

**HAWAII STATE TEMPLATE FOR
BEAD FIVE-YEAR ACTION PLAN
DRAFT (MAY-JUNE 2023)**

INTERNET FOR ALL

Five-Year Action Plan Template



U.S. Department of Commerce
National Telecommunications and Information Administration

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Internet For All

1 Executive Summary

[Insert summary of Five-Year Action Plan, restating purpose and key points of the plan - TO BE DONE LAST]

2 Overview of the Five-Year Action Plan

2.1 Vision

‘Apakau ka lā (translation: ‘spreading of the sun’s rays’) - this metaphoric expression captures the State of Hawaii’s vision to build out robust, reliable and affordable broadband infrastructure to every community and guarantee accessibility for every resident. The investment in broadband begins at the first mile, where reliable Internet infrastructure must first reach our state through transpacific connections; is extended to our neighborhoods and residences via the middle mile, and rounds out the existing gaps in the last mile, where the Internet reaches every resident, community anchor institution, and business on our islands.

The University of Hawaii leads the state’s broadband effort while closely collaborating with the community of stakeholders, including the Department of Business, Economic Development, and Tourism (DBEDT), the Department of Hawaiian Home Lands (DHHL), the Department of Transportation (DOT), the four Counties (Hawaii, Kauai, Maui and Honolulu), incumbent and competitive telecommunications providers, and statewide grassroots community organizations, to ensure that our collective efforts deliver maximum benefit from the numerous federal funding programs. Work on the infrastructure elements will be closely accompanied by thoughtfully implemented digital equity programs to promote the necessary digital skills development for residents, enhancement of our local workforce, and stimulation and diversification of our state’s economy.

BEAD represents the largest of the federal broadband funding programs, and prioritizes last-mile support for our unserved and underserved communities. Taken together, the long list of federal programs will ensure we have robust, reliable, affordable and sustainable efforts that are all-inclusive of first-, middle- and last-mile infrastructure, combined with supporting community-based services aimed to achieve digital equity and literacy, and support for a digitally literate workforce of the future.

By 2030, Hawaii envisions a community where every resident will have meaningful access to reliable and affordable high-speed Internet bolstered by a dedicated digital equity program that enables all of our residents to succeed in digital space. All communities will have ready access to local resources including wrap-around services supporting digital equity and digital literacy. Broad geographic coverage of traditional Community Anchor Institutions together with newly minted Community Digital Hubs provide residents with neighborhood digital resources.

2.2 Goals and Objectives

Hawaii's overall goals of the comprehensive statewide investments of federal broadband program funds are to:

- (a) *Ensure sustainable, robust, reliable and affordable access to the Internet for all Hawaii residents;*
- (b) *Enable digital equity for all Hawaii residents;*
- (c) *Build community capacity to strengthen and support digital literacy for all Hawaii residents through community-based digital navigator and related wrap-around support programs;*
- (d) *Expand and sustain a network of community-based digital access hubs to support statewide digital equity and literacy initiatives;*
- (e) *Maximize benefits to Hawaii's future through effective orchestration of efforts to implement projects supported by the range of federal broadband programs; and,*
- (f) *Establish sustainable public sector oversight and management of Hawaii's digital infrastructure and assets to ensure we can always support a robust, connected and empowered society.*

These objectives collectively support the goal of providing each and every residence in Hawaii with a hefty, reliable and affordable Internet connection of 100Mb or better, along with broadly available digital literacy support in all communities.

Hawaii's investment strategy first utilizes key public investments to reset the small/mid-market capital investment paradigm to remediate the most critical failings of the "fully competitive" telecommunications market. Magnified by our isolated island geography, the aging and brittle threads that interconnect our islands with one another and the rest of the global Internet are in need of direct public investment to ensure their continued use and longevity. The state's investment in key inter-island and terrestrial middle mile infrastructure will both lower the capital cost of Internet access for all providers - and as a result, for all residents - and increase the capacity and resilience of the critical middle mile infrastructure serving the state. Refreshed investment in Hawaii's key middle mile routes also has the desirable benefit of eliminating the most significant hurdles to landing new trans-Pacific systems on our shores.

The broad injection of public capital and wrap-around support services will reinvigorate the competitive commercial telecommunications market by making it more attractive for commercial telecom providers to make other investments that grow their business while also benefiting Hawaii at large. The state, by taking the initiative and building new key broadband routes to previously unserved areas, will expand Hawaii's direct-service market capacity and stimulate new economic prospects. A world-class high-speed Internet connection available to all Hawaii residents empowers the potential export of local products, services and talent. Opportunities include both Hawaii-originated research and commercial entities, as well as peer-level collaboration with existing and new entities from regional and global sources.

Building on the foundational middle mile investments funded by the CPF and MMG programs, and the legacy last mile investments funded by RDOF and CAF, Hawaii will utilize BEAD and

TBC funds to fill remaining gaps in our rural last mile infrastructure. Many of those areas that were uneconomical service locations for private carriers can now be fully served by robust and affordable Internet access. While benefiting incumbent service providers, the comprehensive middle mile and last mile investments will also significantly lower the capital cost hurdles for new competitive service providers and other community-based networks to enter the market, benefiting consumers. Public investments will also be leveraged to encourage new interest in commercial investments in Hawaii-beneficial assets, including critical needs such as the construction of new trans-Pacific first mile submarine cable landings.

All of this infrastructure investment will only be fully converted into real benefits for residents with the simultaneous statewide provisioning of digital equity and literacy services. These wrap-around support services are critical to overcome the many hurdles to adoption that are most prevalent in our underrepresented communities. The wrap-around strategy is centered around support for community digital hubs, and community digital navigators that can provide in-person, on-site support for our communities with the greatest need.

To achieve these goals, Hawaii will work to successfully complete a number of objectives consistent with the guidance offered under the BEAD program. Support for achieving these objectives includes support from a range of federal broadband funding sources such as the US Treasury Coronavirus Capital Projects Fund, the NTIA Digital Equity programs, the NTIA Tribal Broadband Connectivity program, and various other programs under the FCC, EDA and USDA. Hawaii's BEAD-specific Internet-for-All objectives include:

- (a) Identification of BSLs with no service, are unserved, or are underserved based on BEAD standard requirements;
- (b) Identification of other candidate service locations that are priority service locations and for whatever reasons are excluded from (a) - subject to available funding and resources;
- (c) Build-out of last-mile infrastructure, and interconnection with service provider networks to resolve (a) and (b), including provisioning of alternative access to service for locations that are cost prohibitive for BEAD funding support, e.g., specialized wireless or satellite access;
- (d) Engage with grassroots community leaders and organizations to ensure sustainable supports for Internet-for-All activities;
- (e) Identification and service provisioning for community digital hubs, including suitable community partner organizations and sourcing of necessary wrap-around support services;
- (f) Support for state implementation of projects and efforts identified and prioritized in Hawaii's Digital Equity Plan, and in coordination with efforts funded by the state Digital Equity Capacity grant program;
- (g) Coordination of IT/Cyber workforce development initiatives with BEAD and DE investments;
- (h) Leveraging combined efforts supporting (d), (e) and (f) to create sustainable, statewide community digital navigator program; and,
- (i) Achieve all of these objectives while orchestrating the maximum benefits from the range of other federal broadband programs.

3 Current State of Broadband and Digital Inclusion

3.1 Existing Programs

Table 1: Current Activities that the Broadband Program/Office Conducts

Activity Name	Description	Intended Outcome(s)
<i>Broadband Community Convenings</i>	<i>Lead community convenings focused on engaging localized public on broadband and DE needs and program support.</i>	<i>Increase the public’s understanding of broadband and support for engagement and input regarding broadband and DE programs in their local communities</i>
<i>State Broadband Staff Coordination Group</i>	<i>Comprised of B&F staff, University grant program staff, and the NTIA BEAD Federal Program Officer (FPO), who (will) meet on a monthly basis to coordinate on ongoing and planned broadband initiatives</i>	<i>Enable a coordinated and streamlined effort to advancing broadband and digital equity conversation and action</i>
<i>Act 231 Broadband Working Group</i>	<i>Statutorily established working group to recommend structure and makeup of public entity to hold state broadband assets constructed or acquired as a result of federal program investments</i>	<i>Provide recommendations to legislature prior to the start of the 2024 legislative session</i>

Table 2: Current and Planned Full-Time and Part-Time Employees

Current/Planned	Full-Time (FT)/Part-time (PT)	Position	Description of Role
<i>Current</i>	<i>FT</i>	<i>Broadband Infrastructure Architect</i>	<i>Technical infrastructure advisor with general telecommunications background, local knowledge of existing infrastructure and established contact with telecom providers.</i>

<i>Current</i>	<i>FT</i>	<i>Broadband Research Analyst</i>	Provides program management support for the UH broadband and critical infrastructure working group. Functions as a research analyst covering all State, Federal, and privately funded critical infrastructure projects supporting statewide broadband services in Hawai'i.
<i>Current</i>	<i>FT</i>	<i>Broadband Grant Program Coordinator</i>	Responsible for the management of all fiscal, human resource, travel and recording keeping of the project transactions. Responsible for all facets of program management and administrative support for the Principal Investigator (PI), staff, faculty, and researchers associated with the project and other related grant initiatives. Contributes to the overall broadband project coordination and communication through work on project planning, creation of project reports and presentations, and maintaining social media and web presence.
<i>Current</i>	<i>FT</i>	<i>Communications Specialist</i>	Experienced media and social platform communications specialist; also will engage in community outreach activities.
<i>Planned</i>	<i>FT</i>	<i>Community Outreach and Engagement Specialist</i>	Increases and broadens community engagement to help support planning, deployment and adoption on a statewide basis.
<i>Current</i>	<i>FT</i>	<i>Data Specialist</i>	This position requires technical, research, analytics, visualization and data gathering skills, to support collection, analysis and

			visualization work with the range of data to be collected over the performance of the grant project works.
<i>Planned</i>	<i>FT</i>	<i>(x2) Technical Project Manager</i>	Supports detailed infrastructure planning and deployment, and project management and oversight of contracted project efforts funded by federal sources. Initial PM hire will support CPF project oversight, DHHL infrastructure project and BEAD planning efforts.
<i>Planned</i>	<i>FT</i>	<i>Compliance and Contract Manager</i>	Oversees compliance and contracting activities in support of federal broadband grants.

