiled disparities in digital access, impacting residents. To bridge this divide, King County and Seattle aim to empower communities, fostering digital inclusion and connectivity.

King County 2020 Broadband Access Study - Population Barriers

The 2020 King County Broadband Access Study introduced the Spectrum of Digital Connectedness, derived from comprehensive survey research. This spectrum divides the county's population into three main groups and eight sub-segments, each representing various degrees of technology proficiency and connectivity among residents. Each population segment is distinct, characterized by their internet and device usage, as well as their level of digital skills and confidence.

Table 12. - Populations that face barriers or lack access to digital equity services



In Table 12, twelve percent of residents face tangible barriers that impede their digital connectedness. Beyond this group, a significant majority, comprising 59 percent of residents, encounter at least one factor, whether it's related to finances, skills, or attitude, that hinders their digital usage and adoption. Our primary focus is not on the digitally and hyper-connected segments, as individuals in these segments are already proficient with technology. Below is further explanation of the detailed segments in Table 12.

Two (2) percent or 30,555 county residents are Purposefully Disconnected

Lack internet at home because they "don't need or want the internet," "don't trust the internet," or "don't believe it is important or useful."

Five (5) percent or 79,230 county residents are internet Access Limited

Residents believe the internet is important but do not have access where they live or rely on limited access including limited cellular data plans or free/public internet only.

Six (6) percent or 95,515 county residents are Device Limited

Residents have access to the internet where they live but use borrowed devices or may only own one device in the household. Technology/the internet is not central to their lives.

Sixteen (16) percent or 273,476 county residents face Digital Skills Limitations

Residents lack necessary basic skills to access and use the internet independently and confidently.

Seventeen (17) percent or 290,184 county residents are Frustrated and Access Stressed

Residents have access and the skills needed but are frustrated by the speed and cost.

Twenty-Six (26) percent or 428,973 county residents are Digitally Cautious

Residents are technologically savvy and adept, with adequate connections, but affected by worry about privacy/data security and lack of trust of internet companies.

The City of Seattle 2018 and 2023 Technology Access and Adoption Study

This City of Seattle 2023 Technology Access and Adoption survey and focus groups surveys are underway and will update the last study completed in 2018. Much has changed with the Covid-19 pandemic and this survey will gauge progress and remaining barriers for communities in need). Full results will be available by December 2023.

Early finding from Seattle IT's 2023 Technology Access and Adoption survey shows, when asked about barriers, people in covered populations prioritized barriers differently.

Table 13: Barriers impacting digital engagement of specific covered populations.

Covered population	Tangible Barriers (NET)	Limited access to devices	Limited access to internet	Purpose-fully Dis-connected	Limited Digital Skills and Literacy
Living at/below 135% Federal poverty Level	45%	20%	18%	8%	25%
Primary language other than English	29%	13%	10%	6%	31%
Impacted by a disability	30%	14%	8%	7%	26%
BIPOC	See below	NA	NA	NA	22%
Lower-middle income	See below	NA	NA	NA	NA

Source: City of Seattle 2023 Tech Access and Adoption Survey (NA = Survey data not available)

Additional barriers identified by the Seattle Technology Access and Adoption Study:
BIPOC - Additional reasons impacting digital engagement:

- Digitally Cautious: 23 percent
- Limited Digital Skills and Literacy: 22 percent
- Frustrated by Speed, Cost, and/or Service of Providers: 16 percent.

Lower-Middle Income: Additional reasons impacting digital engagement:

- Worry about being able to afford new devices: 75 percent.
- Frustrated by slow speeds/lack of reliable connection: 29 percent.
- Impacted by high cost of internet/affordability: 27 percent.
- Confused by service plans from ISPs: 12 percent.

Affordable and sufficient internet access

- The most common barrier for households earning less than $75K per year is that the internet service is too expensive.
- In addition to expense, unreliable or consistent internet connections and bad connections in parts of the house or building.
- County households now enrolled in the FCC Affordable Connectivity Program (ACP) totals 59,511 or 31 percent, leaving more than 131,488 households in King County at or below 200% of the federal poverty level eligible for ACP but, not enrolled[79].

Table 14: Awareness and Usage of Low-Income Internet Programs

Awareness and Usage of Low-Income Internet Access Programs – By High Impact Groups								
	Among those living at or below 135% of the Federal Poverty Level (FPL) and …							
(% of households)	…are People of Color and Native People	…are Older Adults (65 years old and older)	…are Housing Insecure* (Homeless or Insecurely Housed)	…have a Primary Language in Home Other than English	…are Living with a disability or someone in the household has a disability	… rely only on Cellular Data (no Fixed Broadband)	… have Children in the HH	…. Live in an MDU
Low income households that are **using** any low income internet access programs	30%	30%	31%	33%	33%	24%	38%	36%
Low income households that are **aware but not using** any low income internet access programs	21%	23%	22%	19%	20%	33%	19%	22%
Low income households that are **unaware** of any low income internet access programs	49%	47%	47%	47%	47%	43%	42%	42%

