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HAWAII STATE TEMPLATE FOR BEAD FIVE-YEAR ACTION PLAN

<mark>DRAFT (APRIL 2023)</mark>

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]

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 robust and 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 Oahu), 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 taken together will ensure we have robust, reliable, affordable and sustainable efforts that are all-inclusive of first-, middle- and last-mile infrastructure, combined with robust, community-based services supporting 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 robust, reliable and affordable high-speed Internet bolstered by a dedicated digital equity response that enables all of our residents to succeed in digital space. All communities will have ready access to local resources to provide 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.*

Hawaii's investment strategy first directs 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 reset Hawaii's Internet infrastructure. The state's strategy to build or invest 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 supports will reinvigorate the competitive commercial telecommunications market by increasing attractiveness of Hawaii-beneficial investments, expansion of the Hawaii direct serving market through increased demand for services, and improvement of the prospects to export products, services and talent that are empowered by global-class Internet connectivity for all. 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 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 competitive service providers and community-based networks. Public investments will also be directly leveraged to encourage existing and new interest in commercial investments in Hawaii-beneficial assets, including critical need to support 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 thoughtful 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)
Name of activity	*Brief description of activity*	*Brief list of intended outcome(s)*
Broadband Community Convenings	*Lead community convenings focused on engaging localized public on broadband and DE needs and program support.*	*Increase the public's understanding of broadband and support for engagement and input regarding broadband and DE programs in their local communities*
Broadband Staff Working Group	*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*	*Enable a coordinated and streamlined effort to advancing broadband and digital equity conversation and action*
Act 231 Broadband Working Group	*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*	*Provide recommendations to legislature prior to the start of the 2024 legislative session*

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

Current/ Planned	Full-Time / Part-time	Position	Description of Role
Current or Planned	*FT or PT*	*Position*	Brief description of role

Current	*FT*	*Broadband Infrastructure Architect*	Technical infrastructure advisor with general telecommunications background, local knowledge of existing infrastructure and established contact with telecom providers.
Current	*FT*	*Broadband Research Analyst*	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 Hawaiʻi.
Current	*FT*	*Broadband Grant Program Coordinator*	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.
Starting May 1	*FT*	*Communications Specialist*	Experienced media and social platform communications specialist; also will engage in community outreach activities.
Planned	*FT*	*Community Outreach and Engagement Specialist*	Increases and broadens community engagement to help support planning, deployment

Current/Planned	Time	Position	Description of Role
Starting May 15	FT	Data Specialist	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.
Planned	FT	(x2) Technical Project Manager	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.
Planned	FT	Compliance and Contract Manager	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	Time	Position	Description of Role
Current or Planned	FT or PT	Contractor Position	Brief description of contractor's role
Planned	FT	Community Engagement and Outreach Coordinator	Increases and

broadens community
engagement to help support
planning, deployment
and adoption on a statewide
basis.

Table 4: Broadband Funding

Source	Purpose	Total	Expended	Available
Name of federal agency/ other source of funding	Brief description of broadband deployment and other broadband-related activities	$X,000,000	$X00,000	$X00,000
Broadband Equity, Access, and Deployment Program	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.	$200,000,000 ++ (add possible State match)		
Coronavirus Capital Projects Fund (States)	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	$115,475,318		

	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 limited term through ACP enablement.	
Coronavirus Capital Projects Fund (DHHL)	*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*	*$167,504*

	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.	
Coronavirus State and Local Fiscal Recovery Funds		
Enabling Middle Mile Infrastructure Grant Program	*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,*	*$43,941,543*

	would benefit from the significant increases in capacity and reliability, and the significantly lower capital cost, resulting from the public middle mile investments.	
FCC, ACP Outreach Grant Program	*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.*	*$740,000 (DBEDT) $350,000 (Elepaio Social Services)*
Rural Digital Opportunity Fund (Hawaiian Telcom)	*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.*	*$24,000,000*
State Digital Equity Planning Program (State)	*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.*	*$570,883.08*

State Digital Equity Planning Program (DHHL)	*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.*	*~$50-100,000*
State Digital Equity Capacity Program (State)	*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.*	*~$14,000,000*
State Digital Equity Capacity Program (DHHL)	*TBD*	*TBD*
Tribal Broadband Connectivity Program	*Use and adoption plus mapping. Infrastructure assessment and last mile deployment (deployment will be in the follow-up award).*	*$90,000,000*

3.2 Partnerships

Table 5: Partners

Partners	Description of Current or Planned Role in Broadband Deployment and Adoption
Name of Partners and Potential Partners	*Brief description of the current or planned role of the partner for broadband deployment and adoption in the State or Territory.*
Department of Business, Economic Development, and Tourism (DBEDT)	*Lead applicant in the State Digital Equity Programs. Collaborator on DE requisites specified under BEAD*

