EQUAL ACCESS

Equal Access Summits to the Sea Application to the California Advanced Services Fund Infrastructure Grant Account 2023

Proposal Summary

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Project Title:
Equal Access Summits to the Sea (EAS2C)

Location:
San Mateo, Santa Clara, Santa Cruz and Monterey Counties

Type:
Last Mile - Middle Mile

Grant Request:
$5,650,000

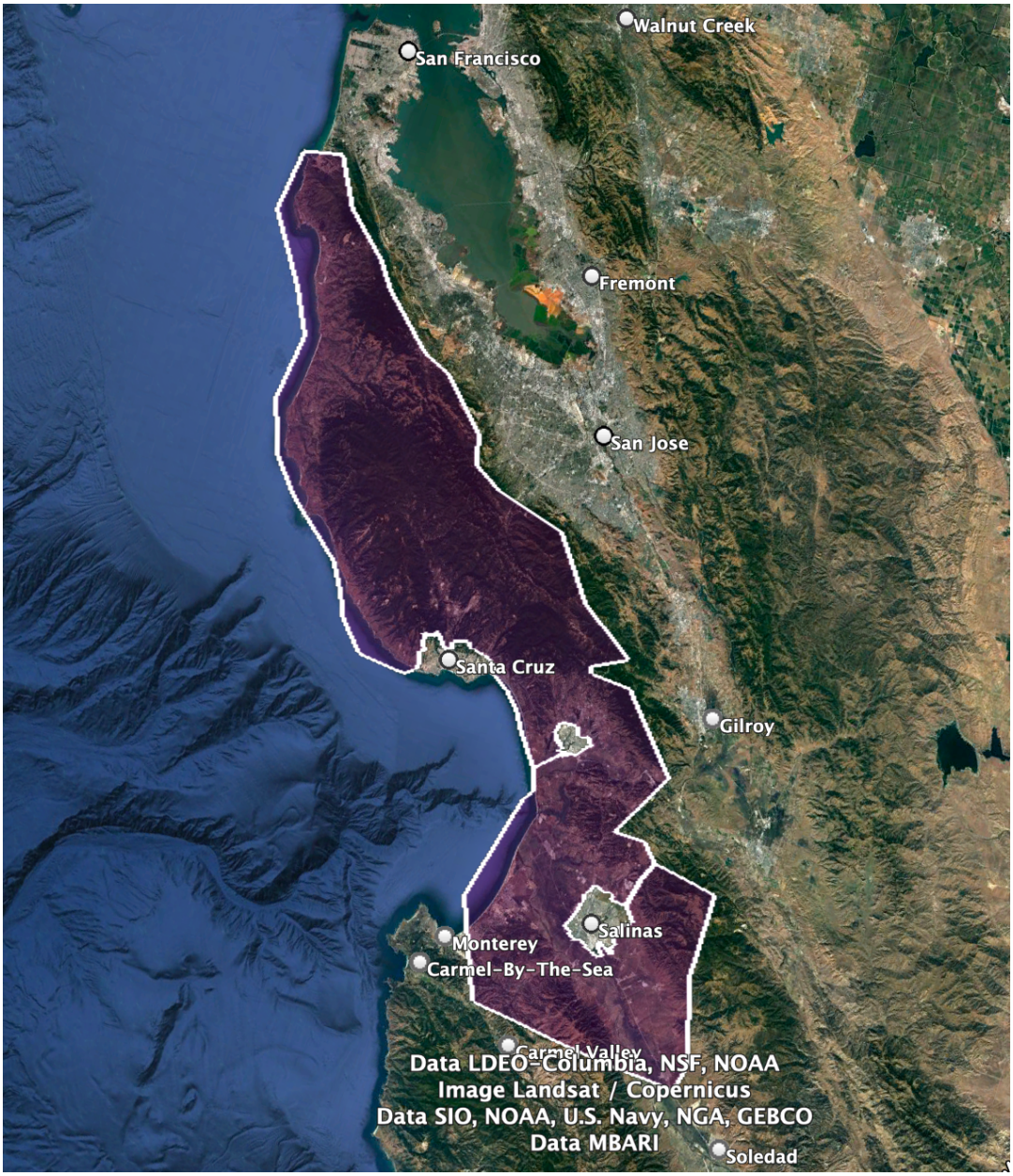
Summary:
Cruzio Internet is applying for a $5,650,000 grant from the California Advanced Services Fund (CASF) Broadband Infrastructure Grant Account to deploy multi-hundred Mbps last mile connectivity to up to 759 unserved locations in San Mateo, Santa Cruz, Santa Clara and Monterey Counties that are currently able to receive less than 25 Mbps download and 3 Mbps upload. There are 1013 serviceable anchor institutions within the project area.