Source: City of Seattle 2023 Tech Access and Adoption Survey

In Summary

Addressing the barriers identified in these studies is not only a matter of equity but also represents a strategic opportunity that benefits the entire region. It contributes to a more vibrant and prosperous community, improves quality of life, and positions the area to lead in the digital society.[80]

[79] *King County ACP Subscriber Map: https://kingcounty.maps.arcgis.com/apps/webappviewer/index.html?id=76e727009e374f9385e2667d97079612*

[80] *Understanding Digital Equity: Everything You Need to Know [2024 DEI Resources] | Diversity for Social Impact*

V. Local Action Report: Potential Paths Forward

Recommendations

These recommendations stem from research, drawing from sources like the KCIT 2020 Broadband Access Study, which shed light on local internet access and access gaps. Leveraging Seattle IT 25 years of expertise in digital equity, helped shaped these suggestions, including input from 70+ community organizations and anchor Institutions reflecting a diverse community.

Recommendations closely adhere to the four key elements of digital equity, stressing the significance of internet access, device availability, digital skills education, and the accessibility of applications and services. This all-encompassing strategy, grounded in both research and community input, is vital for advancing digital equity in our region effectively.

1. **Internet connectivity**
   The stakeholders (i.e., local municipalities, community-based organization, community colleges, career and technical centers, libraries, individuals, and ISPs as listed in Appendix A), recommend establishing affordable and dependable internet connectivity accessible for all, encompassing residents, community-based organizations, small businesses, and historically marginalized communities. To help achieve this, a foundational infrastructure is critical, a concept supported in the broadband infrastructure, on page 8 of this local action report. Subsidized housing units should provide free "always on" building-wide service, bridging the digital divide and promoting equitable access for all.

2. **Devices**
   The stakeholder recommends ensuring digital inclusion by prioritizing affordable and capable devices, with suitable screen sizes and computing power for tasks such as student homework, online learning, telehealth access, and job applications. Additionally, prioritizing assistive technology devices for individuals with disabilities is essential.

3. **Skills training and digital navigators and technical support**
   The stakeholders recommend prioritizing the implementation of training opportunities that empower all residents with the essential technology skills required for success in the realms of employment, entrepreneurship, and technology leadership. To achieve this, advocate for comprehensive access to digital skills training, digital navigation, and the necessary technical support to foster continuous skill development. It is vital that these services are offered within a culturally sensitive context, tailored to accommodate diverse programs, language capabilities, and literacy levels. By adopting these measures, we can ensure a more inclusive and equitable digital landscape that allows all community members to thrive and participate fully in the digital age.

4. **Equitable and accessible applications & services**
   The stakeholders recommend the active involvement of technology developers and individuals with relevant lived experiences in the creation and deployment of digital applications and services. Prioritize the development of applications and services that cater to diverse populations. Ensuring that all residents and communities can easily access, understand, enroll in, and use these services and information is essential. Special attention should be given to the needs of our most vulnerable residents, including those with disabilities, low literacy levels, limited English skills, and those in rural and geographically isolated areas.

VI. Local Action Report: Digital Equity Strategies

Community-driven Strategies

Comprised of feedback from stakeholders (i.e., local municipalities, community-based organization, community colleges, career and technical centers, libraries, individuals, and ISPs as listed in Appendix A), these strategies necessitate collaboration with local, regional leaders, and community stakeholders to prioritize, assign lead roles, and implement digital inclusion programs.

To effectively promote digital inclusion, it's crucial to base strategies on a trusted network of municipal and community-focused stakeholder organizations. These groups are intimately connected to their communities by providing direct services and/or our trusted community partners well-equipped to aid and provide services to residents. The collective expertise and local insights are invaluable for seamlessly implementing digital inclusion programs at local, county, and statewide levels. Together, an eco-system of trusted municipal and community-based organizations delivering services where the need is greatest will ensure no one is left behind in the digital age.

Internet Access and Affordability

Access to the internet is crucial as it connects people to information, education, job opportunities, and essential services, fostering inclusivity and reducing disparities in the digital age.

A. Improve internet access and adoption.
    1. Conduct an awareness campaign to expand participation in ACP and other low-income internet service options.
    Use the DELN, Digital Navigator networks and other communication channels as resources to update community serving organizations on ACP events, changes, and best practices.
B. Improve the quality of internet in low-income residents' homes.
    1. Design and deliver a campaign to educate residents about how to do speed tests and engage with providers to ensure speeds are delivered as paid and contracted
    2. Expand 211 digital stewards to answer resident's internet and WiFi optimization questions.

C. Formalize and expand a newly created Seattle Housing Authority "In-Unit Connectivity," internet pilot program to all housing units[81].
    1. The program is designed to provide consultation and design services of in-unit Wi-Fi internet access systems, with the opportunity to install, maintain and support in-unit Wi-Fi internet access to individual residential units. The pilot program initially consists of six-to-eight SHA residential properties with an approximate total of 525-residential units

D. Expand the availability of outdoor wi-fi access for low-income residents, community centers, libraries, parks, public stadium venues, and emergency shelter locations.