Table 3: Current and Planned Contractor Support

In general, all of the deployment and related support efforts funded by BEAD will be executed by organizations contracted under the BEAD award funds (together with state matching funds). Additional matching funds will be provided by organizations as part of their contract commitment to execute the agreed upon scope of work. This approach is generally true for all of the federally funded broadband grant programs.

Contracted support is included in the BEAD Planning Funds award, to provide a range of services at the grassroots level on a statewide basis. These contracted services include training, outreach, communications and data collection and analysis roles.

Current/Planned	Full-Time (FT)/Part-time (PT)	Position	Description of Role
<i>Planned - August 4 start</i>	<i>FT</i>	<i>Community Engagement and Outreach Coordinator, ~2 month term</i>	<i>Increases and broadens community engagement to help support planning, deployment and adoption on a statewide basis.</i>
<i>Planned</i>	<i>FT</i>	<i>Public Relations firm</i>	<i>Fulfill communications and outreach for state communications</i>
<i>Planned</i>	<i>FT</i>	<i>County Aides</i>	<i>Additional manpower to assist counties with outreach,</i>

engagement, and mapping activities

Table 4: Broadband Funding **forthcoming; subject to veto*

Source	Purpose	Total	Expended	Available
<i>Broadband Equity, Access, and Deployment Program</i>	<i>Funds will be broadly used to provide last mile connectivity to unserved populations across the islands, followed by underserved, and will supplement digital equity programs. Funds will take into account the lands owned by the Department of Hawaiian Home Lands.</i>	<i>~\$200,000,000(plus State match of \$66,000,000 and additional private sector match)*</i>		
<i>Coronavirus Capital Projects Fund (States)</i>	<i>The state CPF allocation will be used towards two primary activities. The first major investment is projected to attract and leverage private investment in new subsea construction, with state allocations planned to support design, permitting and construction of a new inter-island submarine fiber optic cable system, together with associated terrestrial assets to provide interconnection with terrestrial telecommunications network backbones. The second major investment will be the creation of community hubs at HPHA public housing facilities, coupled with free and reduced access to broadband for public housing residents for a</i>	<i>\$115,475,318</i>		

<p><i>Coronavirus Capital Projects Fund (DHHL)</i></p>	<p><i>limited term through ACP enablement.</i></p> <p><i>DHHL proposes to utilize CPF funds for the pre-construction engineering and design to support deployment of infrastructure delivering service under multiple 2.5GHz licenses allocated under the FCC 2.5GHz Rural Tribal Window program, together with the potential for unlicensed CBRS 3.5GHz use. The engineering and design outcomes will be utilized to support the construction of the wireless ISP deployment as an integral part of the DHHL effort to deploy comprehensive last mile services consisting of hybrid fiber and wireless infrastructure; the buildout will primarily be funded by the \$90m allocated to DHHL under the Tribal Broadband Connectivity (TBC) program (\$30m under CAA2021, and \$60m under IJA statutory allocations to DHHL for the benefit of the Native Hawaiian communities). The robust combination of the hybrid fiber and wireless infrastructure deployments under TBC, together with braided</i></p>	<p><i>\$167,504</i></p>		
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	<p><i>support from the State of Hawaii's BEAD, CPF and ARPA funds, will ensure that all of our Native Hawaiian communities are fully connected to robust, resilient and affordable broadband infrastructure.</i></p>		
<p><i>Coronavirus State and Local Fiscal Recovery Funds</i></p>			
<p><i>Enabling Middle Mile Infrastructure Grant Program</i></p>	<p><i>On September 29, 2022, the University of Hawaii submitted their competitive application in collaboration with Hawaiian Electric Co. UH and HECO proposed to build terrestrial fiber along the public right-of-ways and offer open-access access at reasonable cost to the dark fiber infrastructure. The resulting terrestrial fiber assets would combine with the subsea build to create new, robust and geographically diverse routes to stabilize and enhance Hawaii's critical middle mile broadband infrastructure. All broadband uses, including access by incumbents and new competitive entrants, would benefit from the significant increases in capacity and reliability, and the significantly lower capital cost, resulting from the public middle mile investments. Hawaiian Telcom awarded \$37,356,955 for Project URGENT on June</i></p>	<p><i>\$43,941,543</i></p>	

	<p>16, 2023. Total project will cost \$87,466,529.</p>			
<p><i>FCC, ACP Outreach Grant Program</i></p>	<p><i>Facilitate promotion, awareness, and participation in the Affordable Connectivity Program (ACP). Two awards were issued, one to DBEDT and the other to Elepaio Social Services.</i></p>	<p><i>\$740,000 (DBEDT) \$350,000 (Elepaio Social Services)</i></p>		
<p><i>Rural Digital Opportunity Fund (Hawaiian Telcom)</i></p>	<p><i>In February 2021, \$24 million in RDOF funding was awarded to Hawaiian Telcom for the purpose of deploying fiber broadband service to over 8,000 unserved and underserved locations in rural areas of Hawaii. By 2027, all identified locations will be serviced with speeds of 1Gbps/500Mbps.</i></p>	<p><i>\$24,000,000</i></p>		
<p><i>State Digital Equity Planning Program (State)</i></p>	<p><i>The Department of Business, Economic Development, and Tourism’s Broadband and Digital Equity Office, will lead the charge in the Digital Equity Program. The Digital Equity Plannings funds will be used to hire a temporary to assist in developing the plan, with other labor contracted out as necessary to tackle data collection initiatives to develop the plan accordingly.</i></p>	<p><i>\$570,883.08</i></p>		

<i>State Digital Equity Planning Program (DHHL)</i>	<i>In July 2022, DHHL submitted a Letter of Intent to receive funding under the tribal allocation of the Digital Equity Planning Grant. These funds will be used to develop a unique digital equity plan for the Hawaiian Home Lands.</i>	<i>~\$50-100,000</i>	
<i>State Digital Equity Capacity Program (State)</i>	<i>The Department of Business, Economic Development, and Tourism’s Broadband and Digital Equity Office, will lead the charge in the Digital Equity Program. Funds will be expended as deemed in the Digital Equity Plan.</i>	<i>~\$14,000,000</i>	
<i>State Digital Equity Capacity Program (DHHL)</i>	<i>TBD</i>	<i>TBD</i>	
<i>Tribal Broadband Connectivity Program</i>	<i>Use and adoption plus mapping. Infrastructure assessment and last mile deployment (deployment will be in the follow-up award).</i>	<i>\$90,000,000</i>	

3.2 Partnerships

Table 5: Partners

Partners	Description of Current or Planned Role in Broadband Deployment and Adoption
<i>Department of Business, Economic Development, and Tourism (DBEDT)</i>	<i>Lead applicant in the State Digital Equity Programs. Collaborator on DE requisites specified under BEAD</i>
<i>Department of Hawaiian Home Lands (DHHL)</i>	<i>Native Hawaiian state office and collaborator for outreach and engagement to address infrastructure, access and DE programs on Hawaiian homelands</i>
<i>Sandwich Isles Communications</i>	<i>ILEC, ISP, Last mile connectivity</i>

<i>Hawaiian Telecom</i>	<i>ILEC, ISP, Last mile connectivity</i>
<i>Charter Communications</i>	<i>CLEC, ISP, Last mile connectivity</i>
<i>Lumen Technologies</i>	<i>CLEC, Last mile connectivity</i>
<i>ServPac</i>	<i>CLEC, Last mile connectivity</i>
<i>Ocean Networks</i>	<i>First mile connectivity - design and site surveys</i>
<i>Kauai Island Utility Cooperative</i>	<i>Middle mile connectivity (dark fiber only)</i>
<i>Hawaiian Electric Company</i>	<i>Middle mile connectivity (dark fiber only)</i>
<i>Chamber of Commerce of Hawaii</i>	<i>IT Sector Partnership</i>
<i>Island and regional chambers of commerce</i>	
<i>County of Kauai</i>	
<i>City & County of Honolulu</i>	
<i>County of Maui</i>	
<i>County of Hawaii</i>	
<i>County Economic Development Boards</i>	
<i>Regional Chambers of Commerce</i>	
<i>CIO Council of Hawaii</i>	
<i>Non-Profit Service Providers</i>	
<i>Philanthropic Organizations</i>	
<i>Educational Institutions and Organizations</i>	

3.3 Asset Inventory

The current state of broadband infrastructure investments in Hawaii place the vast majority of assets in the hands of commercial carriers. The largest capital assets sit with Hawaiian Telecom (ILEC) and Charter Communications (CLEC), with relatively small assets held by other CLECs (mostly Lumen, Servpac). Radio tower assets are owned by commercial tower asset managers, mostly working with the major cellular service providers. The state does own and operate some key middle mile assets in statewide licensed microwave radio networks, inclusive of the supporting tower infrastructure.

The availability of the statewide Institutional Network (INET) supports significant fiber based connectivity between and among nearly all major public facilities, and includes inter-island connectivity. The INET is a provision of service for the public good as an integral part of the statewide cable television franchise operation, with oversight by the Department of Commerce and Consumer Affairs. Since the INET is delivered as connectivity provisioned off the statewide Charter Communications infrastructure, it is not considered an asset owned by the State. Note that Hawaiian Telecom also operates a “cable television” operation under a franchise agreement, its service franchise area is currently limited to Oahu, and has opted to provide limited network resources as a portion of its franchisee commitment.

The State did receive ARRA BTOP funds to complete connections to a handful of rural schools and libraries. Those funds were invested as incremental cost extensions under the statewide INET program; the resulting assets were extensions of the Charter Communications infrastructure, but held for the benefit of the State INET operation.

Current digital equity and literacy efforts are supported mostly by existing programs within the Department of Business Economic Development and Tourism, with additional projects funded by other federal grants (mostly telehealth outreach programs run by a combination of non-profit organizations and units of the University of Hawaii).

