



November 22, 2019

The Honorable Brian Schatz  
United States Senate  
722 Hart Senate Office Building  
Washington, DC 20510

Dear Senator Schatz:

I am writing in response to your November 8<sup>th</sup> letter to CenturyLink CEO Jeff Storey regarding service outages on the island of Kauai and damage to undersea cable between Kauai and Oahu that is jointly owned by CenturyLink and Hawaiian Telcom. We appreciate your concern about the vital role that communications services play in the economic prosperity, personal lives and safety of Hawaiians. We are working diligently to coordinate the extensive efforts required to repair the damaged cable, and continue working closely and communicating regularly with our enterprise and wholesale customers on the island. Please find below our answers to your specific questions.

**1. When did the outage begin and end? Provide dates and times.**

The undersea cable was damaged on the evening of October 27 and ultimately impacted some of CenturyLink's enterprise and wholesale customers on Kauai, which we understand caused an outage for some consumers. CenturyLink quickly initiated efforts to assess and repair the root cause of the issue. After completing extensive testing, CenturyLink determined the damage was approximately 17 kilometers from the island and 1,000 meters underwater.

As the issue was being identified, CenturyLink made arrangements to transfer as much customer traffic as possible to alternate working paths where resources were available to us. For the cable itself, repair efforts are ongoing, with the subsea repair vessel expected to arrive at the repair site near the end of this month. We expect to have the undersea cable repaired and operational again within several weeks, barring unforeseen circumstances.

**2. When were customers and regulators given information about the outage? What information was provided, including whether they were informed about how long the outage was expected to last?**

CenturyLink immediately informed its enterprise and wholesale customers upon becoming aware of the outage via our internal monitoring and associated customer trouble tickets. Where customers filed trouble tickets, CenturyLink provided numerous progress updates in the first 24 hours after the undersea cable damage and daily progress updates since then.

CenturyLink also filed an outage report with the Federal Communications Commission and voluntarily shared information about the event with the Hawaii Public Utilities Commission, the Hawaii Department of Land and Natural Resources, and the US Army Corps of Engineers.

**3. When did you become aware of the disruption to the fiber optic cable?**

As noted above, CenturyLink became aware of the disruption on the evening of Sunday, October 27, Hawaiian time.

**4. Is network redundancy built into your service for Kauai Island and how? If so, what is your plan to enhance the redundancy for Kauai customers? If not, why not and how will you address this deficiency?**

CenturyLink does not provide any residential or consumer services on Kauai, but we do provide wholesale and enterprise services. For these sophisticated customers, we offer various services and features that enable them to select and determine the level of redundancy in their communications.

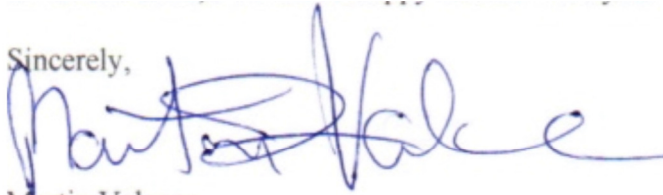
On the Oahu to Kauai subsea cable that CenturyLink operates, customers may purchase logical diversity in which their data traffic traverses separate fiber strands (within the same cable) that are managed by separate electronic components in the landing stations and central offices. To achieve physical diversity, customers may choose to purchase additional capacity from another provider on different subsea cables. With that said, CenturyLink does not generally have insight into whether customers utilize this type of architecture.

CenturyLink's primary goal right now to restore service and redundancy is completing the repair work underway on the undersea cable. CenturyLink has engaged the services of a specialized repair vessel, which is en route to Kauai to pick up remaining supplies and conduct repair work. This includes, but is not limited to, locating the break, recovering both ends to the surface, splicing, testing and returning the restored cable to the seabed. We expect repairs to be completed in the next several weeks, depending on weather and sea conditions, and assuming we do not encounter other unexpected damage. Beyond the

repair, we are also exploring options to make available additional physical diversity to our customers on the island.

CenturyLink appreciates your leadership on technology and infrastructure policy and looks forward to working with you on this and other issues. If you have additional questions about this issue, I would be happy to meet with you.

Sincerely,

A handwritten signature in blue ink, appearing to read "Martin Valence". The signature is fluid and cursive, with a large initial "M" and a long, sweeping tail.

Martin Valence

Vice President, Network Operations Centers



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Senior Vice President Federal Government Relations  
Public Policy, Law & Security

November 22, 2019

The Honorable Brian Schatz  
United States Senate  
722 Hart Senate Office Building  
Washington, D.C. 20510

Dear Senator Schatz:

Thank you for your letter dated November 8, 2019 to Verizon CEO Hans Vestberg regarding the October 27, 2019 service outage in Kauai, Hawaii.

Verizon takes seriously the trust that consumers in Hawaii put in us as their communications provider. That is why we strive to have the most reliable network among all wireless providers. To achieve that goal, we pay a premium to wireline providers serving Kauai to support resilient and reliable fiber facilities to connect our cell sites to our switching facility near Honolulu. In Hawaii, our fiber providers necessarily must rely on undersea cables due to the state's unique geography. On October 27, one of the three undersea cables used by one of our fiber providers (Spectrum) on Kauai was damaged, leading to an 11-hour service disruption to the cell sites that Spectrum connects on Kauai. We are currently working with our partners to understand more about this incident in order to prevent a similar outage in the future.

Below, we have included answers to the specific questions in your letter.

