Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Connect America Fund	)	WC Docket No. 10-90
	)	
Phase II Support for Price Cap Carriers	)	
Serving Non-Contiguous Areas	)	

COMMENTS OF HAWAIIAN TELCOM, INC.

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Table of Contents

SUMMARY

Section 254 of the Communications Act mandates the FCC to ensure that affordable telecommunications and advanced services be made available to insular, high cost, and rural areas of the country. Current price cap universal service support mechanisms are inadequate to provide many of these areas with critically needed universal service funds. This is particularly true for Hawaii because of the state-wide averaging used in the former mechanism, and the failure to recognize Hawaii's significantly higher service costs. Although the FCC made substantial changes to the USF in the *USF-ICC Transformation Order*, it needs to do more to support high cost areas served by price cap carriers located in non-contiguous areas. HTI applauds the staff for pursuing added support in these areas of the country.

HTI lags behind comparable ILECs located in the contiguous U.S. in bringing advanced communications demanded by residents and businesses in its rural territories. The FCC should address wireline costs needed to build out broadband to the Neighbor Islands in Hawaii. Although a number of issues still need to be resolved with respect to the CACM, the current version of the model appears to provide HTI with more support than it has received in the past. However, given the additional broadband build-out obligations, this support is still inadequate. HTI is heartened by this forward progress and urges the Commission to begin issuing support based on a final model at the earliest possible date. At the same time, the Commission should determine a portion of the CAF II to be allocated to non-contiguous areas. Thereafter, the staff should continue its efforts to meet the Commission's mandate in the *USF-ICC Transformation Order* to address unique issues of non-contiguous areas.

HTI faces unique circumstances that make serving its customers difficult and costly. Located in the middle of the Pacific Ocean, Hawaii is geographically isolated, which increases

transport and other costs. Its geographic location subjects it to a harsh environment, and its island structure and volcanic origins result in isolated corridors between mountains. Hawaii's rural areas, where 28 percent of the population reside, are geographically dispersed and sparsely populated. Telecommunications plant in those areas is generally older, with higher than average loop lengths, which has slowed deployment of broadband.

As indicated by ACS's cost model, certain uniquely higher costs exist in non-contiguous areas. Although Hawaii has its own unique high cost issues, it shares a number of cost considerations with Alaska, Puerto Rico, and the U.S. Virgin Islands. First, HTI relies heavily on the availability of undersea cable both to provide transport communications among the islands and to reach the continental U.S. Second, the costs of obtaining peering relationships for broadband traffic in the State of Hawaii are four to ten times higher than on the mainland. Third, there is a need to support middle-mile costs in Hawaii. Fourth, the State of Hawaii is plagued by higher than average labor costs. Fifth, the State of Hawaii has higher costs due to the rugged and difficult terrain, harsh climate that is characterized by searing sun, seismic activity, tsunamis, hurricanes, corrosive salt water, and mountainous or densely forested terrain. Sixth, unique government requirements to preserve Hawaii's beauty greatly add to network costs.

To rectify past inadequate support, the Commission should promptly complete and provide support pursuant to the CACM. In addition to that effort, Hawaii's unique circumstances should be recognized by adjusting the CACM. As an alternative and at the same time that the CACM is finalized, price cap carriers serving insular, non-contiguous areas should be allocated an increase equivalent to what other price cap carriers will receive from CAF II, from $76M to $127M, which should then be divided equitably among non-contiguous price cap carriers based on their respective needs to meet the Commission's broadband deployment goals.

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Hawaiian Telcom, Inc. ("HTI") hereby submits its comments in response to the Wireline Competition Bureau's ("Bureau's") Public Notice concerning Connect America Fund ("CAF") Phase II support for price cap carriers serving areas outside the contiguous United States.[1] The Public Notice is intended to implement the Commission's mandate that the cost model being developed to provide universal service fund ("USF") support to price cap carriers take into account the unique characteristics of these non-contiguous areas, including the State of Hawaii.[2] HTI congratulates the Commission for recognizing this issue in the *USF-ICC Transformation Order* and strongly supports efforts to provide sufficient USF support in accordance with the unique cost characteristics experienced by price cap carriers serving non-contiguous areas. Commission rules to date have short-changed end-users served by price cap carriers in these areas, including in the States of Hawaii and Alaska, and prompt action to provide sufficient

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1 Public Notice, *Wireline Competition Bureau Seeks Comments on Connect America Fund Phase II Support for Price Cap Areas Outside of the Contiguous United States*, WC Docket No. 10-90, DA 13-162 (rel. Feb. 8, 2013) ("Public Notice"). The locations involved are the States of Alaska and Hawaii, and the territories of Puerto Rico, U.S. Virgin Islands, and the Commonwealth of the Northern Marianas Islands.

2 *Connect America Fund*, WC Docket No. 10-90, Report and Order and Further Notice of Proposed Rulemaking, 26 FCC Rcd 17663, ¶ 193 (2011), *pets. for review pending sub nom. In re: FCC 11-161*, No. 11-9900 (10th Cir., filed Dec. 18, 2011) ("*USF-ICC Transformation Order*").

support in non-contiguous areas is necessary to achieve the Section 254's universal service mandate and the Commission's broadband deployment goals.