Digital Devices Access

Access to devices like laptops and smartphones is vital as they enable individuals to connect, learn, work, and access critical services in our increasingly digital world, promoting equity and opportunity.

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[81] *Seattle Housing Authority, Internet pilot program:* *https://www.seattlehousing.org/sites/default/files/5704%20Invitation%20to%20Bid%20Ad_Final_01.12.23.p*

A. Increase distribution of devices to residents without internet connected devices.
    1. Advocate at state level for 1:1 device program in pre-K-12 education and higher education.
    2. Include 211 support for set-up and configuration, and other technology support.
    3. Encourage hardware companies to continue, start, restore provide affordable devices.
    4. Conduct an awareness campaign to expand usage of ACP $100.00 device subsidy program.

Digital Skills Training

Basic and advanced digital skills training is paramount for all, particularly those marginalized by the digital divide. It levels the playing field, empowers individuals, enhances employability, and promotes full participation in the digital age.

1. Use as a best practice the path forward basic and applied digital skills education[82]
2. Parent engagement: Skills required to use school online systems and help kids with homework.
3. Teach classes and provide services in native languages.
4. Expand training and education in safety, security, and privacy.
5. Work across the schools, community-based providers, community and technical colleges, and other workforce programs to confirm a set of accepted basic digital skills.
6. Run a pilot project testing use of this in intake and training design.

Applications and Services for Digital Equity

In the context of this report, digital equity initiatives aim to connect diverse communities, service providers, and government and industry professionals responsible for creating applications and services that cater to residents' specific needs and locations. Government online services, to effectively serve all communities, require input and testing from the diverse populations they serve.

Local Action Report Recommendations:

A. Identify digital equity and community organizations interested in partnerships with government developers for planning and testing.
B. Use the DELN, the City of Seattle Community Technology Advisory Board, KCIT, industry and government application development teams to convene a forum about opportunities and the needs to improve visibility of digital equity and other services for covered populations.

Workforce Development

Developing a Washington Statewide workforce plan, leveraging public-private partnerships, is vital to boost job opportunities and economic growth for underserved populations, crucial for BEAD deployment and advancing digital equity.

Encourage Washington State Employment Security, Washington Workforce Association, WorkSource Washington, Tribal Organizations, Workforce Development Councils, and Community and Technical Colleges (coalition) to develop a statewide framework and alignments with priorities related to unserved communities, partnership development, outreach, job quality framework. Skill training and job opportunities specifically should target individuals in the covered population demographics.

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[82] *King County ACP Subscriber Map: https://kingcounty.maps.arcgis.com/apps/webappviewer/index.html?id=76e727009e374f9385e2667d97079612*
[82] *City of Settle Digital Equity Initiative: Digital skill sets for diverse users: A comparison framework for curriculum and competencies*

Embracing the recommendations detailed in this report is a pivotal step for the Washington State Department of Commerce and its Broadband Office. These measures can lay the foundation for narrowing the digital divide, ensuring that every Washington resident has access to essential digital resources and skills required to thrive in the digital age.

VII. Digital Inclusion Funding Requirements

Digital Inclusion funding and sustainability (Possible funding mechanisms)

To bridge the digital divide and ensure equitable access to information and opportunities in increasingly interconnected world, it is imperative to allocate funding for robust, long-term digital inclusion programs. The sustainability of digital inclusion programs depends on securing financial resources, which can be achieved through possible new or existing taxes or other funding sources. Long term funding and investments are essential to prevent these crucial programs from running out of money, as they play a pivotal role in providing underserved communities with the tools and skills needed to thrive in a digital age. There is insufficient federal funding for long-term sustainment of these initiatives, making it more vital that state governments take proactive measures to secure the future of digital inclusion funding, ensuring that no one is left behind in the ever-evolving digital society.

How much will this cost? Developing the budget for the path forward

The challenge of budgeting for digital inclusion programs over the next five to ten years lies in the uncertainty of costs. Currently, the costs vary across the state, as they depend on various factors and the ever-evolving landscape of technology, accessibility needs and populations. However, encouragingly, cost modeling is underway by the esteemed UW Business School, which aims to provide a more accurate financial framework. Projections will be rooted in the cost analysis of delivering digital inclusion programs across King County, WA, but will also highlight the dynamic nature of this endeavor and the essential need for flexible financial planning to ensure that digital resources remain accessible to all, regardless of economic or geographic barriers.

VIII. Other Implementation Considerations

Structural & Capacity Building

A robust ecosystem of organizations is essential due to its multifaceted benefits. It bolsters organization structure and capacity, fostering effective leadership. It's vital for its collaborative approach, ensuring diverse stakeholders work together to achieve common goals. Additionally, data analysis, evaluation, and accountability within this ecosystem are indispensable for assessing progress, optimizing strategies, and ensuring transparency and efficiency in digital equity initiatives.

