

comment on the requirement, as mandated by the Paperwork Reduction Act of 1995. In addition, pursuant to the Small Business Paperwork Relief Act of 2002, the Commission will seek specific comment from the public on how it might “further reduce the information collection burden for small business concerns with fewer than 25 employees.”

**X. ORDERING CLAUSES**

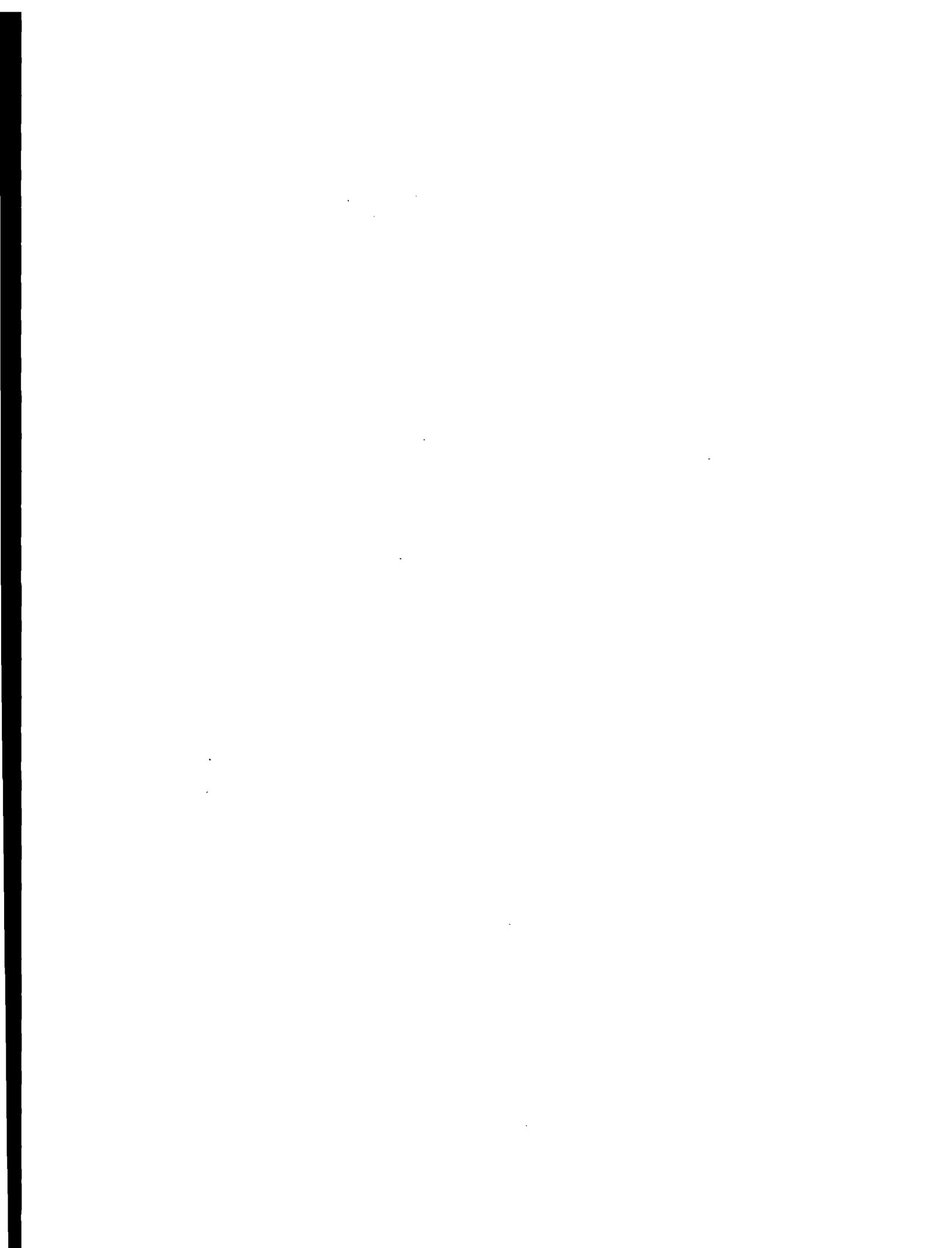
161. Accordingly, IT IS ORDERED that, pursuant to sections 1, 2, 4(i), 4(j), 225, 251, 254 and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 152, 154(i), 154(j), 225, 251, 254, 303(r), this *Further Notice of Proposed Rulemaking* IS ADOPTED.