I. INTRODUCTION.

Section 254 of the Communications Act was intended to ensure that affordable telecommunications and advanced services are available to insular, high cost, and rural areas of the country.[3] Current price cap universal service support mechanisms are inadequate to provide many high-cost, low-density areas with critically needed universal service funds. Although the FCC made substantial changes to the USF in the *USF-ICC Transformation Order*, implementation of this USF restructure to support broadband services underscores the need to target support smartly and more effectively in non-contiguous areas served by price cap carriers.

HTI serves an island territory that shares characteristics similar to other insular areas, and therefore falls within the protection of Section 254's mandates. Hawaii is a unique environment requiring special consideration from the USF program. Although HTI is classified as a non-rural carrier, the majority of its service area is rural in nature and high cost. The Commission partially addressed the problem of inadequate support under the legacy USF rules when it abandoned state-wide averaging as it reformed USF and targeted support more toward high cost wire centers. But this is only half the battle: costs used to support USF must take into account the unique higher costs found in non-contiguous areas served by price cap companies.

II. ADDITIONAL USF SUPPORT IS NEEDED URGENTLY IN THE STATES OF HAWAII AND ALASKA AND IS IN THE PUBLIC INTEREST.

HTI has been on record since at least 2007 that the then-existing USF mechanisms for non-rural carriers (mostly price cap carriers) did not adequately support the provision of

[3] 47 U.S.C. § 254.

universal service in the State of Hawaii.[4] Because of its geographic area's characteristics, and the FCC's inadequately designed USF mechanisms, HTI lags behind comparable ILECs located in the contiguous U.S. in terms of bringing advanced communications to its rural territories, as does Alaska Communications Systems ("ACS").[5] This anomaly was caused in part because the FCC computed costs on a state-wide basis rather than focusing on high cost areas[6] and in part because the model did not adequately model non-contiguous area costs. The primary flaw of state-wide averaging is that it required urban areas to subsidize higher cost rural areas, an unsustainable proposition in the current extremely competitive urban market. The result of these decisions is that rural areas of price cap companies,[7] including HTI and ACS, were short-changed under the previous mechanism and could not receive sufficient support as required by Section 254 of the Communications Act.[8]

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4 Hawaiian Telcom, Inc. Petition for Waiver of Sections 54.309 and 54.313 (d)(vi) of the Commission's Rules, WC Docket No. 08-4 (filed Dec. 31, 2007) ("HT Petition").

5 Commission, Broadband Availability Gap, OBI Technical Paper No. 1, at 12 (Apr. 2010) ("Broadband Availability Gap") (released as Appendix C to *Connect America Fund; A National Broadband Plan for Our Future; High-Cost Universal Service Support*, WC Docket No. 10-90, Notice of Inquiry and Notice of Proposed Rulemaking, FCC No. 10-58, 2010 FCC LEXIS 7433 (rel. Apr. 21, 2010).

6 *Federal State Joint Board on Universal Service,* CC Docket No. 96-45, Ninth Report & Order, 14 FCC Rcd 20432, ¶ 45 (1999) ("*USF Ninth Report & Order*").

7 Roughly 70 percent of the state's population is located in Honolulu, on the island of Oahu, an urbanized, relatively compact market comprising just nine percent of the state's land mass, while the remaining 91 percent of the state's land mass is home to a mere 30 percent of the population scattered among hundreds of small communities on six diverse islands. Many of the state's rural communities are quite isolated from each other (as well as from Honolulu) due to active volcanoes, steep mountain ranges, gorges, rain forests, and deep-water ocean channels many miles wide. Comments of Hawaiian Telcom, Inc., WC Docket No. 10-90, Appendix, at 7 (filed April 18, 2011) ("HTI Comments").

8 Eventually the Commission recognized this issue when it recognized that 70 percent of high cost areas are located in price cap territories and do not receive targeted support to enable service equivalent to that available in urban areas. Federal Communications Commission, Connecting America: The National Broadband Plan, GN Docket No. 09-51, at 141 (rel. Mar. 16, 2010) ("National Broadband Plan"). *See also USF-ICC Transformation Orde*r, ¶ 127.

To date, however, the Commission has not taken into account these special factors affecting Hawaii and those of Alaska.[9] For example, in the context of adopting the *USF-ICC Transformation Order*, the Commission technically rejected HTI's waiver petition seeking adequate USF support, but recognized that the FCC's new CAF proposals would address HTI's claims at least in part.[10] The Commission announced that CAF Phase II support would be based in part upon the results of the Connect America Cost Model ("CACM"), to be issued by the end of calendar year 2012 and used to grant support beginning January 1, 2013.[11] The Bureau has issued the CACM, based on a model called the CostQuest Broadband Analysis Tool ("CQBAT") that was submitted by a group of price cap carriers.[12] Although there are a number of issues that still need to be resolved in the CACM, the current version of the model appears to provide HTI with more high cost support than it has received in the past. However, given the additional broadband build-out obligations this support is still inadequate. HTI is heartened by this forward progress and urges the Commission to begin issuing support based on a final model at the earliest possible date. The final version should be based on an econometric analysis that will promote broadband availability to additional locations and customers, by using a Greenfield approach[13]

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9 ACS has repeatedly documented the need for greater USF support for broadband. *See, e.g.,* Comments of Alaska Communications Systems, WC Docket No. 10-90 (filed Feb. 27, 2013) ("ACS CACM II Comments").