Leadership and coalition building

A. Broadband Action Team: Formalize and build KCIT's Broadband Action Team for ongoing work.
B. Digital Equity Learning Network[83]: Support staffing to ensure program continuity and expand the ability of the Digital Equity Learning Network to provide regional services and foster collective digital inclusion programs and outcomes.
C. Digital Equity Summits and Conferences:
    1. Support an annual Washington State Digital Equity Summit to convene stakeholders from multiple sectors to share best practices and recognize outstanding work in the field.
D. Help agencies and organizations further develop Digital Equity strategic planning.

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[83] *Digital Equity Learning Network (DELN): https://www.digitalequitykc.org/*

1. Encourage and support municipalities in conducting technology access studies.
2. Encourage the State Public Library Agency to expand existing digital navigators' program to all Washington State Library systems.
3. Develop a digital equity toolbox to assist organizations in how to incorporate digital equity into strategic plans, mission statements, annual workplans, budget planning, and personnel.

Data, Analysis, Evaluation, and Accountability.
Create and a data sub-committee to develop a dashboard to track, measure, report outcomes on key performance indicators.

Appendix A: Organizations providing Feedback on Digital Equity Barriers and Path Forward Recommendations

African American Elders Advisory Council
Arms Around You
Astound
AT&T
Black Brilliance Research Project
CACCWA
Casa Latina
Centro Americano
Chinese Information and Service Center
City of Seattle Information Technology Department (Seattle IT)
Comcast
City of Tukwila
COFA Alliance National Network of Washington
Comcast
Community Roots Housing
Computing for All
East African Community Services
Entre Hermanos
Evergreen Goodwill
First Nation Foundation
Goodwill Connect
Helping Link
Hilltop House, Inc.
Hopelink
Horn Of Africa Services
IDIC Filipino Senior & Family Services
Inclusive Data LLC
Interconnection
King County
King County Department of Information Technology
King County Library System
Lake Washington Institute of Technology
Literacy Source
LUMEN
Mini Mart City Park
Multimedia Resources and Training Institute
National Digital Inclusion Alliance (NDIA)
North Seattle College
Olympic Research and Strategy
Out in Tech
Pacific Market Research
Phinney Neighborhood Association
Pioneer Human Services
PNA | K2BW Power Networking Alliance | Keys to Building Wealth
Prison Scholar Fund
PRR, Inc.
Real World EDA
Seattle Housing Authority
Seattle Jobs Initiative
Seattle Public Schools
Shoreline Community College
Shoreline-Lake Forest Park Senior Activity Center
Somali Family Safety Task Force
Sound Generations
T3 (Tribal Technology Training)
Technology Access Foundation (TAF)
The Breakfast Group
The Playback
The Seattle Public Library
Tigray Community Association
U.S. Department of Commerce, NTIA
University of Arkansas at Pine Bluff
Uplift Northwest
Urban League of Metropolitan Seattle
Verizon
Villa Comunitaria
Windz of Change Alliance
Workforce Development Council of Seattle-King County
WSU Extension
YWCA Seattle – King – Snohomish
Ziply Fiber NW

Appendix B: Detention and Alternatives Report

King County Department of Adult and Juvenile Detention (April 2023)

King County Department of Adult and Juvenile Detention
Detention and Alternatives Reports

through April 2023

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD
Adult													
Bookings													
Secure	1,215	1,160	1,258	1,239									4,872
EHD	43	39	44	25									151
Total	*1,258*	*1,199*	*1,302*	*1,264*									*5,023*
Releases													
Secure	961	894	1,009	913									3,777
EHD	76	69	84	59									288
Total	*1,037*	*963*	*1,093*	*972*									*4,065*
Average Daily Population (ADP)													
Secure													
KCCF	1,228.9	1,207.7	1,192.7	1,152.3									1,195.5
MRJC	257.0	269.6	292.3	337.6									289.2
Total Secure	*1,485.8*	*1,477.2*	*1,485.0*	*1,489.9*									*1,484.6*
EHD	319.0	328.2	333.8	318.0									324.7
Total Custodial	*1,804.9*	*1,805.4*	*1,818.9*	*1,807.9*									*1,809.4*
Average Length of Stay (LOS) [1]													
Secure	42.4	35.8	40.3	42.9									40.5
EHD	114.4	89.4	100.9	165.8									116.3
Total	*48.8*	*41.2*	*46.9*	*52.6*									*47.5*

Appendix C: Community Engagement Process and Outcomes

Introduction

With the passage of the Infrastructure Investment and Jobs Act (IIJA), the federal government is making historic investments in broadband and digital equity aimed at bringing all U.S. residents online. These programs will be implemented at the state level.

There are two primary program components:

1. Broadband Equity, Access, and Deployment (BEAD) – FCC will define allocation.
2. Digital Equity – Washington state will define allocation.

The Washington State Broadband Office (WSBO) partnered with Washington State University (WSU) Extension to support the capacity of Counties, and Tribes in the development of Broadband and Digital Equity Action Plans. These plans will provide local feedback to inform WSBO's planning and projects to expand broadband infrastructure and ensure that everyone has an equitable opportunity to access, adopt, use, and benefit from the Internet. In this partnership, WSU Extension provides technical, operational, and planning funding support local efforts to develop Broadband and Digital Equity Action Plans.