162. IT IS FURTHER ORDERED that the Commission’s Consumer & Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this *Further Notice of Proposed Rulemaking*, including the Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

A handwritten signature in black ink, reading "Marlene H. Dortch". The signature is written in a cursive style with a large, stylized initial "M".

Marlene H. Dortch  
Secretary



## APPENDIX A

## TRS Broadband Pilot Program (TRSBPP)

## I. INTRODUCTION

1. This Appendix A sets forth one proposal to implement a TRS Broadband Pilot Program (TRSBPP). We seek comment on this proposal, and on each of the specific proposals for implementation set forth herein. We wish to emphasize that each of the specific proposals set forth in this Appendix A are just that – proposals. In making specific proposals, we do not signal that a decision has been reached, but instead intend to provide a “stake in the ground” to ensure that a detailed and comprehensive record is developed in response to this *Further Notice*.

2. As discussed in greater detail below, we propose to build on the work the Commission has done and continues to do in developing the universal service Lifeline and Link Up programs in order to take full advantage of the lessons learned in developing and operating those programs.<sup>1</sup> The Commission currently is seeking comment on proposals to reform and modernize the Lifeline and Link Up programs,<sup>2</sup> and we propose to ensure that any rules adopted to implement a TRSBPP, to the extent they are dependent on proposals or regulations in the Lifeline and Link Up proceeding, be made consistent as necessary with any rules the Commission adopts to improve the administration of the Lifeline and Link Up programs.

## II. SERVICES TO BE SUPPORTED

3. We seek comment on the nature of the Internet access services that should be supported by a TRSBPP. We note that providers generally assert that users must have an Internet connection with minimum upload and download speeds of 256 kilobits per second (kbps) in order for VRS to work properly.<sup>3</sup> We seek comment on whether the TRSBPP should support only those services which are advertised as being capable of sustaining 256 kbps or better bi-directionally. We seek comment on whether there are other connection characteristics, such as latency or jitter, that should be required of supported services. We further seek comment on the suitability of satellite broadband service for VRS use. We note that the Commission sought comment in the *USF-ICC Transformation NPRM* on using “actual” connection speeds rather than the “advertised” or “up to” speed, which may be different from the actual speed an end-user experiences, and on how to measure actual speeds.<sup>4</sup> We seek comment on whether any actual speed definition adopted in that context should be utilized to assess the suitability of connections for which TRSBPP support is contemplated.

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<sup>1</sup> See 47 C.F.R. §§ 54.400-418.

<sup>2</sup> See *Lifeline and Link Up Reform and Modernization NPRM*, 26 FCC Rcd 2770.

<sup>3</sup> See, e.g., Sorenson, Frequently Asked Questions, <http://www.sorensonvrs.com/faq#general> (last visited Sept. 9, 2011) (“In order for a Sorenson videophone to work properly, you must have a high-speed internet or broadband connection. Only high-speed internet provides the capacity to quickly send and receive high-quality video between videophone callers using sign language. If the internet speed is below 256k, the overall picture quality will be poor.”); Purple, HOVRS FAQ, <http://www.hovrs.com/cc/faq.aspx#70> (last visited Sept. 9, 2011) (“It is recommended that your upload speed and download speed be a minimum of 256 Kbps.”).

<sup>4</sup> See *Connect America Fund; A National Broadband Plan for Our Future; Establishing Just and Reasonable Rates for Local Exchange Carriers; High-Cost Universal Service Support; Developing a Unified Intercarrier Compensation Regime; Federal-State Joint Board on Universal Service; Lifeline and Link-Up*, WC Docket Nos. 10-90, 07-135, 05-337, 03-109, GN Docket No. 09-51, CC Docket Nos. 01-92, 96-45, Notice of Proposed Rulemaking and Further Notice of Proposed Rulemaking, 26 FCC Rcd 4554, 4594-98, paras. 113-118 (2011) (*USF-ICC Transformation NPRM*).

