

Mountain View Whisman School District

Agenda Item for Board Meeting of March 14, 2024

Agenda Category: Consent Agenda

Agenda Item Title: CBRS Update

Person Responsible: Jon Aker
Director of Technology

Background: As part of the Strategic Plan 2027 Goal 5, MVWSD has been building a CBRS network to provide Internet access for students outside of the school campus. CBRS is an acronym for Citizens Broadband Radio Service. In 2015, the FCC opened up shared access to the 3.5 Ghz band that had previously been used exclusively by the military. The shared access provides for three tiers of access: Incumbent Access which is the previous military use, Priority Access which refers to commercial licenses that were sold, and General Authorized Access which is the category that MVWSD uses to operate the CBRS network. General Authorized Access does not require an expensive license but does not protect against interference from incumbent or priority access users. At this time, we have not experienced any interference from other CBRS users in Mountain View.

The District also has a small number of mobile hotspots available to provide Internet for students who live in areas outside of the CBRS network coverage area. The hotspots and CBRS network are part of MVWSDConnect which is our Internet service for students.



Building the network

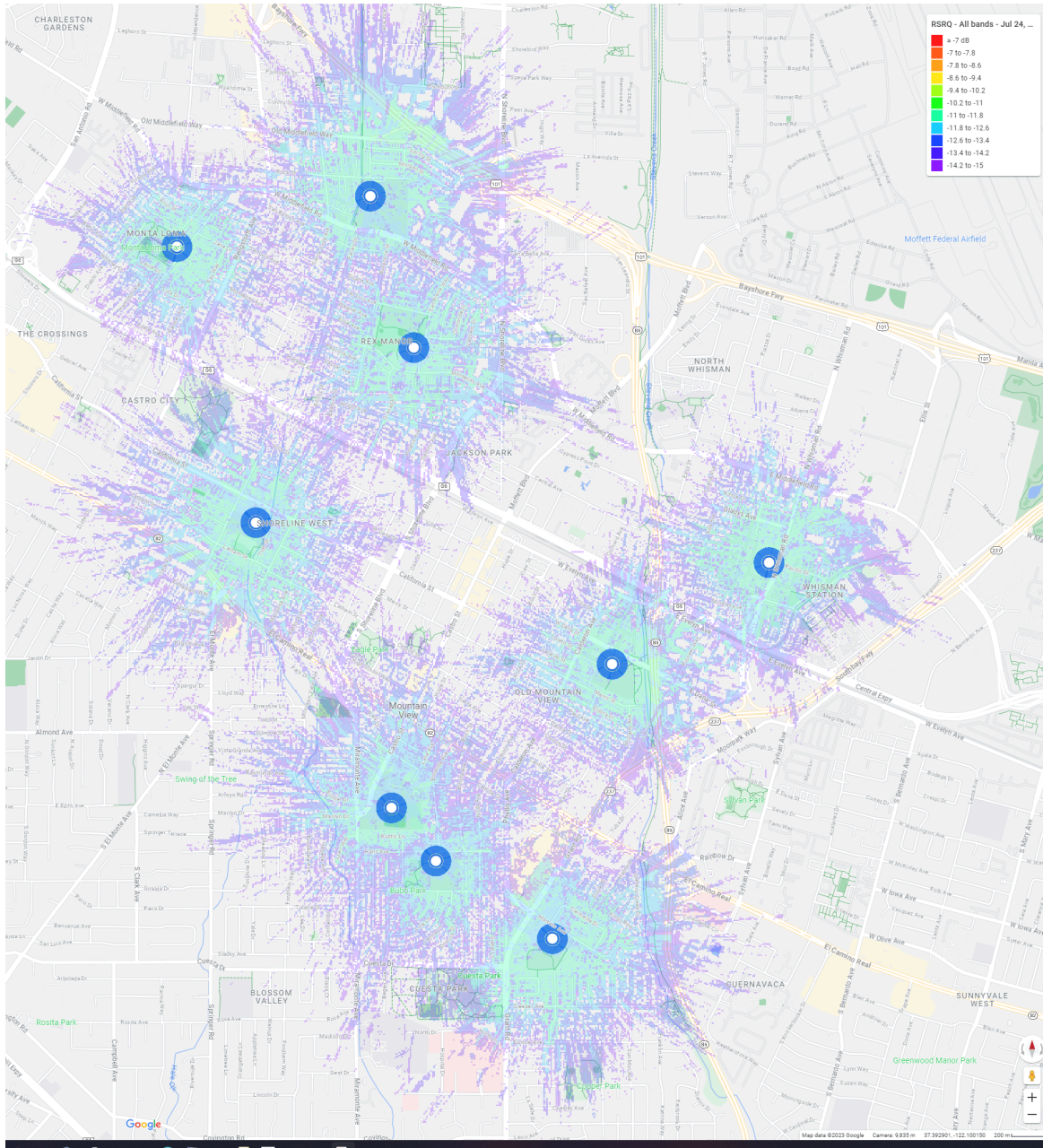
MVWSD uses the CBRS band to create an LTE network that extends 1-2 miles beyond the school campus. Each school campus has a roof mounted antenna with three LTE radios and three external antennas to provide 360 degrees of coverage. The photo below is of the installation at Graham. The radio installation is located on top of the Innovation building.



As of the 2023-2024 school year, each active school campus has this same radio setup to provide network coverage. Where possible the radios are mounted on the highest building on campus.

Current network coverage

The image below shows the District's current network coverage of Mountain View.



Connecting students to the network

The District has explored various options to provide student access to the network. The best option, with the strongest signal, is a wireless router from Cradlepoint. The Technology department pre-configures the router and sends it to the family. Once connected at the student's

residence, it connects to the LTE network and then provides a wireless network for devices in the home to connect to and access the Internet. The District's Technology Department can manage the device remotely and adjust the configuration of the wireless network to reduce network interference from other nearby wireless networks.

This year, the District has purchased 30 Chromebooks that have CBRS radios built-in to the device. These devices are being prioritized for students who may not have a permanent address and the ability to connect a router. To connect to the Internet they only need to have the Chromebook which is pre-configured to connect to the District's LTE network.

The Technology department met with staff from Google who reached out for feedback on how we were using CBRS and how they could make it easier to provision Chromebooks with CBRS.

The District has purchased 1200 of these Chromebooks for Kindergarten and 5th grade students in August. Each of the 1200 Chromebooks has a built-in CBRS radio that can be activated by assigning an eSIM to the device. This makes it easy to add CBRS support to a student's Chromebook even after they have been assigned the device.

Network Resiliency

This year standby generators were installed at Stevenson and Landels to provide uninterrupted power in the event of a power outage. This will ensure that the CBRS network will continue to provide Internet if there is a power outage at Stevenson or Landels. To protect against an outage at an individual school site, the radios are connected to a backup battery system. An outdoor battery system was purchased for Crittenden and the future staff housing project.

Expanding the network

Now that coverage at all of the current school sites is complete, the District is looking at expanding the network by installing CBRS radios at Whisman school campus and the MVWSD staff housing project. There is also a possibility of working with the City of Mountain View to install CBRS radios at the community center.

For the Whisman site, the Technology department has verified that there is a working fiber connection to the site that can be used to connect back to the District wide-area-network(WAN). The next steps will be to install network equipment at the site and order an antenna mount for the installation. The staff housing site will need a fiber connection to connect it back to the District WAN. We are still working through contract issues with Zayo for that project. The Technology department, with the help of city staff, verified a fiber connection to the community center that could be used to connect back to the District's WAN.