Equal Access Summits to the Sea (EAS2C) leverages existing network infrastructure to extend open-access middle mile connectivity at speeds of 10 gigabits per second, and multi-hundred Mbps last mile connectivity to regions of San Mateo, Santa Cruz, Santa Clara and Monterey Counties. Large swaths of these rural, coastal, and mountainous regions are either unserved or underserved. Their older copper networks are deteriorating, leaving households with scarce and expensive internet options.

The project's major expenses consist of major backhaul upgrades and deployment of new distribution hardware at 55 wireless hubs. Project deployment would begin soon after grant is awarded and be completed with 18 months..

We estimate the median annual income of the project area to be $93,419, with a broad span of incomes included. The project will provide initial symmetrical speeds of up to 1 Gbps (1 Gbps upload, 1Gbps download).

Map of Project Area



Middle Mile

There is currently no adequate middle mile infrastructure in the project area to support the delivery of last mile service from proposed fixed wireless hubs. We have consulted with California Department of Technology (CDT) to ensure our project's middle mile portion complements and in no way overbuilds the California State Middle Mile plan. Applicant commits to adhering to program's Open Access requirements.

Funding Level

We are requesting 100% project funding.

For a guaranteed minimum of five (5) years, applicant: (1) offers California LifeLine and/or federal Lifeline service to low income customers; (2) offers a low-income broadband plan for no more than $15/month co-pay; or (3) participates in the Affordable Connectivity Plan or otherwise provides access to a broad-based affordability program with commensurate benefits (10%).

Project uses existing outside plant infrastructure (10%).

The proposed project area contains rugged or difficult terrain (e.g., mountains, desert, national or state forest); is an unincorporated community; is within an extreme or elevated fire threat area as defined by the CPUC Fire-Threat Map (10%).

Makes a significant contribution to the program goal (10%).

We are requesting ministerial review:

- Cruzio meets program eligibility requirements.
- The requested grant is less than $25,000,000.
- The project is CEQA-exempt.

Project involves no underground construction.
We are not disputing the Broadband Map depiction of served status.

Major Infrastructure Expenses and Equipment to be Deployed

Asset type	Quantity	Expense
Backhaul Radios	55	$1,100,000
Broadband Access Points	110	$1,650,000

Overview

EAS2C provides and enables interconnections and last-mile connectivity in rural, coastal, and mountainous regions, creating greater competition in the market, lowering end-user prices, and improving public safety.

By design, EAS2C supports and augments GoldenStateNet, California's plan of record for middle-mile broadband, using state-of-the-art fixed wireless technologies. Although fiber is preferable in many settings, fixed wireless is often the only practical solution in the coastal and mountainous regions of EAS2C. This proposal will bring equivalent service at a lower cost and on a faster timeline. Because it makes use of existing structures (towers, buildings, water storage tanks, etc.), this proposal is minimally invasive, avoiding most of the construction costs, delays, and environmental impacts associated with fiber-only deployments.

The resulting network will be a generational leap forward leading to faster, more reliable interconnect services. Service providers will be able to leverage EAS2C's infrastructure and lowered barriers to entry to construct last-mile projects in unserved areas throughout the region and create Direct Internet Access (DIA) with low fixed pricing and improved capacity and performance.

We anticipate this will reduce the burden on small providers ranging from full-fledged CLEC ISPs to micro ISPs and community broadband cooperatives, who often cannot afford to enter indefeasible right of use (IRU) or datacenter contracts. These include South Valley Internet, Ridge Wireless, Livewire, SLV Fiber and Tekify.

Cruzio is itself a last-mile provider. We have been unable to serve much of the project area due to lack of middle-mile infrastructure and as a result of this project will be able to expand our services to many unserved and underserved rural communities. Using state-of-the-art fixed wireless solutions Cruzio will immediately bring multi-hundred Mbps broadband to thousands of locations in this underserved region. The final result will be greater competition and new availability leading to lower prices for residents across the entire region.

EAS2C infrastructure will also improve public safety. As a partner of the ALERTWildfire Consortium, Cruzio will leverage this project to add to our array of internet-connected thermal detection cameras throughout the region to detect and prevent wildfires.

A fixed wireless project is relatively fast to deploy and inexpensive to build. It will quickly add the ability for thousands of rural residents to get internet connections with upload and download speeds similar to those in large cities, many at subsidized prices. Augmenting larger, slower projects, it will bring significant, lasting improvements in a short time.

Area Served

The Santa Cruz Mountains dominate the EA2SC project area, creating a divide that is as stark in human terms as in geography. Within our region are rural, agricultural, and low-income communities flanked by mountainous areas. Fiber-optic broadband infrastructure is especially challenging throughout. Not far to the east are the affluent, tech-saturated cities of Silicon Valley. It is difficult to imagine a greater technical contrast—a greater digital divide. The inability of residents to participate in the dominant industry of the area causes economic hardship and social division.

Despite its proximity to San Francisco and Silicon Valley, home to many of the world's biggest technology companies and an area rich in internet infrastructure, the region served by the EAS2C project has been historically underserved and is greatly lacking in broadband investment.