4. We also seek comment on whether the TRSBPP should support fixed services, mobile services, or both. Fixed connections – whether wireline or wireless – that are advertised as capable of delivering 256 kbps generally deliver such speeds to their customers,<sup>5</sup> and can be shared by all members of a residential unit. Mobility is a desirable feature for consumers,<sup>6</sup> and mobile data services increasingly are advertised as being capable of delivering 256 kbps or better upstream performance.<sup>7</sup> However, the actual performance speed for mobile wireless services can be affected by the signal strength at the location of the end user and the amount of network traffic, which in turn can be affected by many factors that vary moment to moment, including proximity of the end user to the cell site, terrain, and obstructions.<sup>8</sup> Further, as we have learned in the context of the Lifeline program, the decision to support multiple services that can compete for a subscriber can add a layer of complexity to program administration, and the decision to support such competitive services can increase the likelihood of duplicative support.<sup>9</sup> How should we balance these considerations? Would the VRSURD help address these concerns?

5. Fixed broadband Internet access services are often available as part of a larger service bundle,<sup>10</sup> but also generally are available as a standalone offering at a fixed monthly price, as are a limited number of mobile, prepaid, data only wireless plans.<sup>11</sup> Mobile data plans for smartphones, however, generally must be purchased as part of a bundle with a voice plan offered by a mobile service provider.<sup>12</sup> Providing support for bundled service offerings could result in TRSBPP funds being spent on services other than broadband (*i.e.*, the services with which the broadband is bundled). We therefore seek comment on whether the TRSBPP should support only standalone service offerings or whether the broadband portion of bundles should be supported. If bundled broadband is to be supported, how should the cost of the bundle be allocated among services in the bundle? To the extent that data usage caps are becoming more common, does this affect the suitability of broadband services for VRS use?

### III. AMOUNT OF DISCOUNT

6. As discussed in greater detail below, we propose that broadband providers will provide discounts to eligible households or residences and receive reimbursement from the TRS Fund for the provision of such discounts. At the same time, Project Endeavor, a program established by Communication Service for the Deaf, Inc. and funded through the National Telecommunications and

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<sup>5</sup> See FCC, Office of Engineering and Technology and Consumer and Governmental Affairs Bureau, *Measuring Broadband America*, 19, 21 (rel. Aug. 2, 2011) (*Measuring Broadband in America*), available at [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-308828A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-308828A1.pdf).

<sup>6</sup> See, e.g., May 11, 2010 Comment of Jedediah Patton, CG Docket 03-123 (“I want the mobile device!”); Aug. 18, 2010 Comment of Chris Littlewood, CG Docket No. 10-51 (“Wireless VRS is essential for functional equivalency. Hearing people can make wireless calls on cell phones. In a very mobile society, this is very important to the deaf/hoh for travel, work, and communicating with families and friends just as hearing people do.”).

<sup>7</sup> *Fifteenth Mobile Wireless Competition Report* at paras. 108-123.

<sup>8</sup> *Seventh Broadband Progress Report*, 26 FCC Rcd at 8083-84, appendix E at para. 17..

<sup>9</sup> See *Lifeline and Link Up Reform and Modernization NPRM*, 26 FCC Rcd at 2806, para. 110; see also *Further Notice* paras.20-22, discussing limiting eligibility to a single connection per residence or household.

<sup>10</sup> Most users (70 percent) receive broadband bundled with other services. Horrigan, *Broadband Adoption and Use in America* 3.

<sup>11</sup> *Fifteenth Mobile Wireless Competition Report* at para. 102 (describing prepaid “all-you-can-eat” wireless data plans for laptops).

<sup>12</sup> *Fifteenth Mobile Wireless Competition Report* at paras. 81-102.

Information Administration's Broadband Technology Opportunities Program,<sup>13</sup> has experienced difficulty in obtaining subscribers, even when offering significant discounts on service and equipment.<sup>14</sup> We propose to establish the discount amount for the TRSBPP at a level that will make broadband Internet access service capable of supporting VRS at no cost, or very low cost, to consumers. Below, we seek comment on how to set the amount of the discount that should be provided to qualifying households or residences.