As a part of its current operational network infrastructure, the University of Hawaii owns IRUs on AAG (2x10Gb HNL to CONUS) and SEA-US (100Gb HNL to LA, HNL to Guam). It also has long term agreements for colocation space at the Guam GNC/Piti CLS, and the Hawaiki Kapolei CLS, and right of entry to the Southern Cross Kahe CLS. In partnership with AARNet, the University of Hawaii has access to capacity on SCCN (2x100Gb, AU to HNL to CONUS + AU to Mauna Lani to CONUS; note: AUP for R&E traffic only). In partnership with REANNZ, the University of Hawaii peers with REANNZ at the Hawaiki Kapolei CLS. The University of Hawaii also maintains multiple racks at DRFortress for backup facilities, operation of the HIX, and network interconnection with carriers and the DRFortress commercial IX.

3.4 Needs and Gaps Assessment

Since March 2020, Hawaii has had many individual efforts to collect data on the broadband and digital equity landscape as a result of a societal push to remote work, education, and telehealth during the global health crisis. A few reports have been published since then, with a focus on digital literacy and workforce. To date, Hawaii has released the following studies:

Digital Workforce Hui – 2022 State of Hawaii 5-Year Strategic Plan for a Digitally Ready Workforce – published October 2022

In November 2021, the National Governors Association awarded the state of Hawaii and five other states \$100,000 to develop a strategic state plan for increasing access to digital skills necessary to perform education, training, and work. The Digital Workforce Hui, comprised of various leaders in the state from both state offices and nonprofit sectors, published a final report in October 2022. This final report featured input from communities statewide to create a 5-year strategic plan to close digital skills gaps in the state's workforce.

State of Hawaii – Hawaii Digital Literacy & Readiness Study – published September 2021

Published in September 2021 by the State of Hawaii's Department of Labor & Industrial Relations' Workforce Development Council, this study aimed to establish an initial benchmark on Hawaii's digital literacy and digital readiness following federal and national level studies that some two-thirds of Americans had poor to no computer skills. This study measured the digital literacy and reading of Hawaii's working age population

with consideration of various demographic markers, such as education, occupation, industry, and geography.

Vibrant Hawaii – Digital Literacy Project – published September 2021

This report was published by Vibrant Hawaii, a nonprofit based in Hawaii County focusing on increasing equitable opportunities. This project covers Hawaii County only, and occurred over the period of January 2021 – March 2022 in which digital literacy workshops convened across the island with two core focus demographics: the unprepared and the Old Guard (mostly Native Hawaiians and those with business/trade school educations). As secondary outcomes, Vibrant Hawaii identified programmatic feedback to gauge project scalability and sustainability, program effectiveness, incubating on island job creation alongside refurbishment of computers, increasing enrollment in EBB and ACP, and increasing equity for Hawaii County residents in telehealth, online education, and online benefit and employment applications.

Collectively, these larger scale studies have demonstrated lower literacy rates among distinct communities and the benefit of digital literacy programs to advance individual confidence in digital skills for both leisure and professional tasks. All three reports can be found online. In addition, DBEDT’s work on the state DE Plan also features an assessment on digital equity measures. This data will inform BEAD, and the completion of the assessment is expected in Summer 2023.

Further data collection for BEAD purposes addressing the needs and gaps will be a joint venture of UH, DBEDT, and the counties, with funding provided to counties for use towards data collection efforts, among other pre-approved activities detailed in this plan. In addition, contracted aid is also planned to assist counties and the state in the data collection process, with data visualization of all data components to be fulfilled by the UH team and presented collectively on behalf of the state. County efforts to collect data will be largely guided and supported by UH to ensure that the same types of data are collected across all counties for the most concise scope of the state’s broadband and digital equity landscape.

The state has already begun work on data collection, with DBEDT currently working on the state’s Digital Equity Plan, conducting focus groups to gather information on internet use habits, challenges and barriers to use and adoption, and digital equity solutions to ensure that the digital equity programs created focus on meeting the needs of the represented communities. In addition, DBEDT is creating a historic log of digital equity-related events that have been conducted and future events.

To date, the following activities have been completed or are ongoing at state and county levels:

- FCC unserved/underserved location vetting, including removal of incorrectly identified sites (e.g. water towers and other non-residential structures marked as residences)
- Identification of CAIs and other potential locations considered for the definition of CAI
- Mapping of federally funded project areas, Hawaiian Home Lands, public housing facilities, statewide CAIs, and “sanitized” unserved and underserved locations

- County broadband story maps, created by the counties, detailing county-wide DE projects, CAIs, unserved/underserved locations and or other fields

These ongoing data projects are comprised of publicly available data, using the following existing data layers:

- Schools, including public and charter schools, private schools, preschools and early childcare centers, and postsecondary institutions
- County parks (C&C Honolulu)
- Hospitals and clinics, including community health centers and rural health centers
- State libraries
- State parks
- Hawaiian Home Lands
- State-owned public housing

These data layers can be found on the City and County Open Spatial ARCGIS Data Portal (C&C Honolulu) and the State Office of Planning and Sustainable Development GIS Portal. In addition, U.S. census data, the FCC broadband map, the NTIA Indicators of Broadband Need map, the USAC ACP tracker, and others will determine what other information the state has and what is lacking (i.e. data AND community needs).

[Insert assessment of gaps between the Eligible Entity's current state and needs of broadband deployment and digital equity. Much of this section will contain information from the Digital Equity plan]

This section to include the following information:

- Assessment during State DE Plan effort and BEAD Planning work (initially for BEAD Five-Year Plan, then for BEAD Initial Proposal, then BEAD State Challenge, then BEAD Final Proposal. In addition, ongoing refinement of assessments through the project execution and implementation period.
- Roadmap for outreach and engagement as part of BEAD and DE plans - see part 5 (Implementation Plan)
- Statewide deployment of community digital navigators - outreach, service, training, support (consolidated wrap-around services), and creation of new set of community digital hubs

3.4.1 Broadband Deployment

The Eligible Entity may identify and detail the needs and gaps in the State or Territory, which may include, but is not limited to the following need for:

- Service to unserved locations;
- Service to underserved locations;
- Service to Community Anchor Institutions (CAIs) without gigabit service;
- Development of a dedicated broadband office or governance structure to facilitate integration of broadband efforts in the State or Territory;
- Legislative and/or regulatory solutions to overcome barriers or to accelerate infrastructure deployment;

- Solutions to funding barriers in designated “high-cost areas,” as defined by the BEAD NOFO, Section I.C.m;
- Improved databases and/or systems that enhance use

3.4.2 Broadband Adoption

Insert relevant information from Digital Equity Plan findings related to digital literacy.

The Eligible Entity may identify and detail the needs and gaps in the State or Territory, which may include, but is not limited to the following need for:

- Improved digital literacy;
- Increased household broadband subscription;
- Increased households, businesses, and CAIs with access to internet-capable devices; and/or
- Increased emphasis on multi-sector strategies to broadband adoption (e.g., from educational, agricultural, economic development, and telemedicine perspectives).

3.4.3 Broadband Affordability

Insert relevant information from Digital Equity Plan findings

The Eligible Entity may identify and detail the needs and gaps in the State or Territory, which may include, but is not limited to the following need for:

- Increased support for enrollment in assistance programs (such as ACP) for low-income consumers; and/or
- Increased financial assistance for low-income consumers;
- Increased options for broadband services, including a wider range of low-cost services.
- Setting baseline “affordable” cost at ACP reimbursement base (\$30/month) for 100/20Mbps “underserved” threshold.
- Estimated 9.3% of the population in HI are below the federal poverty level:
<https://data.census.gov/table?q=poverty+in+hawaii+in+2020&tid=ACSST5Y2020.S170>
1

3.4.4 Broadband Access

Insert any relevant information from Digital Equity Plan findings about Public Access Points

The Eligible Entity may identify and detail the needs and gaps in the State or Territory, which may include, but is not limited to the following need for:

- Increase in public Wi-Fi and networks;
- Increase in public access points; and/or
- Increase in cellular connectivity (Mobile Broadband).

3.4.5 Digital Equity

Insert executive summary from Digital Equity Plan findings, including reference to how findings will inform administration of Capacity Grants. Include full DE Plan as an appendix.

The Eligible Entity may identify and detail the needs and gaps in the State or Territory, which may include, but is not limited to the following need for:

- Increased workforce development training and employment services related to broadband deployment and adoption;
- Increased participation in the digital economy by communities traditionally disengaged;
- Greater resources to support digital inclusion (i.e., organizations and/or funding for Digital Navigators); and/or
- Increased engagement with community-based organizations, CAIs, digital inclusion/equity coalitions, state agencies, local community champions, tribal leaders, and federal landowners

4 Obstacles or Barriers

4.1 High-Cost Geographic and Topographic Barriers

Serving geographically remote rural areas, including extended residential setbacks, will be amongst the greatest and highest cost barriers to achieve ubiquitous Internet-for-All. Of note, in August 2022, the FCC disqualified Starlink’s RDOF bid set to cover all locations on the island of Niihau—a privately owned island which supports a small population. BEAD is expected to provide service to those sites instead under the high cost and extreme high cost area designations. The generally high cost of last mile infrastructure for Hawaii’s unconnected locations, anticipated to be well above the national average for high cost areas, will likely impact our ability to fully serve all residents without requiring significant non-federal matching funds. Recognized remote areas such as east Maui, and the northern and southern ends of Hawaii island, will present similar cost challenges, including factors such as lava-impacted regions.

4.2 Resistance to Adoption and Change

The state anticipates that one of the most difficult barriers to overcome will be negative perceptions of Internet technology. The University of Hawaii recognizes the need to educate and inform the public so that they understand the value in broadband investment now for the future generations. Historically, the university has had a complicated relationship with more rural communities with a prominent Native Hawaiian presence, research and education efforts often clashing with the values of our oldest communities. To overcome this hurdle, we will work closely with each county and forge local community contacts that are trusted in their local communities and uphold the values of their community while also instilling a trustworthy view of the benefits of broadband access for the current and future generations, who will otherwise be left behind in a world where basic Internet access is considered vital to everyday life. We are unsure what this looks like now, but we can anticipate incentivizing build outs for communities who are reluctant to adopt broadband infrastructure or are historically underserved long-term residents. This may potentially be some discounting or waiver of service costs for a limited term, or working out a bulk service deal with ISPs to significantly reduce the cost so that residents do not look at the cost of service as the primary obstacle to getting connected. Getting to this point first and foremost begins with a strong understanding of how the internet works, its relevance to our lives today, and developing a safe online presence (i.e. how to avoid identity theft and online scams). Note that the Department of Hawaiian Home Lands will be consulted as to plans on behalf of locations (and therefore residents) on Hawaiian Home Lands.