10 *USF-ICC Transformation Order*, ¶ 155.

11 *Id.*, ¶ 157.

12 Public Notice, *Wireline Competition Bureau Announces Availability Of Version Two of the Connect America Fund Phase II Cost Model*, WC Docket No. 10-90, DA 13-70 (rel. Jan. 17, 2013).

13 *See, e.g.,* Comments of the United States Telecom Association, AT&T, CenturyLink, FairPoint Communications, Frontier Communications, Verizon, and Windstream Communications, *Connect America Fund*, WC Docket No. 10-90, 13-23 (filed July 9, 2012); Comments of the National Association of State Utility Consumer Advocates, *Connect America Fund*, WC Docket No. 10-90, 5-9 (filed July 9, 2012); Reply Comments of Alaska Communications Systems Group, Inc., WC Docket No. 10-90 (filed Jul. 23, 2012).

and without considering mobile broadband when determining whether an area is served by an "unsubsidized competitor.[14]

Notwithstanding the apparent progress on finalizing the CACM the FCC has not rectified the prior failures to grant sufficient support to price cap carriers serving non-contiguous areas in Hawaii and Alaska. Further prompt focus to modify the CACM is necessary to achieve greater broadband availability in the rural and high cost areas of the State of Hawaii, as well in other non-contiguous areas served by price cap companies as required by the Commission.[15] As HTI has been arguing for some time, because of past inequities and current needs, further increased support is necessary to help bring Hawaii closer to achieving its broadband goals by substantially increasing support in Hawaii.[16]

On a permanent basis, the Commission may be better able to meet its Section 254 mandate by expanding the cost model proposals of ACS and PRTC to include the State of Hawaii.[17] Notwithstanding the encouraging sign of progress, HTI is concerned that the Bureau's efforts to promote broadband availability in non-contiguous areas will be delayed, particularly since the CACM itself (without non-contiguous area accommodation) has not been delivered as announced by the end of 2012. The Commission must bring these non-contiguous area cost issues to a successful conclusion promptly. In the meantime, the Commission should finalize the CACM, even if it does not contain the mandated accommodations for insular areas, and begin

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14 *USF-ICC Transformation Order*, ¶ 103.

15 *Id.*, ¶ 193.

16 HTI Petition, *passim*; HTI Comments, *passim*.

17 *See* Letter from Karen Brinkmann, Counsel for ACS, to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 10-90 and 05-337 (filed Feb. 13, 2012) ("ACS Cost Model") (submitting Alaska Communications Broadband Network Cost Study Model); Letter from Thomas J. Navin, Counsel to PRTC, to Marlene H. Dortch, Secretary, FCC, WC Docket Nos. 10-90 and 05-337, Attachment A ("PRTC Cost Model"), Attachment B (CQBAT Results Analysis comparing insular and non-insular results) (filed Jan. 18, 2013).

providing support promptly to all areas of the country, including non-contiguous areas, while it refines the best approach for adequately addressing insular-specific issues.[18]

In the alternative, the Commission should set aside a minimum target amount from price cap funds until the CACM is modified to include non-contiguous area cost inputs. This amount should be established at the same time as the Commission finally determines CAF II support for other price cap carriers so that it can fairly allocate support where it is needed. As ACS has noted, given the 67 percent increase in CAF II support that will be provided for price cap carriers nationwide,[19] the price cap carriers serving insular, non-contiguous areas should be allocated an equivalent increase, and the amounts more equitably divided based on current needs to meet the Commission's broadband goals.[20] This would increase from $76M to $127M the amount of support allocated to price cap carriers serving insular, non-contiguous areas, which should then be divided among these carriers based on their respective needs to meet the Commission's broadband deployment goals.[21] Such an increase on an alternative basis would bring near-term advances in broadband availability in non-contiguous areas.

Making CAF support available to HTI would also acknowledge HTI's historic role as the only carrier of last resort ("COLR") in the state and the only provider of essential statewide

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[18] As such, alternative proposals to continue to provide frozen USF support based on past awarded support pending final resolution of the cost model issues is not a satisfactory resolution for HTI since it does not now receive any high cost model support due to the inappropriate state-wide averaging that exists in today's model. *See, e.g.,* Comments of Virgin Islands Telephone Corp. d/b/a/ Innovative Telephone, WC Docket No. 10-90, at 7 (filed Jul. 12, 2012) ("Vitelco Comments").

[19] Sixty seven percent was derived from the increased USF support CAF II is expected to produce for cap carrier territories (from $1.076 billion to $1.8 billion). *USF-ICC Transformation Order*, ¶ 158.