7. One approach would be to provide each qualifying household or residence a discount equal to the lowest cost, generally available service offering from a provider that meets the performance standards discussed in Appendix A, section II above.<sup>15</sup> Given that most fiber, DSL, and cable connections are capable of providing 256kbps upstream,<sup>16</sup> we expect that the "basic" standalone offering of most providers would qualify. In those areas where terrestrial broadband is not available, satellite offerings are available at \$79.95 and \$89.99.<sup>17</sup>

8. An alternative approach would be to provide a flat discount to broadband providers – an approach that would simplify the administration of the program, but likely result in the payment of discounts that are greater or less than the cost of the service provided. Would such an approach be "efficient" as required under the statute, or would it raise the potential of waste and abuse? How would such a discount be calculated? Though the Commission does not have reliable price data on basic

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<sup>13</sup> The National Telecommunications and Information Administration (NTIA) administers the Broadband Technologies Opportunities Program (BTOP) pursuant to the American Recovery and Reinvestment Act (Recovery Act). American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat. 115, 128 (2009). The BTOP program has allocated more than \$4 billion in the form of grants for initiatives to promote broadband adoption and spur deployment in unserved and underserved areas. NTIA, THE BROADBAND TECHNOLOGY OPPORTUNITIES PROGRAM, EXPANDING BROADBAND ACCESS AND ADOPTION IN COMMUNITIES ACROSS AMERICA: OVERVIEW OF GRANT AWARDS 2 (2010) (NTIA, OVERVIEW OF GRANT AWARDS), *available at* [http://www.ntia.doc.gov/reports/2010/NTIA\\_Report\\_on\\_BTOP\\_12142010.pdf](http://www.ntia.doc.gov/reports/2010/NTIA_Report_on_BTOP_12142010.pdf). Project Endeavor is designed to "expand broadband adoption among people who are deaf and hard of hearing and provide them with online tools to more fully participate in the digital economy" by, among other things, offering discounted computers and discounted broadband services to individuals meeting the qualifications. [http://www2.ntia.doc.gov/files/grantees/communicationservicesforthedeaf\\_sba\\_infrastructure\\_part1.pdf](http://www2.ntia.doc.gov/files/grantees/communicationservicesforthedeaf_sba_infrastructure_part1.pdf).

<sup>14</sup> See CSDVRS, Quarterly Performance Progress Report for Sustainable Adoption, May 18, 2011, para. 2.a *available at* [http://www2.ntia.doc.gov/files/grantees/q1-2011\\_sba\\_46-41-b10548commservice.pdf](http://www2.ntia.doc.gov/files/grantees/q1-2011_sba_46-41-b10548commservice.pdf) ("The final end user cost for the broadband and equipment service options outline in the grant were more expensive than our consumers base could afford."); Project Endeavor, Equipment List, *available at* [www.projectendeavor.com/Portals/0/pdf/BTOPEquipList\\_e.pdf](http://www.projectendeavor.com/Portals/0/pdf/BTOPEquipList_e.pdf) (describing equipment and service discounts)..

<sup>15</sup> See also *Further Notice paras. 20-21* for a discussion of limiting eligibility to one per household or residential address.

<sup>16</sup> See, e.g., FCC, Office of Engineering and Technology and Consumer and Governmental Affairs Bureau, Measuring Broadband America, 19, 21 (rel. Aug. 2, 2011) (Measuring Broadband in America), *available at* [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-308828A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-308828A1.pdf); see also OBI, THE BROADBAND AVAILABILITY GAP 94-95, 99-100, 104-106 (OBI Technical Paper No. 1, 2010) (2010 BROADBAND AVAILABILITY GAP), *attached to Connect America Fund NOI*, 25 FCC Rcd at 6721, App. C, *available at* <http://download.broadband.gov/plan/the-broadband-availability-gap-obi-technical-paper-no-1.pdf>.

<sup>17</sup> Wildblue, Availability and Offers, <http://www.wildblue.com/getWildblue/doServiceAvailabilitySearchAction.do> (last visited Sept. 9, 2011); HughesNet, Plans and Pricing, <http://consumer.hughesnet.com/plans.cfm> (last visited Sept. 9, 2011). We note that the services offered by WildBlue and HughesNet are subject to usage caps which may render them unsuitable for individuals with high call volumes. HughesNet, Fair Access Policy, <http://web.hughesnet.com/sites/legal/Pages/FairAccessPolicy.aspx> (last visited Sept. 9, 2011); Wildblue, Fair Access Policy Information, <http://www.wildblue.com/fap/> (last visited Sept. 9, 2011).

