

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
Wireline Competition Bureau Seeks)	CC Docket No. 02-6
Comment on Draft Eligible Services)	GN Docket No. 09-51
List for Schools and Libraries)	WC Docket No. 13-184
Universal Service Program)	

REPLY COMMENTS of TV BAND SERVICE, LLC

TV Band Service, LLC (“TVBS”) submits these reply comments in response to the Public Notice released by the Wireline Competition Bureau (“Bureau”) in the above-captioned proceeding.

The Bureau seeks comment on a draft eligible services list (“ESL”) for the E-rate program, and in particular seeks input on how to define caching, including comment on the software or equipment the E-rate program should support as part of supporting caching, and on whether the program should support caching as a service.¹

The E-rate program should support caching services. As the FCC has noted, caching functionality can “optimize network performance, and potentially result in a more efficient use of E-rate funding.”² TVBS has previously expressed its support for allowing E-rate funding to be used for caching systems, which improve bandwidth efficiency by allowing for more efficient use of circuits, thus reducing bandwidth demand.³ Pilot programs in schools in North Carolina measuring the impact of caching software on network deployment have seen a 99.8% reduction in Wide Area Network (“WAN”) usage for certain applications, and caching services can easily achieve a reduction of 30% or more of total WAN requirements when applied to total network traffic.⁴

Eligible Caching Services Should Be Device and Platform Agnostic and Provide a Minimum Bandwidth Capacity Increase. Eligible educational caching services and equipment should include embedded server functionality capable of caching dynamic web content, video,

¹ Wireline Competition Bureau Seeks Comment on Draft Eligible Services List for Schools and Libraries Universal Service Program, CC Docket No. 02-6, GN Docket No. 09-51, WC Docket No. 13-184, *Public Notice*, DA 14-1130 (WTB rel. Aug. 4, 2014).

² Modernizing the E-rate Program for Schools and Libraries, WC Docket No. 13-184, *Report and Order and Further Notice of Proposed Rulemaking*, FCC 14-99 ¶ 130 (rel. Jul. 23, 2014).

³ See Reply Comments of TVBS, WC Docket No. 13-184 at 2 (filed Apr. 21, 2014).

⁴ See Letter from Deborah Broderson, Counsel to TVBS, to Marlene Dortch, Secretary, FCC, WC Docket No. 13-184 at 1 (filed May 29, 2014).

multimedia lessons, educator created content and other learning resources regardless of format. E-rate eligible educational caching performance should be measured in terms of an effective increase in bandwidth capacity or bandwidth savings, measured either by school or as a district average, and be device and platform agnostic. The whole network benefits of an eligible caching service will be evident from classroom time savings (providing more learning time), increased digital distribution/consumption and other previously stated benefits.

Our initial data shows a performance measurement as shown below:

Average Monthly Network Usage per Student:	1314 MBytes
Student population:	9000
Monthly External Bandwidth Required without URcast:	11.826 TeraBytes
Monthly External Bandwidth Required with URcast:	19356 MegaBytes
Network Transfer Savings:	11.8 TeraBytes / month
Total Caching Effect on Bandwidth:	99.84%⁵

We cite the separate filing of *Mount Vernon Elementary School* (“MVE”) in Flemington, WV as an example of performance measurement. MVE has a T-2 (5 Mb/s) WAN, adequate LAN/Wi-Fi connectivity and no cell coverage for a 6 mile radius. The challenge for MVE was how to “flip” their classes and utilize more digital learning resources with the bandwidth they have. Employing caching gave MVE with the capability to provide the learning experiences of a school with much higher bandwidth and enabled efficient distribution of data-rich video and other learning resource files over the existing network, with no additional WAN, Local Area Network, or Wi-Fi upgrades. MVE is currently a Windows device school but as a result of the network gear and learning resource savings stemming from its adoption of caching, MVE will be able to purchase lower-cost Android student devices, improving the penetration of technology in the classroom.

TVBS respectfully asks the Bureau to provide E-rate support for caching services, and adopt a definition for education-centric caching service that includes the above characteristics.

Respectfully Submitted by:

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⁵ Source: Pilot project with Lee County Schools, North Carolina. For more details on this project, *see id.*

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