- >learning new technologies
- >overcoming fear (including security issues)
- >economically disadvantaged

4.3 Cooperative Collaboration Among Range of Diverse Stakeholders

(Insert any relevant information from Digital Equity Plan about challenging populations to reach i.e. communities that distrust government and technology; unhoused populations i.e. homeless and working homeless who live out of their car and other disadvantaged persons who do not have physical residences to wire up.)

The state is largely served by two ISPs who provide residential service (Charter and Hawaiian Telcom). The state's competitive landscape is significantly smaller than other states and territories, and there will be a heavy reliance on these providers to collaborate with the state to ensure service to residents with no last mile connectivity or underserved status across all islands, regardless of cost for deployment and topographical barriers. A handful of smaller and potentially new startup ISPs may be able to help fill gaps. Carriers must be aware that stringent subgrant criteria will be in place that considers the needs of the community first.

4.4 Access to sufficient (human, technical and contract) resources for deployment of community wrap-around services

The final draft of this section will include, in part:

- Some information from **Digital Equity Plan** about DE plans for sustained community wrap-around services encouraging and promoting digital literacy.
- The state anticipates a temporary increase in demand for build-out/construction labor and has already reached out to representatives from the relevant trade unions to ensure they are up to speed.
- After buildout, the state anticipates there will be sustained need for skilled labor across a range of employment categories as a result of this historic investment in a robust, resilient, reliable broadband infrastructure. To meet the anticipated demand and to lift all ships together on the rising tide, DE programs may need to be leveraged together with other community efforts to further develop Hawaii's IT workforce.
- Sustaining DE's wrap-around support services could include continuation of the Digital Navigator training program; incubation of community anchor institutions as workforce capacity building sites and helping to develop nascent grassroots efforts by a handful of individuals to spread digital literacy into more formal vocational training programs within their communities.

4.5 Supply Chain Delays (and inflation impacts)

Supply chain issues are anticipated with the overwhelming influx of interest in broadband deployment, with multiple federally funded programs underway at once for all states. Backlog is largely expected across all fronts, including fiber and device purchases, with evidence already from approved Capital Projects Funds and other programs of significant delays in the global supply chain, in particular for products including fiber optic cables, fiber transceivers, and network equipment. The delays that have been impacting the IT supply chain have not improved since the beginning of the pandemic; with the climbing demand such delays are expected to further degrade over the next few years. The large US investment (Chip Act) in semiconductor

fabrication plants is expected to provide some relief in the future - although likely not until after the currently planned implementation timeframe for federal broadband projects.

4.6 Inconsistent or Competing Funding Priorities

Every county is working towards identifying the most prevalent gaps in broadband and digital equity for their respective communities. Each county's population experiences the issue of lack of broadband differently, with community varying demographics, cost of service, and geographic challenges differing across the islands and their respective county. The state recognizes that this will vary from county to county, and that funding priorities may not necessarily be consistent across the four counties, nor will the funding awarded be proportionate to the size of the county (i.e. there will not be a state-level formula for proportionate allotment across counties eligible for award) but available competitively to the state as a whole. Counties will be provided support from the University of Hawaii and additional contractor support to ensure that their funding priorities are identified and that any concerns are accounted for in the implementation work.

4.7 Federal grant compliance and monitoring, and need for patience in arrival of implementation funding

It is important to note that funding will not be as readily available as may be publicly perceived. Parties interested in funds or considering applying for funding at a later date are encouraged to remain patient as no hard dates have been set for when funding will reach the state and only estimates are provided as to when funding will be released. While the state's official allocation will be announced June 30, 2023, this is NOT an announcement of release of funding from the federal government to the state.

5 Implementation Plan

5.1 Stakeholder Engagement Process

Hawaii has initiated outreach via known public and organizational networks, requesting assistance in identifying bonafide community grassroots organizations that can assist with outreach and engagement directly at the affected community level. Together with existing grassroots outreach under the Hawaii Broadband Hui (over three years running), we expect to bring broad inputs and feedback to the planning and implementation efforts. We will overlay a public service announcement outreach effort, together with providing briefing information to legislators to connect with their constituents, to fully connect with statewide stakeholders and special interest groups. All outreach efforts will be fully coordinated with the State Digital Equity Plan effort (already underway), together with the DHHL outreach efforts under the TBC program.

Initial efforts will be structured around public sector engagement and outreach, together with strategic networks based on organized non-profit and service providers that have reach into grassroots, neighborhood organizations. Public sector engagement will be driven through state executive department and county designees to help identify known connectivity, equity and literacy gaps, and to connect us with their set of community organizations already engaged for outreach and general community engagement activities. Since many of these organized entities already hold regular member or public meetings, we will utilize those existing events to help us push information broadly throughout the state. We expect to also leverage elected officials, including legislators and county councilmembers, to help us reach out broadly to neighborhoods around the state.

The non-profit sector outreach begins with organized statewide and countywide entities, such as the Chambers of Commerce, Economic Development Boards, state and county business and community organizations. The group will be extended to start with large philanthropic service providers, such as Aloha United Way, Catholic Charities and the Institute for Human Services. Specific regional or neighborhood non-profits that have previously participated in our broadband outreach activities will also be connected, including Vibrant Hawaii, Hawaii Literacy and Lanakila Pacific. In parallel with these efforts, we will continue to leverage the work of the Broadband Hui to keep connected with statewide grassroots participants.

While some of the informational and discussion sessions will be held online (via Zoom), we expect that many of the discussions will be held in smaller, neighborhood centric in-person convenings. Likely locations will include public (e.g., public libraries, schools or University locations) or community centers. We will utilize a “local host” organization whenever possible in order to keep the focus at the grassroots level. Some larger informational type meetings will also occur; the smaller meetings will help to encourage a greater degree of participation by attendees.

Once the team completes a suitable public communications campaign, we will hold a statewide in-person public listening tour to reinforce the statewide education and outreach process. The goals of the statewide listening tour will be to share information regarding work funded by the multiple federal programs, including what work and support will be covered by public funds.

5.1.1 Partnership with Counties

All four counties are actively partnering with the state’s broadband office to provide local outreach, engagement and support for the Five-Year Action Plan along with the subsequent detailed planning and implementation efforts. The efforts include engagement with the state’s

digital equity efforts, informational and outreach briefing activities, and active engagement of local stakeholders and community groups to provide broad and comprehensive reach for the state's broadband efforts.

In order to help maximize the effectiveness of the collaborative efforts with the Counties, the state broadband office will provide financial support in the form of four sub-awards to the counties, to enable funding of supplemental staffing and direct support for local non-profit and community groups - that funding support was in the approved BEAD Planning Funds proposal, and will be distributed as sub-awards to the Counties for each to use to help maximize local engagement activities. In addition to the sub-award funding, the state broadband office will provide financial support for technical assistance and training in support of both statewide and county efforts (also as provided for in the BEAD Planning Funds award).

Over the course of the Five-Year Action Plan, the Initial Proposal and State Challenge process, and the Final Proposal, the state will work closely with the counties to gain context of community infrastructure and digital equity needs to ensure those county-level priorities are met. Throughout the next few months, our partnership with county leadership will provide the groundwork for informational briefings across the state, where the public will have an opportunity to learn more about the funding going into the broadband space to ensure that all residents have the opportunity to be connected and have the necessary skills to make the most of the Internet. Each county has unique issues challenging their communities, and as such will inform the planning and implementation efforts necessary to see broadband flourish in those communities they serve. Counties will assist in identifying the gaps in broadband coverage and reconcile unserved and underserved communities, as well as identify and support community digital hubs, service providers and partners for wrap-around support services. Collaboration is integral to ensuring ongoing support for access and wrap-around support services in local communities.

Finally, partnership with the counties is expected to streamline the required construction and implementation activities in their respective localities in support of effective implementation of new and improved telecommunications infrastructure.

5.1.2 Coordination with DHHL TBC efforts

Historically, residents on Hawaiian Home Lands have experienced poor access to robust, reliable broadband that was unfortunately exacerbated by their contracted LEC, who effectively failed to install and provision sufficient last mile service assets on Hawaiian Home Lands. The state broadband office is working closely with DHHL to ensure that programmatic objectives of TBC are met, and that work in that space is braided in with BEAD and other sources of investment to ensure that all of the unmet needs of Hawaiian Home Land residents are fulfilled within the program's period of performance window.

As an integral part of the statewide coordination effort, DHHL outreach and community engagement will be conducted in collaboration with other state broadband outreach and community engagement efforts included as part of the state's CPF, BEAD and DE programs. While some differences exist across the various program requirements, the core outreach and community engagement efforts will benefit with greater efficiencies and orchestration of solutions to statewide residents.

5.1.3 Engagement with business and community groups, including active non-profit organizations (also tied to 5.1.1. and 5.1.2.)

Extensive community engagement and outreach is critical to ensure that the state's BEAD effort can achieve the objective of meaningful robust, reliable and affordable Internet-for-All Hawaii's residents. In addition to simply provisioning required telecommunications infrastructure to establish access to the Internet, it is critical that Hawaii build and maintain a rich and robust social infrastructure of digital equity and digital literacy wraparound services, with statewide reach supporting all of our communities. Building on the concept of Community Anchor Institutions (CAIs), Hawaii looks to establish and work to sustain widespread Community Digital Hubs to provide community-based access and support in every statewide community.

Community Digital Hubs may be sourced from a range of public and private non-profit organizations. These may include public and private educational institutions, community centers, non-profit service centers, business organizations, economic and community development entities - any gathering place that has some kind of sustainable organizational support. Community Digital Hubs may also be mobile, or even "pop-up" provided there is some kind of foundational support to the operation.

Community engagement at the highest level (i.e. counties) is underway to identify and organize around key community players are who can reach into their local communities and further pinpoint the needs of a community, determine which residences may be unserved or underserved but do not have a proper street address to be accounted for in the FCC maps, and as the programs progress, impart digital literacy and workforce development skills with residents. Together with the CAIs and Community Digital Hubs, these communities will be the roots to create Community Digital Navigator programs that will be critical to build sustainable community-based wraparound service delivery systems.