broadband Internet access service, OECD data indicates that the median monthly subscription price for connections below 2.5 Mbps advertised download speed is \$27.21,<sup>18</sup> while the median monthly subscription price for connections between 2.5 and 15 Mbps advertised download speed is \$36.25.<sup>19</sup> In 2010, Ookla placed the average monthly cost of broadband Internet access service in the United States at \$47.32.<sup>20</sup> Would it be appropriate to set the TRSBPP discount at one of these levels, or some other level? Could the annual survey of urban broadband rates authorized in the Commission's recent *Connect America Fund Order* or the rate information contemplated by the Commission in the *FCC Form 477 Modernization NPRM* be used to help set the discount?<sup>21</sup> Even if the subsidy amount turns out to be, in aggregate, lower than the actual cost of broadband Internet access, would it be reasonable to expect end users and/or providers to make up the difference?

9. We seek comment on these approaches to determining the amount of the discount should be offered and to whom. Which of these approaches best balances the goals of the program? Are there other approaches that would better fulfill the goals of the statute and the program?

10. *Minimum consumer charges.* We note that the Federal-State Joint Board on Universal Service recommended that, to guard against waste, fraud, and abuse in the Lifeline program, the Commission consider whether a minimum monthly rate should be paid by all Lifeline subscribers, including eligible Tribal subscribers.<sup>22</sup> We seek comment on whether or not requiring a minimum monthly rate under the TRSBPP is appropriate. Are there other steps the Commission could take to address concerns associated with consumers having a "stake in the game?"

#### IV. ELIGIBILITY

11. We seek comment on what criteria should be established for eligibility for TRSBPP support. Below we seek particular comment on three potential criteria: (a) low income, (b) qualifying disability, and (c) fluency in American Sign Language. We seek comment on whether additional criteria should be established for program eligibility. We also seek comment on how we should operationalize those criteria.

12. *Income Eligibility.* We seek comment on what individuals seeking TRSBPP support should be required to submit to demonstrate "low income" eligibility for the program. One possibility would be to adopt the existing federal Lifeline program eligibility criteria. As discussed in the *Lifeline*

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<sup>18</sup> Organisation for Economic Co-operation and Development (OECD), Average Monthly Subscription Price For Connections Below 2.5 Mbps (Sept. 2010), With/Without Line Charge, available at <http://www.oecd.org/dataoecd/22/45/39575011.xls>.

<sup>19</sup> OECD, Average Monthly Subscription Price For Connections Between 2.5 And 15 Mbps (Sept. 2010), With/Without Line Charge, available at <http://www.oecd.org/dataoecd/22/46/39575020.xls>.

<sup>20</sup> Telecompetitor, Ookla: Average U.S. Monthly Broadband Cost - \$47.32, <http://www.telecompetitor.com/ookla-average-u-s-monthly-broadband-cost-47-32/> (last visited Sept. 9, 2011).

<sup>21</sup> See *Connect America Fund; A National Broadband Plan for Our Future; Establishing Just and Reasonable Rates for Local Exchange Carriers; High-Cost Universal Service Support; Developing a Unified Intercarrier Compensation Regime; Federal-State Joint Board on Universal Service; Lifeline and Link-Up*, WC Docket Nos. 10-90, 07-135, 05-337, 03-109, GN Docket No. 09-51, CC Docket Nos. 01-92, 96-45, Report and Order and Further Notice of Proposed Rulemaking, FCC 11-161, para. 114 (rel. Nov. 18, 2011); *Modernizing the FCC Form 477 Data Program*, WC Docket Nos. 11-10, 07-38, 08-190, 10-132, Notice of Proposed Rulemaking, 26 FCC Rcd 1508, 1533-36, paras. 66-76 (2011).

<sup>22</sup> *Federal-State Joint Board on Universal Service, Lifeline and Link Up*, CC Docket No. 96-45, WC Docket No. 03-109, Recommended Decision, 25 FCC Rcd 15598, 15626-27, para. 79 (Jt. Bd. 2010) (*2010 Recommended Decision*); *Lifeline and Link Up Reform and Modernization NPRM*, 26 FCC Rcd at 2798, paras. 85-92.

and *Link Up Reform and Modernization NPRM*, Lifeline discounts are available to eligible consumers in households that qualify as “low-income,” but there is no uniform national definition of households for all programs. The Commission’s Lifeline eligibility criteria state that eligible consumers qualify for Lifeline assistance if they are at or below 135 percent of the Federal Poverty Guidelines, or participate in various income-based public-assistance programs, such as Medicaid, Food Stamps, and Federal Public Housing Assistance.<sup>23</sup> Should the Commission adopt these Lifeline eligibility criteria as the income eligibility criteria for the TRSBPP? To the extent the Commission modifies its Lifeline criteria, should the TRSBPP criteria be modified as well?