[20] *See, e.g.,* Comments of Alaska Communications Systems, WC Docket No. 10-90ACS CACM II Comments, at 10-11 (filed Feb. 27, 2013)

[21] This alterative fund could replace model support provided to non-contiguous areas under the CACM model that is unmodified to take into account non-contiguous area considerations.

telecommunications services. It also is an efficient investment for the nation. Many infrastructure deployments and upgrades needed to bring broadband to unserved areas will be far less costly for HTI to accomplish than for another provider. For example, on the island of Molokai, most wire centers do not have digital subscriber line ("DSL") equipment needed for residential broadband Internet access, but HTI has heavily invested in voice and packet-based networks as well as in fiber transport facilities that could be leveraged quickly and efficiently to provide broadband with a reasonable amount of additional investment.

Since both satellite and terrestrial wireless communications normally do not perform well in dense rain forests or deep valleys, and commercial power is not available in some areas, HTI has adapted its network architecture to the state's terrain using complicated solutions at considerable cost. For example, in order to serve remote valleys like Kalaupapa[22] on the island of Molokai, and parts of Waipio on the island of Hawaii, which are inaccessible by land vehicles, HTI transports materials by helicopter or constructs materials on-site by hand. HTI also has engineered custom facilities to cross the wide spans of the Malua, Laupahoehoe, and Kawalii gulches in order to serve the remote communities along the Hamakua coast on the island of Hawaii.[23] Latency, high monthly charges, expensive equipment, weather issues, solar flares, and lack of in-person customer support are all problems associated with satellite-delivered communications. However, from a network standpoint, land-based fiber systems are the only

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[22] The Kalaupapa Peninsula is extremely isolated, cut off from the rest of Molokai by sea cliffs rising two thousand feet and otherwise surrounded by ocean. There is no access to the area by ground vehicle, and the only option for transporting heavy equipment to the area on a timely basis is by helicopter, since a barge makes scheduled visits to the area only twice per year. Visitors may access the area via passenger aircraft or private boat, or by riding mules down the steep Kalaupapa Trail from topside Molokai. At this time, Kalaupapa residents have "no cell phone service and limited Internet access." Catherine Cluett, *Kalaupapa Post Office to Remain Open*, The Molokai Dispatch (Mar. 4, 2012), http://themolokaidispatch.com/category/kalaupapa/page/3/ (last visited Mar. 4, 2013).

[23] HTI Comments, Appendix, at 5-6.

economically scalable solution to meet the increasing bandwidth needs of consumers because compared to other technologies, the incremental cost to upgrade these wireline fiber systems is very reasonable. Fiber also reduces latency, has lower maintenance cost than other mediums, and is better designed for resiliency. Therefore, supporting Hawaii's wireline COLR is good public policy and in the public interest because this will produce more efficient gains in broadband coverage than other options.[24]

III. SERVICE IN THE STATE OF HAWAII IS DIFFERENT FROM THAT PROVIDED IN THE CONTIGUOUS UNITED STATES.

HTI faces unique circumstances that make serving its customers difficult and costly. First, HTI serves a geographically isolated area made up of several islands with diverse climate, topography, and character. Second, Hawaii's population is dispersed throughout the islands with the exception of a single population center in Honolulu. And, finally, HTI lacks other sources of funding for network investment. This combination of factors makes providing service to Hawaii's historically underserved and economically challenged population particularly difficult and underscores the need for sufficient universal service support for rural and insular areas.

A. Hawaii's Geographic Characteristics Make it Uniquely Difficult and Costly to Provide Advanced Communications.

Hawaii's unique geographic characteristics increase the costs of providing telecommunications services. Located in the middle of the Pacific Ocean, Hawaii is considered to be the most geographically isolated of all major population centers on the planet. The last state to join the Union, Hawaii is over 2,500 miles from the closest point on the mainland United States. Even within the state, residents are isolated from one another because Hawaii is

[24] Indeed, the Commission's staff has recognized for the State of Hawaii that wireline technologies can be expanded to achieve the Commission's broadband goals more efficiently than would other technologies. Broadband Availability Gap at 12.

comprised entirely of volcanic islands. It is the only island state in the U.S., and the only state whose land mass is growing day by day due to volcanic activity. The six largest islands in the archipelago (the "Big Island" of Hawaii, Kauai, Lanai, Maui, Molokai and Oahu) are separated from each other by ocean channels that reach depths of over 10,000 feet, and span distances of over 100 miles. Hawaii's geographically isolated location and island composition create distinct challenges and network complexities for advanced infrastructure deployment.

Unlike the rest of the United States, HTI must use deep sea submarine cables to provide intrastate and interstate service. Although fiber is the best choice for inter-island connectivity, fiber has limitations and substantial costs. For example, fiber requires deep sea marine cables which are expensive to install and maintain and are more vulnerable to damage from a variety of sources including seismic activity, tsunamis, maritime activity, and hurricanes. Maintenance of undersea fiber requires specialized ships, none of which are based in Hawaii, resulting in long outages when fiber cuts do occur. Further, long haul optics, environmental impact issues, permitting, and specialized cable landing stations on each island all contribute to higher cost than normal terrestrial systems.[25]

Conditions within each island contribute to the difficulty and cost of providing service. Outside of the Honolulu area, Hawaii is sparsely populated with mountainous, uneven terrain. The volcanic mountain ranges on the Islands force HTI to locate its facilities in coastal regions and isolated corridors between mountains, which limit network diversity and increase exposure to hazards such as lava flows, hurricanes, tsunamis, and salt erosion. For example, coastal salt erosion can shorten the useful life of equipment by up to 80 percent and require the use of more expensive materials such as stainless steel down guys and messengers as opposed to