Department of Hawaiian Home Lands (DHHL)	Native Hawaiian state office and collaborator for outreach and engagement to address infrastructure, access and DE programs on Hawaiian homelands
Sandwich Isles Communications	ILEC, ISP, Last mile connectivity
Hawaiian Telcom	ILEC, ISP, Last mile connectivity
Charter Communications	CLEC, ISP, Last mile connectivity
Lumen Technologies	CLEC, Last mile connectivity
ServPac	CLEC, Last mile connectivity
Ocean Networks	First mile connectivity - design and site surveys
Kauai Island Utility Cooperative	Middle mile connectivity (dark fiber only)
Hawaiian Electric Co	Middle mile connectivity (dark fiber only)
Chamber of Commerce of Hawaii	IT Sector Partnership
Island and regional chambers of commerce	
County of Kauai	
City & County of Honolulu	
County of Maui	
County of Hawaii	
County Economic Development Boards	
Chambers of Commerce	
CIO Council of Hawaii	
Non-Profit Service Providers	
Philanthropic Organizations	
Educational Institutions and Organizations	

3.3   Asset Inventory

The current state of broadband infrastructure investments in Hawaii place the vast majority of assets in the hands of the commercial carriers. The largest capital assets sit with Hawaiian Telcom (ILEC) and Charter Communications (CLEC), with relatively small assets held by other CLECs (mostly Lumen, Servpac). The state does own and operate some key middle mile assets in statewide licensed microwave radio network, 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 Telcom also operates a "cable television" operation under a franchise agreement,

its service franchise area is currently limited to Oahu, and has opted to provide only 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

[Insert assessment of gaps between the Eligible Entity's current state and needs of broadband deployment and digital equity]

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

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).

Assessment during State DE Plan effort

Roadmap for outreach and engagement as part of BEAD and DE plans

Statewide deployment of community digital navigators - outreach, service, training, support (consolidated wrap-around services), and creation of new set of community digital hubs

Ongoing service delivery programs in parallel with infrastructure construction and activation

Community-based efforts to assist with identification of needs and gaps

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

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

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.

3.4.4. Broadband Access

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

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

High-Cost Geographic and Topographic Barriers

Servicing geographically remote rural areas 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–privately owned island which supports a small population. BEAD is expected to provide service to those sites instead under the high cost area designation. 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.

Resistance to Adoption and Change

>learning new technologies

>overcoming fear (including security issues)

Cooperative Collaboration Among Many Diverse Stakeholders

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

>need for skilled labor

>tie to IT sector workforce development

Supply Chain Delays (and inflation impacts)

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

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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 two 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 (just 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 try to 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.

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 original BEAD Planning Funds proposal, and will be simply redirected as sub-awards to the Counties for each of them to utilize to 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, the 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 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 already 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.

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

5.2 Priorities

Table 6: Priorities for Broadband Deployment and Digital Inclusion

Priority	Description
Unserved and Underserved Last Mile	*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.*
Digital Equity and Digital Literacy (Wrap-Around Services)	*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.
Expansion of Community Hubs	*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.*
Community Digital Navigator Program	*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 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*

Identification and vetting of actual map defects (FCC FABRIC Map), during Initial Proposal process, and State Challenge process, in order to identify ACTUAL prioritized locations for last mile deployment

Provided the state can establish and approved State Challenge process early, i.e. Summer 2023, Hawaii intends to execute a preliminary State Challenge process based on deployment locations identified in the June 2023 FCC FABRIC MAP release, along with whatever local data is available at that time. The goals of running this preliminary challenge process are to:

(a) Validate the operational readiness of the agreed upon State Challenge process, including to determine if any adjustments need to be made in the process or 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) For the preliminary State Challenge only, provide for open public input by individuals as a part of the information gathering process.

The preliminary State Challenge process would be run in the Summer/Fall 2023 to assist with the preparation of a well crafted Initial Proposal. Hawaii would also run another 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, 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. 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, and enhancement of in-flight IT/Cybersecurity workforce development activities.

Infrastructure deployment to address all unserved and underserved locations, including identified high cost locations

Identification and adoption of additional community access hub locations

Community digital navigator program

Libraries & established community centers (CAIs), plus identification and collaboration with broad range of community digital hubs

Leveraging statewide IT/Cyber workforce development efforts to build staffing pool to support community access institutions and community digital hubs

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]

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]

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, Kuyper, 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]

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.

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]

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 Telcom 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 no additional technical assistance for implementation of the planned projects. Depending on the mix of participating providers, we may require technical assistance in support of compliance and regulatory efforts.

6 Conclusion

[Insert Text]

<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 Hawaiʻi Story Map