13. States with their own Lifeline programs determine qualifications for Lifeline. States must base Lifeline eligibility criteria solely on income or factors directly related to income, but within that general rule states take varying approaches.<sup>24</sup> For instance, of the twenty-two states that allow participation in the Lifeline program based on income alone, some have established an income threshold that is higher than the Commission’s, which enables more low-income consumers to enroll, while others have established a lower threshold.<sup>25</sup> Should the Commission require that consumers meet state Lifeline income eligibility criteria in order to qualify for TRSBPP support, or should federal eligibility requirements serve as a “floor” upon which states can build?<sup>26</sup>

14. What other income eligibility criteria might be appropriate? For example, the Commission adopted a rule to allow individuals enrolled in federal subsidy programs with income thresholds lower than 400 percent of the FPG threshold to automatically be deemed income eligible for the Commission’s National Deaf-Blind Equipment Distribution Program (NDBEDP), a program that was set up by Congress in the CVAA to distribute end user communications equipment to low income Americans who are deaf-blind.<sup>27</sup> We also note that Project Endeavor established income eligibility criteria that are similar, but not identical, to the Commission’s Lifeline criteria.<sup>28</sup> Should the Commission require that any or all of these additional qualifying criteria, such as participation in the Women, Infants and Children program (WIC), or status as a Transition Plan Student or and active Vocational Rehabilitation Client, be met for a residence to receive TRSBPP support?

15. *Eligibility based on disability.* We seek comment on how to ensure that TRSBPP support is directed to those who are “deaf, hard of hearing, deaf-blind, or who [have] a speech disability.”<sup>29</sup>

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<sup>23</sup> 47 C.F.R. § 54.409(b). If a consumer’s eligibility is based on income, the consumer must provide acceptable documentation of income eligibility including, among other things, the prior year’s state, federal, or tribal tax return and a current income statement from an employer. 47 C.F.R. §§ 54.410(a)(2), 54.416.

<sup>24</sup> See 47 C.F.R. §§ 54.409 (consumer qualification for Lifeline), 54.410 (certification and verification of consumer qualification for Lifeline), 54.415 (consumer qualification for Link Up), 54.416 (certification of consumer qualification for Link Up). States must base eligibility criteria solely on income or factors directly related to income. *Id.* §§ 54.409(a), 54.415(a).

<sup>25</sup> U.S. GOVERNMENT ACCOUNTABILITY OFFICE, REPORT TO CONGRESSIONAL REQUESTERS, GAO 11-11, TELECOMMUNICATIONS: IMPROVED MANAGEMENT CAN ENHANCE FCC DECISION MAKING FOR THE UNIVERSAL SERVICE FUND LOW-INCOME PROGRAM 50 (2010) (2010 GAO REPORT).

<sup>26</sup> 2010 *Recommended Decision*, 25 FCC Rcd at 15607, 15608, paras. 26, 28.

<sup>27</sup> CVAA § 105; 47 U.S.C. § 719; *CVAA Implementation Order*, 26 FCC Rcd at 5656-57, 5657-58, paras. 37, 40.

<sup>28</sup> Project Endeavor, Eligibility Requirements 4-2-11 (dated Apr. 2, 2011), available at [http://www.projectendeavor.com/Portals/0/pdf/BTOP\\_EligibilityRequirements4-14a.pdf](http://www.projectendeavor.com/Portals/0/pdf/BTOP_EligibilityRequirements4-14a.pdf).

<sup>29</sup> 47 U.S.C. § 225(a)(3).