The state and counties have identified a number of nonprofits already working in this space, including, Vibrant Hawaii, Hawaii Literacy, Lanakila Pacific, Catholic Charities, Institute for Human Services, Aloha United Way, Hawaii Foodbank, and Hawaii Community Foundation, with additional organizations continually being added to the group. We expect that the counties will be able to add a significant number of grassroots type organizations to the group, given their existing community relationships. As our outreach and engagement efforts ramp up over the coming months, we expect to build a substantial web of community partners who will help us gather information and ideas to formulate project ideas and broadly encourage participation across our diverse statewide communities.

5.1.4 Orchestration of Statewide Efforts

All active broadband programs in the state are coordinated by UH, to include BEAD, CPF, DE (DBEDT responsibility), and TBC (UH together with DHHL). Additional federally funded efforts are also in-flight by DOT (FHWA funds) and Hawaiian Telcom (RDOF+CAF funds). All funded efforts are expected to complement each other and result in effectively braided efforts to minimize gaps in coverage, eliminate duplication of efforts, and maximize the overall benefit to the state. The overall effort is focused on achieving robust, reliable and affordable Internet-for-All.

All active efforts are in regular communication to coordinate efforts, and maximize efficiencies.

5.1.5 Hawaii Act 231 Broadband Working Group

The State convened the initial Act 231 Broadband Working Group meeting on March 30, 2023. The meeting was convened via Zoom, with a handful of participants present in person at the University of Hawaii, Information Technology Center. The meeting included representatives of UH, DBEDT, B&F, DCCA, DAGS, DOH, DOE, DHHL, Kauai County, City and County of Honolulu, Maui County, Hawaii County, and the Lt. Governor. A recording of the meeting is posted at the UH /broadband/ site, along with meeting materials. The Act 231 Broadband Working Group will continue to meet as needed to determine the appropriate governance structure to implement, operate, and maintain state-owned broadband infrastructure assets.

In order to provide broad industry input to the process, the Act 231 Broadband Working Group is organizing an industry advisory committee that will include representatives from key telecommunications providers and large industry representatives. The industry advisory committee will be convened by state broadband staff to collect and assemble inputs for consideration by the Act 231 Broadband Working Group.

The charter of the Act 231 Broadband Working Group is to examine the oversight and management of the public assets created by and under ownership of the state and submit its recommendations as to the structure of a public entity to hold and manage those public assets, in a report to the legislature of its findings and recommendation, including proposed legislation, to the legislature no later than twenty days prior to the convening of the regular session 2024.

5.1.6 Ongoing Engagement and Monitoring

The university alongside DBEDT began meeting with counties in March 2023 to establish county roles to contribute to the overall success in BEAD implementation, identify staff members fulfilling broadband and digital equity leadership in their respective counties, determine technical assistance and programmatic knowledge requiring clarification, assigning tasks contributing to the overall success of BEAD and the Digital Equity plan (e.g. story maps, identification of smaller non-profit and local philanthropic organizations, etc.), and coordinating outreach activities to identify community needs and inform communities on the importance of fast, reliable internet access and digital literacy skills. Counties will receive a sum of planning funds to enable them flexibility to meet local staffing or contractor help for project fulfillment, fund county-wide outreach, fund mapping efforts, and other activities that are pertinent to the success of BEAD. A lump sum of \$100,000 will be granted to each individual county with an eighteen (18) month period of performance extended to them. Scheduled weekly meetings with counties include county report-outs and are used to regroup, provide county and state updates, and continue team coordination.

UH is releasing funds under a Memorandum of Agreement, requiring that counties provide quarterly reports on spending, activities, data and metrics on community engagement activities. In addition, UH is required to fulfill reporting requirements to the State Department of Budget & Finance, and NTIA.

5.2 Priorities

Table 6: Priorities for Broadband Deployment and Digital Inclusion

Priority	Description
<i>Unserved and Underserved Last Mile</i>	<i>BEAD NOFO highest priority. An estimated 21,500 residences in the fabric are considered unserved and do not fall under CAF, RDOF, or Hawaiian Home Lands. As underscored by the BEAD program, our ultimate priority is to build out last mile connectivity to these unserved locations first, and underserved residents next. Service solutions will look primarily towards fiber and satellite in cases of isolated high-cost locations, as well as the necessary infrastructure upgrades for underserved residents.</i>
<i>Digital Equity and Digital Literacy (Wrap-Around Services)</i>	<i>BEAD and DE NOFOs. Internet access alone is not enough to ensure that residents benefit from the BEAD program. It is imperative that the necessary skills to make use of technology offering Internet connectivity are developed, and that healthy relationships between residents and technology are established. This includes a thorough education on navigating devices and digital skills development that allows use of online services (e.g. telehealth, e-learning, telework) and supports a digital workforce.</i>
<i>Expansion of Community Hubs</i>	<i>While access to the home is of primary importance under BEAD, offering an alternative location to access the Internet at community digital hubs offers an added layer to support individuals that need location alternatives (due to lack of suitable space within the home, or as to individual preference). Residents should have the opportunity to visit local community digital hubs offering robust Internet access, digital literacy classes, technical support, and telehealth support services.</i>
<i>Community Digital Navigator Program</i>	<i>Digital Navigators play a critical role in closing the digital chasm, assisting their respective community members with all matters digital literacy. They are the frontline in guiding late adopters to devices, getting them connected, teaching technical skills, and providing technical assistance. Support for Digital Navigators will be instrumental in advancing the</i>

state digital equity goals under both the BEAD and the DE programs.

High Cost LEO Satellite Support

A number of Hawaii's unserved and underserved locations fall under the high-cost designation, and are severely challenged by topography and rurality. LEO satellite support is critical to reach those high-cost areas, ensuring they have equitable access to robust, high-speed Internet while maximizing funding for the state's other unserved and underserved locations.

IT/Cyber Workforce Development

Hawaii's IT and Cyber workforce remains considerably small, with development a priority to ensure a reliable local workforce capable of sustaining our evolving infrastructure and demand for connectivity, and diversifying our tech landscape through quality education and training programs.

5.3 Planned Activities

During the Initial Proposal development, and the subsequent State Challenge Process, the State's primary planned activity is the identification and vetting of FCC map data (FCC FABRIC MAP) in order to identify ACTUAL prioritized locations for last mile deployment.

The state intends to fully adopt the NTIA Model State Challenge process (subject to its release in June 2023). Based on the NTIA Model State Challenge process, and the current state of the FCC map data, Hawaii intends to pursue additional outreach processes to help ensure that the full set of eligible locations is identified. The goals of running these outreach processes are to:

- (a) Validate the operational readiness of the NTIA Model State Challenge process, including to determine if any adjustments need to be made in the state's procedures.
- (b) Work to refine the identified unserved and underserved locations in order to help prepare the Hawaii Initial Proposal, and to ensure it is based on location and service data of sufficient accuracy to better guide last mile investment planning and determine the necessary matching funds financial model required.
- (c) Accept broad public input as a part of the information gathering process.

The outreach processes would be run in the Fall 2023 to assist with the preparation of a well crafted Initial Proposal. Hawaii would run its official State Challenge process upon release and approval of the Initial Proposal to further refine the last mile and overall BEAD investment strategy.

One of the critical elements to inform the state's Initial Proposal will be the degree to which additional (over the required 25% match) matching funds may be required to fund the state's overall BEAD investment strategy. There are significant elements of the overall strategy, in addition to the basic (and highest) priority to address universal access at the 100/20Mb floor (unserved + underserved). In particular, the need to sufficiently provision widely distributed

Community Digital Hubs, statewide wrap-around support services, and integration of statewide IT/Cyber workforce programs, and close potential gaps in terrestrial middle mile facilities, will be absolutely necessary to achieve meaningful Internet-for-All.

Once the State Challenge process is complete, Hawaii would proceed with its competitive procurement activities to identify the contractors that would complete the required last mile implementation efforts. As needed, the competitive procurement process may include additional rounds of responses by potential contractors in order to establish the state's extreme high cost threshold, and to help manage the overall cost of last mile deployments. Also If required, additional design and engineering efforts would be conducted during this period to refine the requirements for the competitive procurement activities. Once all contractors have been identified, along with the necessary financial requirements, the Final Proposal would be completed and submitted for NTIA review and approval.

On receiving approval of the Final Proposal, the state would proceed with the required last mile implementations, as well as any of the other funded activities under the Final Proposal. Depending on the funding available, these efforts would include provision of wrap-around support services in our statewide communities of need, adding support for Community Anchor Institutions and Community Digital Hubs, enhancement of in-flight IT/Cybersecurity workforce development activities, and potentially close any critical gaps in middle mile terrestrial facilities. Further information on planned activities are detailed below.

5.3.1 Unserved and Underserved Deployment

BEAD prioritizes service to unserved locations before funding under BEAD may be used toward underserved locations and digital equity programs. Beginning in 2024, Hawaii plans to release multiple RFPs grouping various unserved locations together state- and county-wide, ensuring that even the most costly of locations in the hardest to reach places are accounted for. This will be followed by RFP releases for eligible underserved locations. A rigorous subgrantee selection process will be established and applied to both unserved and underserved deployment to ensure that selected subgrantees' commitment to the program is fulfilled with care to all locations at a reasonable cost as we work together to attain universal service for the state of Hawaii.

Work is ongoing to identify unserved locations that will need to be serviced before any other funding may be used towards underserved and digital programs funded out of BEAD. Unserved locations and respective RFP terms will be introduced in the Initial Proposal, including a feasible match requirement and other requirements for prospective applicants.

Partners: Counties, ISPs
Funding: BEAD

5.3.2 Community Access Hubs

Community anchor institutions (CAIs) are well-known common access points for digital literacy project deployment and promoting outreach efforts for broadband equity, literacy, and access. This term encompasses schools, libraries, community health centers, and public housing among others, many of which have seen pilot projects for broadband that can be replicated at other community access locations for greater reach to populations that may still see limited access to existing services. Hawaii has compiled a list and created a map of potential CAIs (pending definition in Initial Proposal) across the state. As another priority of the BEAD program, Hawaii

must identify which of these CAIs do not offer over 1GB of service and ensure that these sites also have the necessary speeds to serve their publics. This list can be found in the appendix.