[25] HTI Comments, Appendix, at 2-3.

conventional galvanized equipment.[26] Volcanic activity poses great risk to people and property on the Big Island of Hawaii, where lava flows have been active for more than two decades.[27] The ongoing eruption of Kilauea, for example, destroyed HTI facilities in the Royal Gardens subdivision and the Kalapana area and will continue to pose a risk to the Puna district for the foreseeable future. Mauna Loa, another highly active volcano, has lava flows capable of reaching 70 percent of the island.[28]

The risk of seismic activity is ever present as well, affecting the installation and maintenance of telecommunications equipment and the safety of HTI employees. This was vividly illustrated in October 2006 when a large seaquake totally isolated the town of Kipahulu, located on the island of Maui, for weeks by destroying HTI's facilities and compromising roads required to facilitate repairs. While HTI's facilities escaped damage from the recent tsunami generated by the Japan earthquake on March 11, 2011, certain coastal areas of the state suffered substantial enough damage to be declared a disaster area by the federal government.[29]

Rain erosion and thousands of streams have created gulches and valleys throughout the islands which further isolate already remote communities. HTI must use expensive wireline facilities to provide telecommunications throughout its service area because wireless communications are difficult to serve due to mountain topography and a lack of commercial power. For instance, to serve certain communities on the islands of Hawaii and Molokai which are inaccessible by land vehicles, HTI must transport equipment and materials via helicopter or

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[26] *Id.*, at 4-5.

[27] *See* United States Geological Survey, Lava Flow Hazard Zone Maps (Dec. 18, 1997), *available at* http://pubs.usgs.gov/gip/hazards/maps.html (last visited Mar. 4, 2013).

[28] HTI Comments, Appendix, at 3.

[29] *Id.*, at 4.

construct them on-site.[30] Similarly, HTI cannot access other areas of the Islands with construction or maintenance vehicles due to weight restrictions on bridges. Even heavy rainfall can cause landslides that prevent vehicular access to remote towns. For example, the towns of Pahala and Naalehu on the Island of Hawaii are isolated with every heavy rain, as flooding effectively closes Highway 11 in the same location time after time. HTI's facilities often offer the only way to communicate with these communities during and after these rains.[31] Further difficulties are caused by soil composition. For example, the Island of Hawaii has high soil resistivity, due the presence of oxides, and soft water, which does not conduct electricity as well as hard water. Oxides make equipment grounding difficult and expensive; soft water raises the costs of undergrounding and trenching.[32] Adding to these difficulties, terrain conditions vary greatly across short distances and change on an annual or even more frequent basis, due to volcanic activity. Although HTI has crafted creative, custom solutions for many of these challenges, such efforts involve considerable expense, far above that of serving areas in the contiguous U.S.

The violent storms, seismic activity, landslides, and other challenges that make serving Hawaii so difficult also physically isolate communities, making reliable telecommunications even more essential. Landslides, hurricanes, and lava flows damage, destroy, or cut off isolated areas of Hawaii on a regular basis, forcing residents and businesses in these remote communities to depend on HTI's services. When HTI's facilities survive such a disaster, they are critical for the provisioning of emergency services and rebuilding efforts. This underscores the importance of high levels of redundancy and reliability. In those cases where HTI's equipment has been

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[30] *Id.*, at 5 n.37.

[31] *Id.*, at 8.

[32] *Id.*, at 6-7.

destroyed, such as following Hurricane Iniki in 1992, new equipment may have to be brought from neighboring islands or the mainland by air or sea, substantially delaying the restoration of service—and the rebuilding of communities.[33] Even wireless communications in these rural communities depend heavily on HTI's wireline network because the backhaul connections from the cell sites to the wireless points of presence ("POPs") are provided by HTI.

B. Most of Hawaii is Sparsely Populated and Difficult to Serve.

Seventy two percent of Hawaii's population lives on the island of Oahu, with most of those people resident in the city of Honolulu.[34] The remaining population—approximately 335,000 people—are scattered throughout the remaining islands. Thus, the majority of the islands have an extremely low population density.[35]

The challenges for HTI to serve as the state's COLR have become even greater with growing demand for broadband-based services. HTI's loops are traditional copper cables of assorted gauges, combined with Digital Loop Carrier ("DLC") electronics where loops are otherwise too long to sustain service. Outside of Oahu, however, HTI's loop plant typically includes older, coarser (22 and 24) gauge cables, and approximately 50 percent of pairs have load coils (compared to 16 percent on Oahu). While HTI has taken steps to shorten these loops using DLCs, these steps have simply not been enough. HTI's highest-cost loops are an average of 9.4 years old, and rely on manufacturer-discontinued technology that is too old to support broadband.[36]

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[33] *Id.*, at 8.

[34] Hawaii Department of Business, Economic Development & Tourism, 2007 State of Hawaii Data Book, Table 1.05 (2007), *available at* http://hawaii.gov/dbedt/info/economic/databook/db2007/ (last viewed Mar. 4, 2013).

[35] *Id.*, Table 1.11.