Neither the statute nor the Commission's rules define these terms.<sup>30</sup> It does not appear that VRS providers generally define these terms either, though many require that users certify that they have a qualifying disability as part of their terms of service.<sup>31</sup>

16. Should direct evidence of hearing or vision loss be required? Project Endeavor requires that an applicant submit a form signed by a professional to certify that he or she is "deaf or hard of hearing and has a bilateral hearing loss of 40db or greater."<sup>32</sup> To qualify for funding support under the NDBEDP, individuals must provide verification from any "practicing professional that has direct knowledge of the individual's disability" or provide documentation from a public or private agency, such as a Social Security determination letter, that serves as verification of the person's disability.<sup>33</sup> The International Committee of Sport for the Deaf requires that "deaf and hard of hearing athletes" seeking to participate submit an audiogram from a qualified audiologist demonstrating "a hearing loss of at least 55dB per tone average (PTA) in the better ear (three-tone pure tone average at 500, 1000 and 2000 Hertz, air conduction, ISO 1969 Standard)."<sup>34</sup> Would any of these criteria be necessary and sufficient to demonstrate eligibility for TRSBPP support? How would individuals with a speech disability demonstrate eligibility?

17. Should indirect evidence of disability be sufficient? For example, would it be appropriate to deem an individual eligible for TRSBPP support if he or she provides evidence of enrollment in a Division of Vocational Rehabilitation (DVR) program on the basis of a speech or hearing disability?<sup>35</sup> Should enrollment in the Supplemental Security Income program or the Social Security Disability

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<sup>30</sup> The CVAA does define "individuals who are deaf-blind," but only for the purposes of the specialized customer premises equipment programs for which funding is authorized under section 719 of the Act. *See* 47 U.S.C. § 719(b) ("For purposes of this subsection, the term 'individuals who are deaf-blind' has the same meaning given such term in the Helen Keller National Center Act, as amended by the Rehabilitation Act Amendments of 1992 (29 U.S.C. 1905(2))").

<sup>31</sup> Sorenson, VP-200 Application, [http://www.sorensonvrs.com/apply/apply\\_form?up=1985&down=3657](http://www.sorensonvrs.com/apply/apply_form?up=1985&down=3657) (last visited Sept. 9, 2011) ("by clicking "Submit" below, you certify that you have a medically recognized hearing or speech disability necessitating your use of TRS."); Purple, Purple Relay Service Terms and Conditions & Acceptable Use Policies, <http://www.hovrs.com/common/tc.aspx> (last visited Sept. 9, 2011) ("In order to download the Software and access the Services you must certify that you are a Qualified Person (*i.e.*, Deaf, Hard of Hearing or speech disabled)."); CSDVRS, Z Product Agreement, <http://www.zvrs.com/company/the-z/legal-disclaimer/product-agreement> (last visited Sept. 9, 2011) ("Customer represents and warrants to CSDVRS that: (i) Customer is deaf or hard of hearing ....").

<sup>32</sup> Project Endeavor, Eligibility Requirements 4-2-11 (dated Apr. 2, 2011), *available at* [http://www.projectendeavor.com/Portals/0/pdf/BTOP\\_EligibilityRequirements4-14a.pdf](http://www.projectendeavor.com/Portals/0/pdf/BTOP_EligibilityRequirements4-14a.pdf).

<sup>33</sup> 47 C.F.R. § 64.610(d). If providing verification from a professional, an applicant for communications equipment under the NDBEDP may use, among others, community-based service providers, vision or hearing related professionals, vocational rehabilitation counselors, educators, audiologists, speech pathologists, hearing instrument specialists, and medical or health professionals. 47 C.F.R. § 64.610(d)(1)(i). Such professionals must attest, either to the best of their knowledge or under penalty of perjury, that the applicant is an individual who is deaf-blind. 47 C.F.R. § 64.610(d)(1)(ii). The verification must include the attesting professional's name, title, and contact information. 47 C.F.R. § 64.610(d)(1)(iv).

<sup>34</sup> International Committee of Sport for the Deaf, Audiogram Regulations, Version 2.1 at 2 (Nov. 13, 1999), *available at* [www.ciss.org/pdf/AudiogramRegulations.pdf](http://www.ciss.org/pdf/AudiogramRegulations.pdf).

<sup>35</sup> *See* Florida Department of Education, Division of Vocational Rehabilitation, Deaf, Hard of Hearing, <http://www.rehabworks.org/deaf.shtml> (last visited Sept. 9, 2011); Washington State Department of Social and Health Services, Division of Vocational Rehabilitation, Deaf and Hard of Hearing, <http://www.dshs.wa.gov/dvr/Individuals/DeafHOH.aspx> (last visited Sept. 9, 2011).