In addition to these traditionally defined CAIs, Identification and adoption of additional community access hub locations - over and above the defined Community Anchor Institutions, these Community Digital Hubs would consist of non-profit locations with missions consistent with delivery of wrap-around support services to their communities; e.g., community centers, community support facilities, service centers, private schools, and other similar community centered facilities. Hawaii looks to other community serving organizations such as the Institute for Human Services (IHS), Goodwill, Salvation Army, Aloha United Way, Economic Development Alliance of Hawaii, and the various Hawaii Chambers of Commerce as alternative last mile connectivity and digital equity access points. Other sites of interest include the above organizations operating mobile or “on-wheels” programs, and CAIs under the Department of Education and HSPLS that do not currently participate in any community access programs.

Using funds on a one-time basis to deliver equipment (e.g. computers, laptops, routers, etc.) to these sites for public use would potentially enable new locations to serve communities previously unserved, or otherwise provide an alternative site to connect to the internet for communities. Additionally, by executing a multi-year contract, broadband access can be provided to sites that do not currently have the bandwidth to sustain a public network. Each site participating as a community access location will also be a candidate site for digital literacy training, and other educational and public (government) support services, including remote education and workforce development. Community members will have access to technical support on-site and remotely should it be required.

Partners: Listed above and others

Funding: BEAD, DE

5.3.3 Data Collection and Visualization

Beginning in the second half of 2023, the state will make a big push towards data visualization and collection during the Initial Proposal and BEAD challenge process, with the primary goal of preparing the State for RFP releases in 2024 first tackling our unserved and underserved locations, with attention to CAIs with less than 1Gb service as well. Hawaii recognizes the need to establish a transparent broadband landscape that encourages improvement of broadband service, promotes education on access and availability, and drives down costs of broadband service. One of the planned efforts to do this is to create a “living” state broadband map. Mapping efforts will include layers with data on community outreach efforts and response, human barriers to adoption, federally funded project areas, state funded project areas, CAIs, and reported unserved/underserved locations. Efforts will be largely collaborative between UH, counties and DBEDT for completion of the state portion, with data and mapping specialists from both organizations fronting the effort and additional voluntary effort from UH to support the initiative. Finally, mapping on Hawaiian Home Lands is planned for completion under the Tribal Broadband Connectivity Program’s first tranche of awarded funding, again with support from UH as needed.

Partners: Counties, DBEDT, DHHL, others

Funding: BEAD (state), TBC (DHHL)

5.3.4 Inter-Island Submarine Cable Ring

The state of Hawai‘i currently has three operational inter-island fiber systems, all of which are halfway through or past the end of their planned service lifetime. This puts the state in an

immediate need of a new inter-island fiber system with capacity to sustain the state for transformational decades to come with sustainability, smart design, and general broadband access for all. At the forefront again is reliable, robust, and future-proof broadband infrastructure.

Together with the inter-island fiber buildout, a robust and future-proof trans-Pacific fiber route and the addition of new, carrier-neutral cable landing station (CLS) sites across the islands must be secured to lay the groundwork for the inter-island build. In May 2022, the University of Hawai'i has awarded a contract to Ocean Networks Inc. to survey at least twelve (12) potential CLS locations across the islands and complete a desktop design study for the inter-island submarine fiber cable route(s). The study has since been completed and was the first step towards both securing a new inter-island and trans-Pacific fiber route offering diversity and design resilience from today's existing routes and CLSs. Hawaii's CPF submission in September 2022 followed, with program plans to execute the permitting and construction of the northern path of the inter-island submarine cable ring. If the plan for the Subsea Middle Mile Program is approved, this northern path will be ready for service no sooner than three years from the date of award.

Partners: TBD

Funding: CPF

5.3.5 Terrestrial Middle Mile Buildout - Cable Landing Stations and Other Front Haul

The state of Hawaii currently has eighteen privately owned and or operated cable landing stations across Kauai, Oahu, Maui, Molokai, Lanai, and Big Island. Currently, no cable landing station is fully carrier-neutral, limiting the appeal of landing new transpacific submarine fiber systems to the islands and effectively limiting competition. While the Hawaiki CLS at Kapolei is mostly carrier-neutral in ownership and operation, the lack of additional seaward bores and limited terrestrial backhaul facilities make its carrier-neutral status mostly symbolic. In introducing carrier-neutral CLS infrastructure to Hawaii, the state is able to foster competition, promote and attain a future-proof broadband infrastructure landscape.

Work on terrestrial middle mile buildout is already underway, with ARPA funds supporting a RFP awarded to Ocean Networks to complete a desktop study identifying potential cable landing sites across all islands that offer diversity and functionality to the current broadband landscape by means of accessibility in the sea-ward approach as well as terrestrial backhaul. Twelve (12) sites were identified to include in the engineering study, the first step in this process for site identification, procurement, and eventual construction. This includes potential Hawaiian Home Lands locations, which would benefit in building up interconnectivity for their services.

Several new CLS sites are intended to be designed in preparation for the proposed new inter-island fiber build and ahead of planned trans-Pacific routes with potential to land in Hawaii. The State will also consider expanding existing CLSes, including those with wet segments nearing their end-of-life, plus, the Hawaiki Kapolei CLS (as noted above), beach manholes at HECO Kahe, and Kakaako Look Lab / JABSOM, pending results of the engineering study, cost estimates, and viability of existing sites for future use.

Partners: Ocean Networks, TBD

Funding: ARPA, CPF

5.3.6 Terrestrial Middle Mile Buildout - New Fiber

In September 2022, the University of Hawaii, in partnership with Hawaiian Electric, submitted

a \$44 million proposal to the NTIA Middle Mile grant program. This application proposed support for new, high-capacity terrestrial fiber routes to support dark fiber IRUs for carriers and large enterprise customers. An additional competitive grant was submitted by Hawaiian Telcom to support non-duplicative festoon and terrestrial routes to key areas.

Additionally, ARPA/CSFRF/BEAD funds are planned for use in providing tail connections to integrate with key network interfaces and or handoffs, or to connect with other middle mile connections. In a limited number of cases, ARPA/CSFRF/BEAD funds will build middle mile gaps as required.

Partners: Hawaiian Electric

Funding: Middle Mile Grant Program, ARPA/CSFRF/BEAD

5.3.7 Transpacific Fiber

Since 2018, the State of Hawaii has been bypassed by all new transpacific fiber systems (five in total). While today's fiber capacity is sufficient to support Hawaii's need for broadband over the next decade, the increase in demand for broadband and the approaching end of service dates for the two older trans-Pacific fiber systems (Japan-US, SCCN) factor heavily into the necessity of future-proofing Hawaii's connectivity to the global landscape. Work is underway to begin choosing the next sites for carrier-neutral cable landing stations across our islands to bolster traffic to Hawaii for new transpacific fiber. Of note, preliminary efforts to date on the inter-island subsea fiber system have attracted multiple parties interested in potentially landing branch segments off new trans-Pacific systems.

Total projected costs for just one new transpacific fiber system are expected to exceed \$500 million, and when partnered with a new interisland fiber system, will ensure a robust, reliable fiber system to and within our state for years to come.

Partners: Multiple private sector potential partners

Funding: TBD, private

5.3.8 Community Digital Navigator Program

(Insert any relevant information from Digital Equity Plan on what the Digital Navigator Program will look like.)

As detailed above in Table 6, digital navigators are critical to closing the digital chasm. Digital navigators will be deployed to libraries & established community centers (CAIs), along with a broad range of community digital hubs beyond the traditional CAI. At these sites, they will aid residents in gaining access to devices, helping them get connected, teach technical skills necessary for independent technology use for personal and professional tasks, and provide continued technical assistance to late adopters. The state will leverage statewide IT/Cyber workforce development efforts to build staffing pool to support community access institutions and community digital hubs.

Partners: Various non-profit organizations and others

Funding: BEAD, DE

5.3.9 Pre-Construction Engineering and Design on Hawaiian Home Lands

DHHL proposes to utilize CPF funds for the pre-construction engineering and design to support deployment of infrastructure delivering service under multiple 2.5GHz licenses allocated under the FCC 2.5GHz Rural Tribal Window program, together with the potential for unlicensed CBRS 3.5GHz use. The engineering and design outcomes will be utilized to support the construction of

the wireless ISP deployment as an integral part of the DHHL effort to deploy comprehensive last mile services consisting of hybrid fiber and wireless infrastructure; the buildout will primarily be funded by the 90m allocated to DHHL under the Tribal Broadband Connectivity (TBC) program (30m under CAA2021, and 60m under IIJA statutory allocations to DHHL for the benefit of the Native Hawaiian communities). The robust combination of the hybrid fiber and wireless infrastructure deployments under TBC, together with braided support from the State of Hawaii's BEAD, CPF and ARPA funds, will ensure that all of our Native Hawaiian communities are fully connected to robust, resilient and affordable broadband infrastructure.

Partners: UH

Funding: CPF (DHHL)

5.3.10 Hawaii Public Housing Authority (HPHA) Connections Program

The objective of the Hawaii Public Housing Authority (HPHA) Connections Program is to incrementally upgrade residential connection facilities in all HPHA owned units, to be immediately eligible for full ACP subsidy coverage, initially at a minimum performance floor of at least 100/20 Mbps for all residents. The lower performance floor is the initial delivery threshold to accommodate time to upgrade existing end-to-end network or infrastructure upgrades that may occur in phases over the project execution. Over the period of performance, the minimum performance floor will be increased to 100Mb symmetrical (or better) as increased upstream capacity is fully allocated to the HPHA facility nodes, and as the carrier facilities are fully upgraded to support the necessary capacity via direct fiber uplink or updates to system standard protocols over existing hybrid fiber-coax infrastructure. The approach will hopefully avoid high cost and/or significant disruption to residential units, including any potential hazmat material mitigation and abatement activities required (due to the age of most of the HPHA facilities). Any new HPHA housing units, or those that will be subject to other substantial renovation efforts will be eligible for replacement fiber optic infrastructure or high performance hybrid fiber-coax infrastructure as best suited to the individual properties.

The program will also enable any designated common use room(s) to be connected at symmetric gigabit-class performance for the shared use of residents - initially including 41 HPHA facilities that have identified available common use spaces. Upgrades to facility entry infrastructure required to support gigabit access to the common use rooms will also increase the performance floor for all residents of those facilities.