[36] Examples include Seimens 914 DLCs, DMS1 Urbans, SLC5s.

The condition of HTI's loop plant and the isolation of many of its wire centers make it uneconomical for HTI to bring broadband service to many communities in the state. HTI currently serves five wire centers with no broadband capability at all: Hana, Ualapue, Kualapuu, Maunaloa, and Honomu.[37]

Low population density, combined with Hawaii's topography and lack of development, leads to low loop densities and increased costs. A main cause of this was the development of residential subdivisions in remote areas of the islands that started in the 1950s. Many of these areas lack county water and sewage systems, commercial electricity, and broadband telecommunications systems. Many also have substandard private roads and dense foliage. For example, although the Puna district on the Island of Hawaii is approximately the same geographical size as the island of Oahu, HTI has only four central offices to serve the population of 31,000, resulting in loops exceeding 35,000 feet in length. To improve service, HTI needs to install remote equipment at various points throughout a 91 square mile area, without the use of paved roads or commercial power, the cost of which is astronomical.[38] Thus, although Hawaii has one large urban center (Honolulu on the island of Oahu), the majority of its geographic area is rural in nature and is more challenging to serve than most other areas in the contiguous United States.

C. HTI Serves Rural Hawaii, Hawaiian Home Lands Areas, and Native Hawaiians.

HTI is the incumbent local exchange carrier ("ILEC") and COLR for the entire state of Hawaii. HTI and its predecessor-ILECs therefore have continuously offered service throughout

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[37] HTI Comments, Appendix, at 11-12.

[38] *Id*., at 12.

the state of Hawaii, including throughout the Hawaiian Home Lands.[39] HTI is charged by the Hawaii Public Utilities Commission (the "HPUC") with *statewide* COLR responsibilities, including service to the Hawaiian Home Lands.

The Native Hawaiian population living outside of the Hawaiian Home Lands comprise roughly 26 percent of the state's population.[40] HTI's COLR responsibilities for the entire state promote a network that is capable of providing access to advanced voice and broadband telecommunications, including to this Native Hawaiian population.

D. Hawaii is a Strategic Location Requiring Advanced Communications in the Defense of the Nation.

Hawaii's command of the Pacific Ocean and proximity to the Far East means that the U.S. military presence in Hawaii is critical to ensuring stability and security in the Asia Pacific region. The U.S. Pacific Command Headquarters, located in Hawaii, is responsible for monitoring: (i) over 50 percent of earth's surface, from the west coast of the U.S. mainland to the east coast of Africa, and from the Arctic to Antarctic; (ii) nearly 60 percent of the world's population; (iii) 43 countries, 20 territories and possessions, and 10 U.S. territories; (iv) the world's largest armed forces (other than the U.S.) in the People's Republic of China, Russia, India, North Korea and South Korea; and (v) compliance with five of the seven worldwide U.S. mutual defense treaties: U.S.- Republic of the Philippines (Mutual Defense Treaty, 1952);

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[39] Hawaiian Telcom Communications, Inc. Application for Review in CC Docket No. 96- 45, at 7-10 (filed June 15, 2005) (documenting service in the Hawaiian Home Lands by HTI and its predecessor-in-interest GTE Hawaiian Telephone Company); Reply of Hawaiian Telcom Communications, Inc. in CC Docket No. 96-45, Affidavit of Daniel Masutomi (filed July 13, 2005) (documenting the continuing requests for service received by HTI in the Hawaiian Home Lands, and the company's fulfillment of those service requests, between 1997 and 2005). *See also* Comments of Hawaiian Telcom Inc., WC Docket No. 10-90, Attachment A, Affidavit of Daniel Masutomi (filed Feb. 9, 2012).

[40] HT Comments at 10. Roughly 92 percent of Native Hawaiians reside outside the Hawaiian Home Lands. *See, e.g.,* Letter from Karen Brinkmann, Counsel to Hawaiian Telcom, Inc., to Marlene H. Dortch, FCC Secretary, regarding *Connect America Fund*, CC Dockets 01-92 (filed Oct. 21, 2011).

ANZUS (Australia – New Zealand - U.S., 1952); U.S.-Republic of Korea (Mutual Defense Treaty, 1954); South East Asia Collective Defense (U.S. - France - Australia - New Zealand - Thailand - Philippines, 1955); U.S.-Japan (Mutual Defense Treaty, 1960). These responsibilities only increase the importance of ubiquitous, redundant, and reliable communications capabilities in Hawaii.[41]

History has also demonstrated that Hawaii's location makes it a key strategic element to our national defense and homeland security effort, as well as a potential lightning rod for attack. Robust, redundant, hardened communications infrastructure is therefore vital to both national security and public safety within the state.

IV. THE CONNECT AMERICA COST MODEL FAILS TO RECOGNIZE HAWAII-SPECIFIC COSTS.

As indicated by ACS when it filed its Alaska-specific cost model, certain uniquely higher costs exist in non-contiguous areas of the United States. Although Hawaii has its own unique high cost issues,[42] it shares a number of those cost considerations with Alaska, Puerto Rico, and the U.S. Virgin Islands.