King County IT & City of Seattle IT - Community Engagement

Subject matter expects from City of Seattle IT and King County IT (KCIT) joined to engage a community of regional stakeholders for feedback through outreach. The goal was to identify the existing disparities, understanding their root causes, and proposing actionable solutions to bridge the digital divide.

KCIT actively sought input from stakeholders including; the Digital Equity Learning Network of Seattle and King County (DELN), Workforce Development Council of Seattle King County, more than 70 community-based organizations (CBOs), community colleges, career and technical centers, libraries, cities and community members.

Outreach Methodology

WSBO report due date of June 14, 2023 led the KCIT and Seattle IT team to develop an accelerated approach to collecting local feedback, using a combination of online surveys, e-mail campaigns, web sites, and virtual community meetings, allowed community-based organizations to share their experiences, insights, and perspectives about the digital challenges facing their clients and community members. In addition, findings from the Seattle Technology Access and Adoption Study (e.g., 2018 & 2023 draft study), and the King County 2020 Broadband Access Study helped identify barriers, needs, and potential strategies to reduce the digital divide.

A Focus on Covered Populations (Households and Individuals)

Federal funding will target "covered populations" as defined in the Digital Equity Act of 2021. WSBO expands the definition of covered population by adding additional populations based on; the WA State digital equity bill (HB 1723) and the Broadband Equity, Access & Deployment Program (BEAD).

Covered Population - The Digital Equity Act of 2021(DEA)

- Low-income Households;
- Aging individuals;
- Incarcerated individuals, other than individuals who are incarcerated in a federal prison;
- Veterans;
- Individuals with disabilities;
- People with a language barrier, including English learners and low levels of literacy;
- Racial or ethnic minority group; and
- Rural populations.

The WA State digital equity bill (HB 1723) identified two additional underserved populations:

- Children and youth in foster care
- Those experiencing housing instability.
-

Broadband Equity, Access & Deployment Program (BEAD)

- Persons of Color
- Indigenous and Native American persons
- Members of ethnic and religious minorities
- Women
- LGBTQI+ persons
- Persons adversely affected by persistent poverty or inequality.

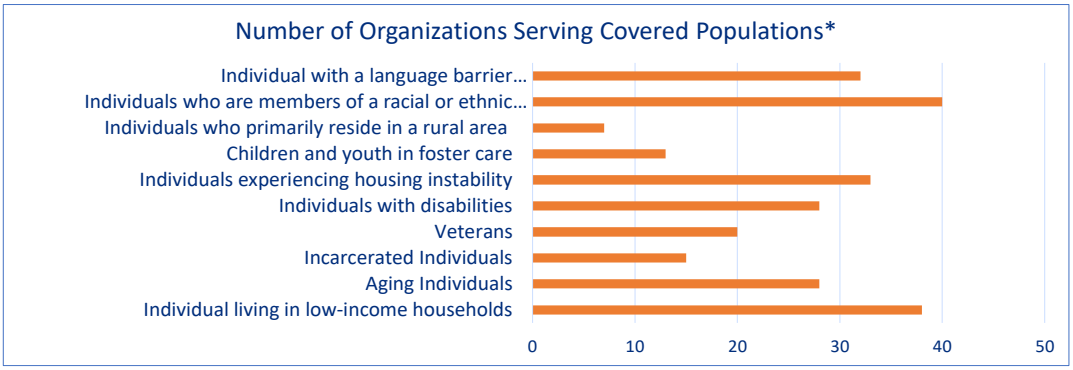
Community Outreach by the Numbers

Organizations	During May 2023
Seattle – Broadband and Digital Equity Listserv	2,000+
Cities of King County	39
Seattle – Technology Matching Grant Recipients	83
Applicants - King County Digital Equity Grant	56
Recipients - KC Digital Equity Grant	22
Digital Equity Learning Network Membership	~175
King County OERSJ BIPOC CBO's & other organizations	~175
Filipino and Othello Area CBO's	~30