**1. When did the outage begin and end? Provide dates and times.**

On October 27, 2019 at 8:20 PM HAST, Verizon lost connectivity to approximately two-thirds of our cell sites on Kauai. Between that time and October 28, 2019 at 5:48:57 AM HAST, we regained basic connectivity to our cell sites, but due to extremely limited bandwidth of the available back-up undersea fiber connection, service was degraded or unusable during that time period. By 5:48:57 AM, we lost all connectivity to our cell sites as traffic ramped up in the morning, causing more congestion on the back-up fiber. Service was fully restored on October 28, 2019 at 4:50 PM HAST when Spectrum moved our services to a different fiber with much larger bandwidth.

**2. When were customers and regulators given information about the outage? What information was provided, including whether they were informed about how long the outage was expected to last?**

In compliance with federal law, Verizon has submitted the first two of three reports to the FCC on the agency's Network Outage Reporting System (NORS) online portal. Verizon will file its final 30 day NORS report as FCC rules require. Additionally, Verizon responded to inquiries

from Kauai Mayor Derek Kawakami with details available at the time. The Verizon communications team provided a statement to external-facing employees at 1:20 PM HAST on October 28, 2019 to ensure that customer inquiries could be met with accurate and up-to-date information. Additionally, we responded to a press inquiry from KHON to help inform reporting on October 28, 2019.

***3. When did you become aware of the disruption to the fiber optic cable? When did you first receive communication from CenturyLink about that disruption?***

The Network Monitoring Center first alerted our local network team of the intermittent connection at 10:05 PM HAST. At that time, our local team contacted Spectrum, our backhaul provider that uses CenturyLink's cable, to open a service ticket. (Verizon does not have a direct contractual relationship with CenturyLink, so Spectrum would have handled direct communications with CenturyLink regarding the event.)

***4. Is network redundancy built into your service for Kauai Island and how? If so, what is your plan to enhance the redundancy for Kauai customers? If not, why not and how will you address this deficiency?***

Our network reliability is a point of pride and our engineers make network design choices to reflect that when possible. With respect to backhaul connections to cell sites, Verizon is not a wireline provider in the state of Hawaii. As a result, we do not own backhaul cable facilities, but instead contract with other wireline providers in the state. When possible, we make choices that increase redundancy by contracting with multiple backhaul providers. On the island of Kauai, for example, we have forgone the cost savings of wholesale purchasing from a single backhaul provider and instead pay a higher rate to be served by two providers. In this case, our policy to contract with multiple providers allowed for the remaining Verizon cell sites on Kauai to remain operational during this outage, thus preventing a complete island-wide loss of service. Our contractual agreements with backhaul providers also include strict requirements for reliability and strict penalties when not met. And through our arrangements with Spectrum, all of the affected traffic was re-routed, even as the cable damage is expected to last for several weeks.

Thank you again for your letter and please do not hesitate to contact us if you have more questions.

Sincerely,



Robert S. Fisher



November 22, 2019

The Honorable Brian Schatz  
United States Senate  
722 Hart Senate Office Building  
Washington, DC 20510

Dear Senator Schatz,

Thank you for your letter regarding the recent Spectrum service outages caused by a third party network provider on Kauai Island in late October and early November. Charter appreciates your interest about this matter, and we share your concern regarding the impact this event had on our customers.

Attached to this letter are the responses to the questions you raised about the dates and times the outages started and ended, Charter's outreach to customers and regulators, Charter's communications with third party network providers, and Charter's network redundancy plans on Kauai Island. Some of the information you requested is deemed proprietary and confidential and is stated as such in our responses. However, we are willing to meet with you or your staff to address any remaining concerns you might have.

Your letter specifically mentions two outages in Kauai beginning on October 27, 2019 and November 1, 2019. In the attached responses, we provide information regarding the October 27<sup>th</sup> outage, but we are unaware of an outage beginning on November 1<sup>st</sup>. Charter's network did experience an outage beginning on November 2, 2019, and we include responses to your questions regarding this event.

Again, thank you for your leadership on this issue of importance to Charter and our customers. Please consider us a resource as you explore ways to address network resiliency on Kauai Island.

Sincerely,

A handwritten signature in black ink that reads "Vanessa Green Sindors". The signature is written in a cursive, flowing style.

Vanessa Green Sindors  
SVP, Congressional & Administration Affairs

Attachment

**ATTACHMENT**  
**CHARTER COMMUNICATIONS, INC. RESPONSES TO SENATOR SCHATZ**

Questions	October Outage	November Outage
<p>1. When did the outage begin and end? Provide dates and times.</p>	<p>The outage began on October 27, 2019 and ended on October 29, 2019. The requested times are confidential information.</p>	<p>The outage began on November 2, 2019 and ended on November 3, 2019. The requested times are confidential information.</p>
<p>2. When were customers and regulators given information about the outages? What information was provided, including whether they were informed about how long the outages were expected to last?</p>	<p><u>Customers:</u> Charter issued a public statement on October 28, 2019 stating that a third party carrier's network fiber had been damaged and it was impacting Spectrum services on Kauai. There was no estimated time of service restoration given, but the statement indicated that Charter was working to restore service as quickly as possible. Charter also set up Interactive Voice Responses on the local Customer Care Center phone line to facilitate acknowledgment of the outage.</p> <p><u>Regulators:</u> Charter notified the FCC through the Network Outage Reporting System (NORS) within the required two hour Notification and 72 hour initial timeframes. Also, Charter notified the Hawaii Department of Commerce and Consumer Affairs (DCCA) of the outage on the morning of October 28, 2019.</p>	<p><u>Customers:</u> No public statement was issued for this event.</p> <p><u>Regulators:</u> Charter notified the FCC through the Network Outage Reporting System (NORS) within the required two hour Notification and 72 hour initial timeframes.</p>

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