First, like Alaska, Puerto Rico, and the U.S. Virgin Islands, the State of Hawaii relies heavily on the availability of undersea cable not only to provide transport communications among the islands, including the Neighbor Islands (all islands other than Oahu), but also to reach the continental U.S.[43] HTI's higher costs are associated with construction, asset value and depreciation, as well as maintenance of the undersea cable.

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41 HTI Comments, Appendix, at 9-10.

42 *See* Section III, *supra*.

43 *See* ACS Cost Model at 1; PRTC Cost Model at 5.

The Neighbor Islands are separated from the main population center of Honolulu on the Island of Oahu by as many as 100 miles of ocean. Connections between some of these islands utilize point-to-point microwave systems first established when voice service was the primary traffic, but HTI increasingly relies on undersea cable to transport traffic between islands in order to provide sufficient capacity to support its growing broadband services. The entire State of Hawaii, including the Neighbor Islands, depends on thousands of miles of undersea cable connections to interconnect with the Internet on the mainland as well as other points in the world. Laying and maintaining undersea fiber requires expensive deep-sea equipment. One of these routes, connecting the rural island of Kauai with Oahu, home to Honolulu, is over 10,000 feet deep and over 120 miles long.[44] Because Hawaii is not home to any ships specializing in the placement, repair, and maintenance of deep sea fiber cables, it can take over a week—sometimes months—to obtain the appropriate equipment and services to restore damaged cables. When tw telecom of Hawaii, Inc. ("tw telecom") and Wavecom Solutions Corporation experienced a break in their inter-island fiber optic cable between Oahu and Maui in July 2010, a ship was deployed to repair the cable about five weeks after the cut.[45] Notably, to accommodate increased demands for fiber transport capacity in the state, HTI installed custom-engineered lasers along the Kauai segment of HTI's fiber network. At HTI's request, Fujitsu engineers in Japan developed these lasers to sustain communications over longer distances. These lasers were not available off-the-shelf and had to be custom built, at great cost to HTI.[46]

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[44] HTI Comments, Appendix, at 2 (citing HTI Petition, Exhibit 1).

[45] *See id*., at 3. HTI based this assessment on the time during which such traffic was diverted to the HTI network under its restoration agreement with tw telecom.

[46] *Id*., at 3.

Second, the cost of obtaining peering relationships in the State of Hawaii is very high, similar to what is experienced in Alaska and the U.S. Virgin Islands.[47] The cost per megabit to peer with the Internet in Hawaii can easily be four to ten times higher than the cost to peer in the contiguous United States, where major Internet peering centers (carrier/collocation hotels) are located across the country.[48] Either HTI must purchase its own capacity on the transpacific cables to transport traffic to peering points on the mainland or to Pacific Rim data centers, or it must pay Tier 1 carriers (e.g., Verizon, AT&T, CenturyLink) much higher costs for Internet connections that incorporate the transpacific links in their pricing.[49] Further, to ensure an outage will not affect all of its services, HTI must diversify its bandwidth requirements across multiple carriers and cables. With limited options available, as compared to HTI counterparts operating in the contiguous United States, HTI inevitably pays much higher costs for peering. As indicated by a number of parties, satellite transport is not an adequate substitute for either voice or broadband communications because of the latency characteristics and delay associated with satellite services.[50] For advanced applications requiring low latency, such as remote surgery, voice over Internet Protocol ("VoIP"), and other applications involving person-to-person communication, such delays make satellite-based services ineffective substitutes for terrestrial broadband services. As most recently shown by Tahiti which placed a transpacific undersea

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47 ACS Cost Model at 11; Vitelco Comments at 4.

48 Reply Comments of Hawaiian Telcom, Inc., WC Docket No. 10-90, at 4 (filed Aug. 11, 2010) ("HTI Cost Model Reply Comments").

49 As a practical matter HTI enters into both types of peering arrangements to obtain route redundancy required by modern advanced communications and by customers.

50 Comments of the Alaska Rural Coalition Concerning the Remote Areas Fund, WC Docket No. 10-90, at 4-5 (filed Feb. 19, 2013); Comments of General Communications, Inc. on Design of Remote Areas Fund, WC Docket No. 10-90, at 3-4 (filed Feb. 19, 2013).

fiber cable from their country to Hawaii in 2010, satellite transport is not an economic or scalable solution when fiber-based options are available.

Third, there is a need to support high-cost middle-mile investments in Hawaii. Middle-mile facilities alone account for thousands of miles of fiber cable stretched across the state and among the six separate islands. Isolated areas like Hana on the Island of Maui still lack any middle-mile fiber facilities by any provider because of the high cost of establishing this route and the low population density the facilities would serve. If these areas are served by fiber in the future, it is unlikely that they will be served with a resilient ring architecture because it would cost twice as much to provide diversity to these locations. The need for expanded middle-mile support is also characteristic of Alaska.[51]

Fourth, the State of Hawaii is plagued by higher than average labor costs due to its remote location, similar to that experienced in the State of Alaska.[52] The State of Hawaii also suffers from a much higher than average cost of living: the current consumer price index is nearly 250, close to the highest in the nation.[53] As such, HTI must pay its workers higher than average wages in order to attract qualified workers to Hawaii so that they can afford the higher cost of living.[54]

Fifth, the State of Hawaii has higher costs due to the rugged and difficult terrain, harsh climate that is characterized by searing sun, seismic activity, tsunamis, hurricanes, corrosive salt

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[51] ACS Cost Study at 1,10.