Outreach Services Profiles

ORGANIZATIONS SERVE THESE POPULATIONS

KING COUNTY-SEATTLE REGIONAL COMMUNITY ENGAGEMENT PHASE 1

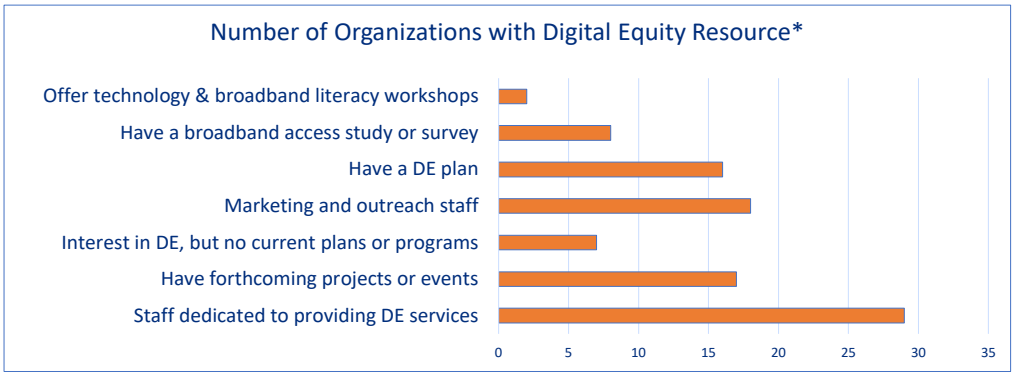


**Many organizations serve more than one covered population. Organizations can and are counted more than once.*

Washington State Department of Commerce · King County · City of Seattle

ORGANIZATIONAL DIGITAL EQUITY RESOURCES

KING COUNTY-SEATTLE REGIONAL COMMUNITY ENGAGEMENT PHASE 1



**Many organizations have more than one digital equity resource. Organizations can and are counted more than once.*

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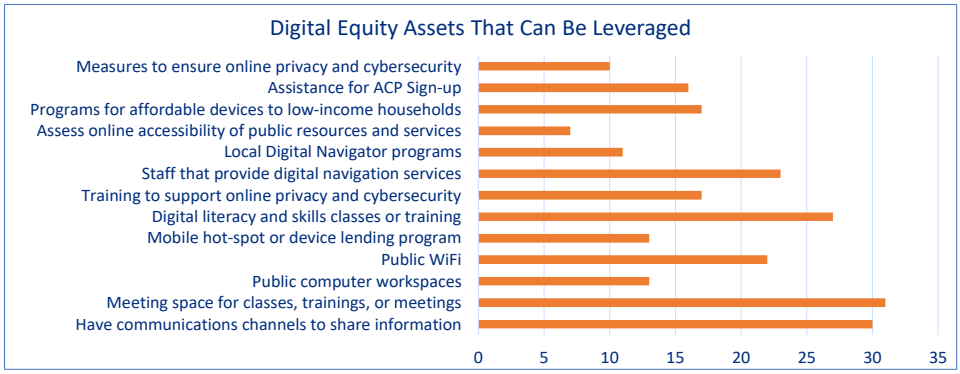
Outreach Services Profiles (cont'd)

ORGANIZATIONAL DIGITAL EQUITY ASSETS

KING COUNTY-SEATTLE REGIONAL COMMUNITY ENGAGEMENT PHASE 1



**Many organizations have more than one digital equity asset. Organizations can and are counted more than once.*

Washington State Department of Commerce · King County · City of Seattle

Summary of Feedback on Digital Equity Needs and Obstacles

DIGITAL EQUITY NEEDS AND OBSTACLES FOR SUCCESS

FINDINGS FROM OUTREACH, WORKSHEET #15 and #16, EXISTING RESEARCH, AND SUBJECT-MATTER EXPERTS

Organizations cited (sustainable) funding as the primary reason they cannot provided additional capacity for ongoing resident digital equity needs.		One organization named the LGBTQ+ community as one in need because they can't access mental health services online (particularly in rural areas), and are subject to online discrimination or harassment.	In addition to covered populations, organizations identified needs for these communities: • Unhoused • BIPOC • NE African immigrants • Native/Tribal • South Seattle and South King County	What residents need: reliable internet, devices, and skills.
Cost was the most cited reason for ongoing digital equity needs for residents.	One organization shared the lack of ongoing digital equity services in the county's jails.			Several cited residents' lack of trust with government agencies.

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Appendix D: Recent outreach list of organizations and services

Worksheet 14: List of organizations and services capacity

Organization	Organization Assets
Casa Latina	A digital equity plan; Staff dedicated to providing digital equity services; Marketing and outreach staff;
Seattle IT	Broadband access study or survey, a digital equity Internet for All plan, staff and programs to provide information on community resources, assistance with low-income internet plans, and limited community support for CBO partners;
City of Tukwila	A digital equity plan; We have forthcoming projects or events;
COFA Alliance National Network of Washington	An interest in engaging in digital equity, but no current plans or programs; We have forthcoming projects or events;
Community Roots Housing	We have forthcoming projects or events;
Computing for All	A digital equity plan; Staff dedicated to providing digital equity services; We have forthcoming projects or events; Marketing and outreach staff;
Entre Hermanos	An interest in engaging in digital equity, but no current plans or programs;
Evergreen Goodwill	Staff dedicated to providing digital equity services; Marketing and outreach staff; We have forthcoming projects or events; A digital equity plan;
Goodwill Connect	A digital equity plan; Staff dedicated to providing digital equity services;
Helping Link	We have forthcoming projects or events; Staff dedicated to providing digital equity services; Volunteers dedicated to providing DEI services.;
Hilltop House, Inc.	Staff dedicated to providing digital equity services; We have forthcoming projects or events;
Horn Of Africa Services	A digital equity plan; Staff dedicated to providing digital equity services;
IDIC Filipino Senior & Family Services	An interest in engaging in digital equity, but no current plans or programs;
Interconnection	Staff dedicated to providing digital equity services; We have forthcoming projects or events; A digital equity plan;
King County	Broadband access study or survey; An interest in engaging in digital equity, but no current plans or programs; We have forthcoming projects or events;
King County Library System	Staff dedicated to providing digital equity services; Marketing and outreach staff;
Lake Washington Institute of Technology	An interest in engaging in digital equity, but no current plans or programs;
Literacy Source	Staff dedicated to providing digital equity services;
Mini Mart City Park	Staff dedicated to providing digital equity services; We have forthcoming projects or events;
North Seattle College	We teach digital literacy at no cost in Basic and Transitional Studies and check out technology (Chromebook/hotspots/headphones etc) to students through our Library.;
Out in Tech	Marketing and outreach staff;
Phinney Neighborhood Association	An interest in engaging in digital equity, but no current plans or programs; Staff dedicated to providing digital equity services; Marketing and outreach staff;
Pioneer Human Services	Marketing and outreach staff;