EAS2C will greatly enhance internet connectivity in communities west of the Santa Cruz mountains by targeting two types of communities: mountainous communities with geographical constraints which make fiber connectivity prohibitively expensive; and rural and low-income areas with socio-economic barriers to connectivity, in addition to their own geographic constraints.

The mountainous region between the San Francisco Bay Area to the east and coastal cities to the west have suffered devastating wildfires and remain under threat. In 2020 nearly 90,000 acres of mountainous area burned, 1,500 homes were lost, and the cost was estimated at over two billion dollars. A Santa Cruz County grand jury follow-up investigation, prepared for the County Board of Supervisors, emphasized the need for home internet to aid in evacuations. Please note that several Santa Cruz County Supervisors have endorsed this grant application.

In 2023 damage was again rained on the project area, this time literally. Months of severe storms deluged fire-damaged terrain, resulting in mountain mudslides and flooded farm communities. Two federal disasters were declared, in January and March of this year.

The area is still recovering, and the losses included communications infrastructure. Residents here have lost their old copper telephone lines and rely on the internet, their only generally available means of communication, to inform them of evacuation directions and other vital information. As more copper service is removed, more internet is vital to their safety.

Cruzio's proposal of fixed wireless infrastructure adds valuable resiliency. Though not impervious to natural disasters, because transmission occurs through the air, it is not affected by damage to ground-level infrastructure. The relatively small footprint of its major hubs means it can be located at a limited number of well-protected places, unlike fiber's contin-

uous, miles-long exposure. Equipment can be easily re-sited if a location becomes unusable.

Socio-economic barriers

For the last few years, Cruzio has worked with local school districts, municipalities, and non-profit partners serving rural Latino populations to provide subsidized internet to low-income families through our Equal Access initiative. Inequality of opportunity is recognized as a major problem in our region and this grant is supported by Digital Nest and Ventures, along with local leaders such as State Senator John Laird, State Assemblymember Robert Rivas, County Supervisor Chris Lopez, and Congresspersons Anna Eshoo and Jimmy Panetta.

In all cases, Cruzio's mission is to provide rural and low-income communities with the same level of service that we make available to our more urban customers. Recent advances in fixed wireless technology are making that mission a reality.

Under Cruzio's Equal Access program, qualifying families receive 100Mbps Internet service for $14.95 per month. In just two years this program, which is the ongoing service portion of our low-income outreach, has enrolled hundreds of families and seniors. Having Equal Access as an arm of our projects enables us to contract with community organizations such as HOAs and housing cooperatives to ensure long-term low-cost internet connectivity for their residents.

In many cases, the populations most in need live in small rural communities which get included in census tracts with more urban or suburban populations. Our local elected representatives and non-profit institutions such as the Monterey Bay Economic Partnership, the Central Coast Broadband Consortium, and the Community Foundation of Santa Cruz also recognize this situation and have endorsed our project.

Climate Resilience

Cruzio is a partner of the ALERTWildfire consortium, and this project will install more internet-connected fire cameras throughout the EAS2C network to expand early detection and prevent wildfires.

About Fixed Wireless Technology

In areas like those covered by EAS2C, where a fiber deployment would be prohibitively costly or technologically challenging, fixed wireless can bring equivalent service at a far lower cost, and on a much faster timeline. This is especially true now with lead times of up to 60 weeks common for fiber materials. Aerial fiber, hung on utility poles, is unsightly and subject to many risks including destruction or interruption from floods, fire, earthquakes, and even animals which gnaw or nest on cables.

Fixed wireless advancements

Fixed wireless connectivity has evolved significantly in recent years. Cruzio routinely deploys wireless links capable of sustaining 10 Gbps throughput. Point-to-point wireless can be installed in a matter of days, as opposed to weeks or months for fiber, and often offers lower real-world latency versus fiber connections.

Reliability

Modern wireless technology is extremely reliable even in the harshest conditions. Higher-bandwidth links use narrow "pencil" beams that resist interference and make interception virtually impossible. Links licensed through the FCC are dedicated channels, and are not susceptible to shared channel performance degradation. Unlike fiber, wireless links are not susceptible to cuts and other physical interruptions.

Resilience

Resilience is an important feature of all networks. Fiber tends to follow common routes along highways and places where right-of-way can be easily obtained. Wireless follows completely different, easily shiftable routes. Since each medium experiences different threats, a multi-model approach ensures survivability of the network as a whole.

Future-proofing

Fixed wireless links are easily upgradeable when technology advancements occur. An upgrade from 1 Gbps to 10 Gbps and beyond is often as simple as uninstalling and reinstalling radios at each end of the link. In our 12-year history of wireless deployment, we have fully cycled through 3 generations of wireless equipment, resulting in exponential increases in stability, bandwidth, and range. We build upgrade costs into our plans from the start. This upward trend is not slowing down.

Low environmental impact

As there is no physical connection between end points, minimal physical construction is required leading to a much-lower environmental impact than fiber, especially underground fiber.