Partners: HPHA

Funding: ACP, CPF

5.3.11 Outreach and Communications

(Insert any relevant information from the Digital Equity Plan on outreach and comms.)

UH and Hawaii's Broadband and Digital Equity Office in collaboration, must engage the community in a meaningful way that allows for a two-way flow of communication, one where the public can be educated on topics of broadband and equity, and a chance for the public to provide community feedback and to collaborate in imagining the next community hubs. These convenings from UH are expected to run concurrently with the Broadband Hui's Ho'ike subcommittee, another public-facing convening expected to supplement equity and literacy. Convenings may potentially be supplemented on the day of the respective event with a poster session featuring organizations who want to promote their AEL programs to residents. Furthermore, island-wide poster sessions unaffiliated with the convenings should be held at large public centers (e.g. shopping malls and centers, libraries) as a low-cost, low planning

method to promote programs in the community with greater community exposure in heavily trafficked common areas, where even without access to the internet, residents may choose to engage and learn more about the programs in their locale that may appeal and apply to them, or pass on the information to someone they may know.

Moreover, in addition to previously stated efforts, the University of Hawai'i intends to maintain the www.hawaii.edu/broadband/ website with the most up to date information on broadband projects in the state, with a focus on the infrastructure projects planned in both middle mile and last mile networks. UH maintains that digital equity and literacy efforts are primarily supported by the Broadband and Digital Equity Office, who must maintain their website with all relevant materials in that space. Both websites will function as the "first stop" for informing the community and maintaining transparency. An online presence casts a broad reach to the public, and with planned social media presence (Instagram, Facebook, Twitter) in addition to physical outreach, outreach and communications will be leveraged to their fullest potential.

Partners: Counties, planned contractor
Funding: BEAD

5.3.12 Free or Reduced Access for Qualifying Residences

On December 31, 2021, the ACP officially replaced the Emergency Broadband Benefit (EBB) to become the permanent program for cost reduction of broadband services for low income and tribal households. This program is available to any household that meets 200% or less of the 2022 Federal Poverty Guidelines, dependent on the household size. At the end of 2021, household enrollment in EBB concluded at 18,430, a participation count that has since increased under the ACP and is at 45,000 as of June 5, 2023, with plenty more residents who still qualify for the program unenrolled as of date ([USAC tracker](#)).

ACP enrollment in Hawai'i relies on "Digital Navigators", who work hands-on with the community to get households enrolled. This process can be improved to maximize engagement and program information awareness through solicitation of translated outreach materials to ensure all households have equal access to this program. Outreach materials should be shared at community access locations in addition to community anchor institutions to ensure visibility within the community. Primary and secondary schools can participate in informing their students' families by distributing a general news release of the program in print form to their students and families. All community sites participating in distributing or displaying outreach materials should be considered for in-person ACP enrollment help sessions, where Digital Navigators are present to assist in the enrollment process. Cultural centers and heritage community centers may also be beneficial to reach populations that may otherwise face language barriers. Additionally, online promotion of the ACP should resemble that of previous EBB efforts in the state, with additional promotion of this permanent program on public access wifi networks.

Plans to support and boost ACP enrollment will see assistance from BEAD and DE funding, and, if awarded, the ACP enablement grant program.

Partners: HPHA and others
Funding: ACP, ACP Enablement Grant Program, BEAD, CPF, DE Programs

5.3.13 Digital Equity and Literacy Content Creation; Leverage Existing Programs

(Insert any relevant information from the Digital Equity Plan on DE content creation.)

Digital literacy skills are gained through instruction and hands-on educational methods with supporting tutorials or other educational content that shows users how to perform such tasks. This may include at the most basic level, how to navigate digital devices, perform basic computer functions, utilize different applications including the web, job search functions such as creating a resume, searching for jobs, and applying for jobs, or more advanced technical workforce skills to meet industry demands. The Workforce Development Council, HSPLS, and Hawaii Literacy are all organizations with sufficient means to provide educational content for introductory and intermediate technical skills development. This includes creating publications as well as courses that may be hosted in person or independently online for the purpose of developing literacy skills for all residents.

Currently, Workforce Development, HSPLS, and Hawaii Literacy all offer or have offered digital literacy training to various extents with geographic restriction being the greatest inhibitor to reaching across the state. Provided proper funding from the Digital Equity Act, unserved, underserved, and remote communities will ideally be able to visit their nearest CAI (e.g. library, school, community health center, public housing facility) for access to these programs if they do not have access from their residence.

Further instruction in advanced, technical skills development may be pursued through UH Community Colleges offering courses at their home campus or education centers, and pending the implementation and success of the proposed Pahoehoe Library project from the University of Hawaii's system's submission for Connecting Minority Communities, may see other CAIs provide access to community college courses for the purpose of IT skills development.

Partners: HPHA and others

Funding: ACP, ACP Enablement Grant Program, BEAD, CPF, DE Programs

5.3.14 Digital Literacy Outreach, Training and Education, Connect with Community Access Locations

(Insert any relevant information from the Digital Equity Plan for these types of projects.)

Under the coordination of the overall broadband investment leadership by the University of Hawai'i, the DBEDT Digital Equity Office under leadership from Burt Lum will construct and vet the state's digital equity plan. Burt Lum is responsible for the weekly convening of the Broadband Hui, whose weekly meetings function as an open forum for stakeholders in the broadband and digital equity community to share project updates of all ongoing, completed, or planned digital equity programs. Outreach efforts should continue to be perpetuated through the Broadband Hui and its participating stakeholders by means of televised, radio, print, and word-of-mouth means. Outreach should be accessible to all sectors of the public, and includes exposure through public spaces, such as public transportation, public housing, public libraries, community centers, and schools.

With participation from the Department of Education, HSPLS, HPHA, and other organizations with community-wide presence, outreach materials should be readily available for distribution from any of the aforementioned entities. Furthermore, distributing entities should have representatives on-site who are readily available to speak about the programs available to residents or refer residents to the appropriate individual for more information if they are uncertain of what a program may entail.

Outreach efforts in the state should promote maximizing application of federal programs like the Affordable Connectivity Program (ACP) along with local digital literacy training and education opportunities hosted by local nonprofits and state entities. This includes digital literacy training sessions hosted at community colleges or other CAIs and other programs

intended to provide training, education, and access to digital technology and broadband. Digital literacy outreach materials should be translated in, at minimum: Hawaiian, Thai, Ilocano, Khmer, Kosraean, Marshallese, Samoan, Tonga, Chinese, and Tagalog. This is to maximize the reach of access, education, and training information to populations facing language barriers.

Partners: UH, DBEDT, others

Funding: ACP, ACP Enablement Grant Program, BEAD, CPF, DE Programs

5.3.15 Community Access Locations

(Insert any relevant information from the Digital Equity Plan on gathering places recommended in DE plan outreach.)

Community anchor institutions (CAIs) are well-known common access points for digital literacy project deployment and promoting outreach efforts for broadband equity, literacy, and access. This term encompasses schools, libraries, community health centers, and public housing among others, many of which have seen pilot projects for broadband that can be replicated at other community access locations for greater reach to populations that may still see limited access to existing services. Distinct from CAIs are community access hub locations, which cover non-profit organizations with a statewide presence and reach. This includes the Institute for Human Services (IHS), Goodwill, Salvation Army, Aloha United Way, Economic Development Alliance of Hawaii, and the various Hawaii Chambers of Commerce as alternative last mile connectivity and digital literacy access points. Other sites of interest include the above organizations operating mobile or “on-wheels” programs, and CAIs under the Department of Education and HSPLS that do not currently participate in any community access programs.

Using funds on a one-time basis to deliver equipment (e.g. computers, laptops, routers, etc.) to these sites for public use would potentially enable new locations to serve communities previously unserved, or otherwise provide an alternative site to connect to the internet for communities. Additionally, by executing a multi-year contract, broadband access can be provided to sites that do not currently have the bandwidth to sustain a public network. Each site participating as a community access location will also be a candidate site for digital literacy training, and other educational and public (government) support services, including remote education and workforce development. Community members will have access to technical support on-site and remotely should it be required.

Partners: Listed above and others

Funding: BEAD, State Digital Equity Capacity Program

5.3.16 Integration with IT Workforce Development Initiatives

The IT/Cyber Leap-Start Experience Exceleator Program is under development by the University of Hawai‘i. It is a program for students close to graduating to gain meaningful experience in the IT and Cybersecurity workforce sectors through mentorship opportunities with partnering employers in the IT and cybersecurity fields. Participants will be hired through RCUH to perform duties under their mentoring entity for a 12- to 24-month term. During this term, they may be hired full-time by UH or the participating employers into the aforementioned sectors. Other similar programs, including private sector internship programs, may also be integrated into the state’s digital equity and literacy efforts to develop a skilled, locally trained workforce.

Planned Requests for Proposals include:

(Insert any potential programs that may be funded under the Digital Equity Capacity Program.)

- Community Access Locations Program
- Data Collection Grant Program: The Data Collection Grant Program is proposed to provide funding to non-profit organizations interested in deploying data collection efforts to support the Hawaii State Broadband and Digital Equity mapping effort.
- Digital Literacy Community Grant Program: Over the next few years, the state expects to release multiple requests for proposals (RFP) under the Research Corporation of the University of Hawaii (RCUH) to fund access, equity, and literacy efforts, as well as last mile projects that are innovative and target communities that do not currently have local community broadband access points or access to digital literacy and skills training. This opportunity will allow for non-governmental entities with prior experience providing broadband service, broadband infrastructure, and other communication services and literacy programs to residential customers within the state of Hawaii, to apply for funding to establish tech centers, digital literacy programs, and create outreach materials to inform the public about federal support programs and local last mile and access, equity, and literacy efforts.

5.4 Key Execution Strategies

[Insert key strategies that the Eligible Entity will undertake to meet its goals and objectives, and to align with and maintain compliance with the statutory requirements of the BEAD program - Section 5.4 Drafting Underway]

Investments will be guided by the declared BEAD priorities, focusing first on extending last mile infrastructure to cover unserved areas, in coordination with statewide strategies for interconnecting with middle mile infrastructure (supported outside of BEAD) and statewide wraparound services to support meaningful adoption of high-speed Internet access. Also per the statutory requirements, BEAD investments will not over-build or duplicate efforts funded by other federal funding sources, including but not limited to, RDOF, CAF and TBC programs.