Prison Scholar Fund	Broadband access study or survey; A digital equity plan; Staff dedicated to providing digital equity services; Marketing and outreach staff;
Seattle Housing Authority	A digital equity plan; Staff dedicated to providing digital equity services; Broadband access study or survey;
Seattle Jobs Initiative	A digital equity plan; Staff dedicated to providing digital equity services;
Seattle Jobs Initiative	Staff dedicated to providing digital equity services; Marketing and outreach staff; We have forthcoming projects or events;
Shoreline Community College	Broadband access study or survey; Staff dedicated to providing digital equity services; Marketing and outreach staff; An interest in engaging in digital equity, but no current plans or programs;
Sound Generations	Staff dedicated to providing digital equity services; Marketing and outreach staff;
Uplift Northwest	Staff dedicated to providing digital equity services; Marketing and outreach staff; Broadband access study or survey; A digital equity plan;
Villa Comunitaria	Staff dedicated to providing digital equity services; Marketing and outreach staff;
Windz of Change Alliance	We have forthcoming projects or events; Staff dedicated to providing digital equity services; Marketing and outreach staff;
YWCA Seattle - King - Snohomish	Staff dedicated to providing digital equity services; Marketing and outreach staff; Broadband access study or survey; Technology & Broadband literacy workshops;
Organization unknown	Staff dedicated to providing digital equity services; An interest in engaging in digital equity, but no current plans or programs;

Appendix E: Past and Upcoming Events and Projects

Community events or projects supporting digital equity efforts

- Beginning January 2025 - June 2025, King County IT, Seattle IT, Prison Scholars Program, and the Confederated Tribes of the Colville Reservation will begin a series of projects designed increase Affordable Connectivity Program (ACP) awareness and enrollment through community outreach, in-person enrollment clinics, paid media campaigns, digital campaigns, and direct mail initiatives targeted at ACP-eligible households, not yet participating in ACP.
- In addition to a grant sub-award to Seattle Housing Authority, the Seattle IT will coordinate outreach efforts by contracting with three community-based organizations with language and cultural expertise allowing us to increase culturally appropriate ACP outreach and enrollment in English, Chinese, English, Spanish, and Vietnamese. Each organization will conduct outreach to increase awareness of ACP and/or ACP enrollment clinics at locations accessible by the community members they serve.
- The Digital Equity Summit in Wenatchee occurred May 2023 and was for those already working in the digital equity space to share ideas and best practices and come back with new approaches for how to best approach digital equity awareness. A 2024 summit was recommended to WSBO by the WSBO sponsored Digital Equity Forum membership.
- Community-based events such as tribal powwows, farmers markets, and education program events are occurring across King County throughout the summer. These events cater specifically to the communities based on what organization is putting them on, and reaches youth, families, and adults. There is benefit in meeting these communities where they are to spread awareness.

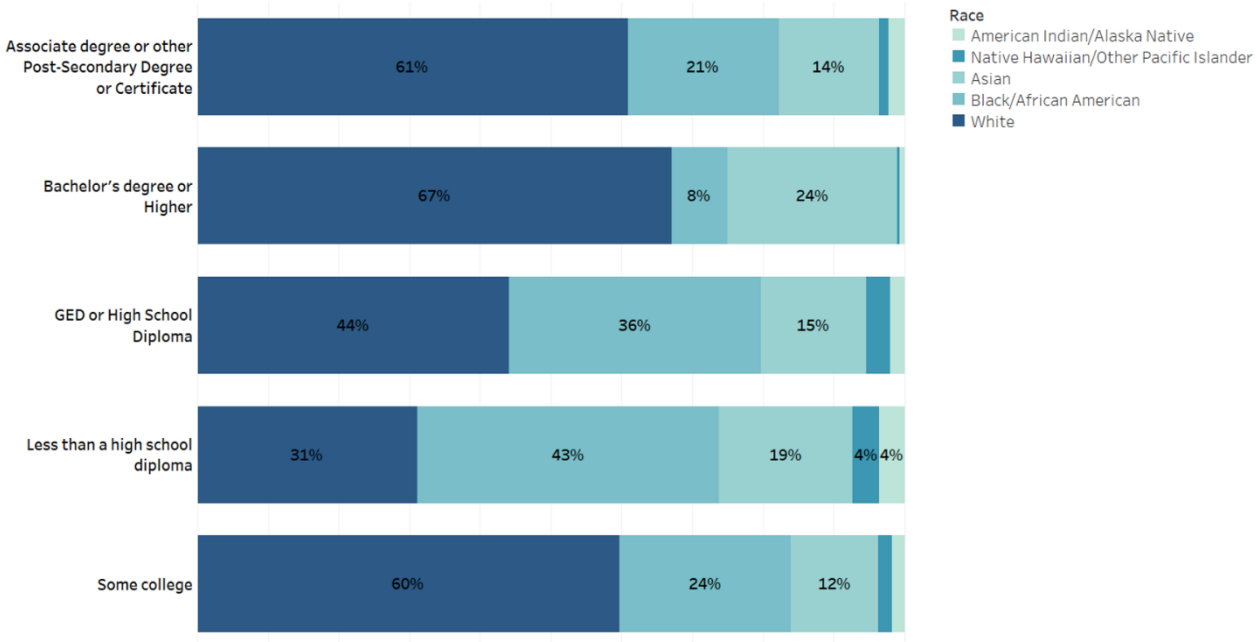
Appendix F: Contributed by Workforce Development Council Seattle-King County