[52] Comments of Alaska Communications Systems, WC Docket No. 10-90, at 16-17 (filed Jan. 28, 2013); PRTC Cost Model at 8.

[53] Bureau of Labor Statistics, Consumer Price Index, 2012 data, *available at* http://data.bls.gov/pdq/SurveyOutputServlet?data_tool=dropmap&series_id=CUURA426SA0,CUUSA426SA0 (last viewed on Mar. 4, 2013).

[54] Bureau of Labor Statistics, Labor Costs by State, May 2011 data, *available at* http://www.bls.gov/oes/current/oes_hi.htm (last viewed on Mar. 4, 2013).

water, and mountainous or densely forested terrain. As indicated in Section III, the islands of the State of Hawaii were formed through volcanic activity, and thus in order to construct a telecommunications network, HTI is forced to incur the greater expense of erecting poles and laying conduit in dense lava, a construction and maintenance phenomenon not experienced by most of the contiguous U.S. Special stainless steel messengers and down guys needed to support cables and to protect infrastructure from corrosive salt air, ocean-going vessels to lay inter-island fiber in deep-sea channels, and work-arounds in locations affected by live volcanic activity are just a few of the many factors that are unique to the island state.[55] Harsh sun, and relentless salt air, although viewed favorably by tourists, wreak havoc on telecommunications networks and increase the costs of materials and maintenance. HTI must also import nearly all of its materials, further increasing its costs. These increased cost characteristics for the State of Hawaii are the same as those experienced in Puerto Rico and the U.S. Virgin Islands,[56] and similar to the equally harsh conditions found in Alaska.[57] Although certain small geographic areas in the U.S. experience high costs due to environmental conditions, the effect of nationwide averaging in the CQBAT and the CACM models produce lower and inadequate cost estimates for the State of Hawaii.

Sixth, Hawaii's tourism industry, the lifeblood of the local economy, requires that the State must protect its natural beauty and geographic wonders for future generations. However, such environmental policies create higher construction costs for service providers. Special use permits, environmental impact studies, culturally significant archeological requirements,

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55 HTI Comments, Appendix, at 2-5; HTI Petition, at 6-12.

56 Comments of Puerto Rico Telephone Co., Inc., WC Docket No. 10-90, at 6 (filed Jul. 9, 2012); Vitelco Comments at 5-6.

57 Comments of Alaska Communications Systems Group, Inc., WC Docket No. 10-90, at 3 (filed Feb. 1, 2012)

undergrounding of facilities to protect view planes, all add up to much higher cost to construct facilities in Hawaii. For instance, ancient Hawaiian bones or "iwi" uncovered during excavation for the Oahu rail system introduced not only schedule delays but also the possibility of rerouting the system that could cost the City and County of Honolulu millions of dollars. Another example of increased costs is recent governmental requirements that HTI must bore its cable well beneath endangered coral in Kaneohe Bay to provide service to Coconut Island.

All these categories of unique circumstances are real situations that significantly increase the cost of providing communication services in Hawaii. To meet the Commission's Section 254 mandate these additional costs must be reflected in the CACM model or by expanding the cost model proposals of ACS and PRTC to include the State of Hawaii. In the alternative, the Commission should set aside a non-contiguous area fund for price cap carriers at the same time as it finalizes its CACM model to ensure that these areas receive sufficient support until the CACM is modified to include non-contiguous area cost inputs.

V. CONCLUSION

The Commission's universal service support policies have short-changed insular areas in the past, making provision of advanced voice and broadband services difficult. HTI applauds the Commission's efforts to move forward to grant further USF support to price cap carriers serving non-contiguous areas. The Commission should complete work on the CACM and provide support pursuant to that model at the earliest possible time because HTI is due to receive more support than it does under the current USF mechanism. However, this effort will produce inadequate support both in terms of the support granted, and the increased burdens caused by the broadband conditions of receiving that support. Those non-contiguous areas, including the States of Hawaii and Alaska, face unique circumstances that make the costs of providing service

exceedingly expensive. As HTI has been arguing for some time, further increased support is necessary to help bring Hawaii closer to achieving the Commission's broadband deployment goals by substantially increasing support for HTI, the only price cap carrier in Hawaii. The Commission should recognize these added costs by including in the CACM these unique cost factors, and replacing the existing CACM support with the new higher support produced when the model adequately accommodates non-contiguous areas or by expanding the cost model proposals of ACS and PRTC to include the State of Hawaii..

As an alternative, the Commission should set aside a non-contiguous area fund for price cap carriers at the same time as it finalizes its CACM model to ensure that these areas receive sufficient support. As ACS has noted, given the 67 percent increase in CAF II support that will be provided for price cap carriers nationwide, the price cap carriers serving insular, non-contiguous should be allocated an equivalent increase, and the amounts more equitably divided based on current needs to meet the Commission's broadband deployment goals. Only by completing all of these actions can the Commission begin to meet the mandate of Section 254 and to support its broadband goals for all Americans.

Respectfully submitted,

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