Second priority is to shore up the underserved areas around the state, create and connect a broader spectrum of community hubs to extend the reach of grassroots community support, and statewide wrap-around services in support of the state's digital equity and digital literacy goals, and continuous support of IT/Cyber workforce development programs (also funded outside of BEAD).

The state broadband office support funded under BEAD will continuously monitor the overall efforts funded across all federal broadband programs. BEAD Planning Funds included support for state broadband office capacity through the five-year term of award to support oversight of projects funded under BEAD, and compliance and monitoring of efforts through the term.

Integrate with already existing statewide and regional IT/Cyber workforce development efforts

5.5 Estimated Timeline for Universal Service

[Insert an estimate of when access to high-speed internet at just, reasonable, and affordable rates will be made available throughout the Eligible Entity - Section 5.5 Drafting Underway]

Hawaii's target to complete Universal Service access to the Internet relies on the combination of BEAD investments (through 2026-2027), completion of the RDOF and CAF commitments by

Hawaiian Telcom (~2027-2030), and the ability to overlay effective and affordable LEO satellite service (Starlink, Kuiper, et al.) for very high-cost areas (2026-2027).

Related investments in key middle mile assets are expected to be online by the end of 2026; these investments are expected to lower the capital cost of provisioning to both incumbent and new market entrants. This factor will be key to increase competition, availability and affordability of high-speed Internet services throughout the state.

Long-term affordability will also be dependent on the continued availability of ACP or some similar program under the revisitation of the FCC’s Universal Service program. Long term concerns and potential barriers to achieving Internet for All in Hawaii, include the unknown disposition of ACP and related subsidy programs, and uncertainties as to high-cost and ultra-high-cost last mile buildouts. We do also expect that the level of actual competition in our telecommunications market will continue to impact our overall reach and affordability goals. While there are significant public one-time funds available to incentivize achieving Internet for All in Hawaii, there may be conditions or issues that will impair our ability to succeed at this goal.

5.6 Estimated Cost for Universal Service

[Insert estimate of how much it will cost to provide access to high-speed internet at just, reasonable and affordable rates throughout the Eligible Entity - Section 5.6 Drafting Underway]

Sum of all federal programs, including legacy funding sources (FCC, USAC, USDA) and programs (RDOF, CAF, ReConnect), plus leveraging a similar amount from commercial providers and private sector partners to achieve the desired goal of Universal Service AND meaningful access to the Internet for all. Total costs will also include the level of funding provided as a match, both directly to our projects, as well as their own direct investments into the state’s broadband infrastructure, from carriers and providers operating in Hawaii.

We also expect to leverage some level of commercial investments into Hawaii’s infrastructure as we directly reduce the impactful hurdles to participating in our broadband infrastructure market. Historically, the public sector entities in the state, inclusive of federal, state and county governments, have not made significant investments in telecommunications infrastructure assets; rather, the collective public sector “consumers” have been subscribers to commercially available broadband (Internet) service. This includes the use of public INET capacity made available via the state’s cable television franchise agreements. There are limited investments of this type, mostly around public safety communications infrastructure that serves specific point-to-point needs for those uses.

<include consideration for ongoing costs to sustain services beyond lifetime of initial capital investments; consider the restructuring of the FCC Universal Service Fund and Lifeline programs to provide ongoing support for economically disadvantaged residents>

5.7 Alignment

[Insert overview of how the Five-Year Action Plan is aligned to the Eligible Entity’s priorities and other existing or planned efforts - Section 5.7 Drafting Underway]

Hawaii's BEAD Five-Year Plan is crafted as an integral part of the state's overall broadband investment framework (see ongoing developments of the investment framework at www.hawaii.edu/broadband/). The investment framework details priorities to address the current brittle and monopolistic middle mile infrastructure, that has long constrained our ability to grow our effective utilization of global class network services. The limited size of Hawaii's market is the primary factor that has limited the commercial investment in our state, that now threatens our ability to grow and thrive together with our CONUS neighbors. This critical middle mile infrastructure is the focus of our investments from the US Treasury Capital Projects Fund, and the submitted NTIA Middle Mile Grant competitive proposals. We intend to leverage these federal sources to incorporate matching or larger investments by commercial partners (the federal investments will lead by overcoming the high capital cost hurdles that have so far caused commercial partners to avoid future Hawaii investments in the middle mile and first mile space).

The BEAD Five-Year Plan effort is also directly integrated with the state's Digital Equity Plan effort, led by the Department of Business, Economic Development and Tourism. That state Digital Equity Plan effort is underway, with an expected completion by November 2023. While the BEAD Five-Year Plan will be submitted in July, the state Digital Equity Plan will be included by reference, and will also be integrated in the state's BEAD Initial Proposal and Final Proposal efforts.

Funding support from the Tribal Broadband Connectivity program will focus initially on five use and adoption projects to provide short term relief for the Native Hawaiian Community, and the effort to assess and plan deployment of last mile (primarily) dark fiber infrastructure for Hawaiian Home Lands (DHHL) locations are expected to bring the necessary layer 1 infrastructure to all locations within those areas. This effort fills the last mile promise, together with the statewide BEAD last mile infrastructure efforts. Note that it is expected that much of the middle mile infrastructure required to provide interconnection between and among the DHHL locations will be provisioned by a mix of incumbent carrier services and new middle mile builds supported by the state's overall investment strategy.

The final piece of the last mile matrix is fulfilled with the already contracted commitments by Hawaiian Telecom under its multiple RDOF and CAF awards. These awards will provide the necessary last mile infrastructure for the designated award areas, and like the TBC-DHHL deployments, dovetail with the state's overall investment strategy.

Hawaii's overall broadband investment strategy is crafted to maximize the collective benefits of the multiple federal programs by carefully braiding the efforts together to support the state's goal of robust, reliable and affordable access to the Internet for all.

5.7.1 Alignment - Workforce Development

Hawaii has significant statewide workforce development already underway in the IT sector, including cybersecurity. The Hawaii IT Sector Partnership is an ongoing effort convened by the Chamber of Commerce of Hawaii, and supported by a number of partners, including the University of Hawaii system. This IT Sector Partnership effort already includes several dozen public and private sector employers, and includes material consideration for broad IT skills enhancement across the full spectrum of the state's workforce, and considers the active

participation of our K-12 sector, and both credit and non-credit elements of our post-secondary education providers. This multi-year effort also includes the participation of industry training providers, including a number of common use, high value, instructional intellectual property (i.e. course materials).

Hawaii will leverage this ongoing IT sector workforce development effort to help support the broad IT literacy requirements associated with our Internet for All statewide goals, and to help ensure a sufficiently broad and deep pool of technically skilled candidates for the future engineering, operation and management of the state's broadband infrastructure.

While much breath has been given to the need for developing installers and construction crews, we are reminded that Hawaii's market and likely job count for these specialized construction skills will be limited over the long term, i.e. past the construction spike funded by the one-time federal investments. Based on the existing staffing and contract firms already in place, we anticipate that we should continue to feed the current steady state of construction skills, but not overly add to the size of that skills pool - lest we later run into a lack of construction jobs following our public investment spike. We do require that the range of technical skills are fully maintained in our community, but caution that we keep a watchful eye on future demands.

5.8 Technical Assistance

Given sufficient clarity and reasonable work by our federal partners, the state anticipates that it will require limited technical assistance for implementation of the planned projects. Depending on the mix of participating providers, we may require some technical assistance in support of compliance and regulatory efforts. We do expect that we will also require some technical assistance during the development of the Initial Proposal and through the State Challenge Process and procurement activities leading up to the Final Proposal.

6 Conclusion

[Insert Text - TO BE DONE LAST WITH EXEC SUMMARY]

<restate overall goals, investment framework, and execution strategy>
<achieve true Internet for All by 2027/2030>

7 Appendices

[Add appendices as needed]

** Include the four **County Story Maps** (Hawaii County one is linked below to provide context for the Story Maps, and while each could play out differently, the core template for the Story Maps will be the the same, or at least very similar)

[County of Hawai'i Story Map](#)

[City & County of Honolulu Story Map](#)

Map/List of CAIs

Hawaii State Digital Equity Plan DRAFT (Very early draft; plan is due to be completed by November 2023)

Glossary

- **ACP:** [Affordable Connectivity Program](#)
- **ARPA/CSFRF:** American Rescue Plan Act / Coronavirus State Fiscal Relief Funds
- **ARRA:** American Recovery and Reinvestment Act
- **BDA:** Broadband DATA Act
- **BEAD:** Broadband Equity Access and Deployment Program
- **BSL/BSLF:** Broadband Serviceable Location Fabric
- **BTOP:** Broadband Technology Opportunities Program
- **CAI:** Community Anchor Institutions (e.g. school, library, hospital)
- **CAF:** Connect America Fund
- **CPF:** Coronavirus Capital Project Funds
- **CQA:** CostQuest Associates (the entity that FCC contracted to make the fabric map)
- **DBEDT:** Hawaii State Department of Business, Economic Development, and Tourism
- **DE:** Digital Equity
- **DHHL:** Department of Hawaiian Home Lands
- **DOT:** Hawaii State Department of Transportation
- **FCC:** Federal Communications Commission
- **FPO:** Federal Program Officer
- **HIDEC:** Hawaii Island Digital Equity Coalition
- **HPHA:** Hawaii Public Housing Authority
- **ISP:** Internet Service Providers
- **INET:** Institutional Network
- **IIJA:** Infrastructure Investment and Jobs Act
- **MDU:** Multi Dwelling Unit (condo, townhouse, apartment, etc)
- **MMG:** Middle Mile Grant Program
- **MOU:** Memorandum of Understanding (sometimes referred to Agreement)
- **NOFO:** Notice of Funding Opportunities
- **NTIA:** National Telecommunications and Information Administration

- **ODEC:** Oahu Digital Equity Coalition
- **PIO:** Public Information Officer
- **RDOF:** Rural Digital Opportunity Fund
- **RFP:** Request for Proposal
- Ongoing service delivery programs in parallel with infrastructure construction and activation
- Community-based efforts to assist with identification of needs and gaps - led by County efforts to create localized Story Maps of County needs and resources (see Appendix).
- **SBLN:** State Broadband Leaders Network
- **TBC:** Tribal Broadband Connectivity Program