Introduction

While the economy of King County appears to flourish, data from King County's WorkSource system customer base delivers a different picture. There are easily identifiable disparities in how the local economy affects different communities. For example, customers in King County who come to WorkSource from the BIPOC community (specifically, those who identify as Black or African American) are more likely to only have completed education requirements up to a high school diploma.

Many education options available today require the use of the internet to complete activities ranging from online courses to research for completing assignments. Access to reliable broadband connectivity is essential for people working to upgrade their skills.

Education Level of BIPOC Customers in the King County WorkSource System



The damaging impact of COVID-19 on the workforce highlights the need to focus on digital inclusion and skill-building, so that we can bridge these gaps and foster a more inclusive and prosperous workforce and community.

This summary of recommendations provides a blueprint to advance workforce equity. The recommendations have been written and provided by Workforce Development Council Seattle-King County for this report, to inform WSBO's 5-Year BEAD and Digital Equity Plans.

Recommendation 1: Invest in digital skills and literacy through inclusive skills policy.
To promote equity and economic advancement, it is crucial to address the digital skills gap. Investments in digital upskilling and reskilling programs can significantly benefit workers and job seekers impacted by the digital divide.

Recommendation 2: Create dedicated funding for workforce digital equity programs.
In addition to the Workforce Innovation Opportunity Act (WIOA), Washington State should establish a Workforce Impact Fund to expand the capacity of local workforce development boards and CBOs. This funding will enable these organizations to prepare underrepresented populations for high-wage, in-demand jobs that employers in Washington struggle to fill. Currently, approximately 92percent of jobs across industries require digital skills, yet many workers, particularly individuals of color, those in rural areas, immigrants, refugees and vulnerable populations, lack access to these skills. This recommendation aims to address this imbalance and the potential job losses due to automation.

Recommendation 4: Expand outcome metrics and data sharing.
To track progress in closing the digital divide, it is essential for the SBO to allocate resources for hiring additional staff dedicated to monitoring participant and outcome data. The development of a data sharing tracking mechanism will facilitate the assessment of program effectiveness.

Recommendation 5: Promote sector partnerships to advance digital skill building.
Investing in sector partnerships is crucial to equip workers with foundational and industry-specific digital skills necessary for success in the workforce. By consistently supporting workforce development, education, and industry partnerships, Washington State can ensure a steady supply of skilled talent for small and medium-sized businesses, while simultaneously providing workers with the necessary training to access available jobs in their communities.

Recommendation 6: Co-create interventions to support digital inclusion for all program participants.
Recognizing that a significant proportion of the U.S. workforce comprises English language learners, the Washington State Broadband Office should invest in a research initiative to document existing practices and tools. This initiative should explore effective strategies for measuring workers' technological expertise, even before they achieve fluency in English. Additionally, the initiative should identify the most effective tools for simultaneously building English language proficiency and digital skills.

Recommendation 7: Expand the role of digital navigators at WorkSource locations.
Direct funding should be allocated to expand the role of digital navigators at American Job Centers (AJCs). These navigators can provide bilingual digital skills classes, digital navigation support, and connect job seekers to community resources such as the FCC Affordable Connectivity Program (ACP). This expansion will help job seekers access low-cost internet services and other critical resources.

Recommendation 8: Dedicate funding to support user-friendly digital needs assessments.
To measure the digital needs and baseline foundational skills of job seekers, Washington State should allocate funding to support the creation and incorporation of user-friendly digital needs assessment tools. These assessments will guide the development of targeted interventions and support tailored skill-building efforts.

Recommendation 9: Set a goal to reduce the digital divide and prioritize impacted communities. Washington State should lead by example and establish a goal to reduce the digital divide by 50 percent over the next five years. This initiative should prioritize communities disproportionately affected by the divide. Implementing the Digital Navigator Model into state-funded programs, such as WorkFirst and Washington Service Corps, and allocating state workforce funding to fill gaps in WIOA funding will contribute to achieving this ambitious goal.