Insurance program on the basis of a hearing or speech disability be sufficient?<sup>36</sup> If so, how should such enrollment be demonstrated? What other criteria, if any, should the Commission establish for individuals to be considered to have a qualifying disability for the purposes of qualifying for TRSBPP support?

18. Should the Fund Administrator, the Commission, or some other entity be responsible for ensuring that persons receiving TRSBPP support actually qualify? For purposes of auditing or monitoring the program, how should the Commission or Administrator assess whether support actually went to qualified persons?

19. *Fluency in American Sign Language.* Under the Commission's rules, VRS is defined as a "telecommunications relay service that allows people with a hearing or speech disabilities *who use sign language* to communicate with voice telephone users through video equipment. . .".<sup>37</sup> We therefore seek comment on whether those seeking to qualify for TRSBPP support should be required to demonstrate some level of fluency in ASL. If so, how should "fluency" be defined, and what standards should be established to determine whether an applicant is fluent? Who should be responsible for determining if an individual is fluent? Would it be administratively more feasible for individuals seeking to qualify for TRSBPP support to certify as to ASL fluency, subject to validation by the Commission, the Administrator, or a designee? If such an approach were to be adopted, would validating the fluency of a random sample of users be appropriate, or is 100% validation necessary?

20. *Eligibility limited to one per household or residential address.* We propose to limit support to a single connection per residence or household in order to facilitate the statutory goal of making TRS "available . . . to the extent possible and in the most efficient manner," while at the same time controlling the growth of the TRS Fund and preventing waste, fraud, and abuse.<sup>38</sup> A single connection at a residence or household should be sufficient to allow all eligible individuals in a residence or household to access VRS and other Internet-based TRS services, thus furthering the goals of the TRSBPP while preventing unnecessary expenditures for duplicative connections. We seek comment on this proposal.

21. We also seek comment on how to implement this proposal in the context of the TRSBPP. First, we propose to adopt the use and definition of "residential residence" or "household" ultimately adopted by the Commission in connection with the *Lifeline and Link Up Modernization NPRM*.<sup>39</sup> We seek comment on this proposal. We also seek comment on how best to interpret the one-per-household or residential address restriction in light of current service offerings and in the context of group living arrangements or other situations that may pose unique circumstances.<sup>40</sup> How should the Commission or

<sup>36</sup> United States Social Security Administration, Disability Programs, <http://www.ssa.gov/disability/> (last visited Sept. 9, 2011).

<sup>37</sup> See 47 C.F.R. 64.601(a)(26) (emphasis added).

<sup>38</sup> *Lifeline and Link Up Reform and Modernization NPRM*, 26 FCC Rcd at 2805-10, paras. 106-125.

<sup>39</sup> *Lifeline and Link Up Reform and Modernization NPRM*, 26 FCC Rcd at 2872-3, Appendix A (proposed 47 C.F.R. § 54.408); Public Notice, Further Inquiry Into Four Issues in the Universal Service Lifeline/Link Up Reform and Modernization Proceeding, DA 11-1346 (rel. Aug. 5, 2011) at 3-6.

<sup>40</sup> *Lifeline and Link Up Reform and Modernization NPRM*, 26 FCC Rcd at 2805-6, para. 109. In an October 2009 Public Notice, the Bureau sought comment on how to apply the one-per-household rule to Lifeline support in the context of group living facilities, such as assisted-living centers, Tribal residences, and apartment buildings. See *Comment Sought on TracFone Request for Clarification of Universal Service Lifeline Program "One-Per-Household" Rule As Applied to Group Living Facilities*, WC Docket No. 03-109, Public Notice, 24 FCC Rcd 12788 (Wireline Comp. Bur. 2009) ("One-Per-Household" Public Notice); Letter from Mitchell F. Brecher, Counsel for TracFone, to Marlene H. Dortch, Secretary, Federal Communications Commission, WC Docket No. 03-109 (filed July 17, 2009).

Administrator determine that TRSBPP support is being provided in a manner consistent with any definition of “household” or “residence” adopted? Should providers be able to rely on the representation of the person signing up for the support? Would the VRSURD constitute a sufficient safeguard?<sup>41</sup>

22. We seek comment on whether a consumer’s decision to obtain services supported by the TRSBPP, if adopted, should affect eligibility for the Lifeline or Link Up programs, or vice versa. Given that households and residences may consist of both individuals who are disabled and individuals who are not, we propose to allow households or residences that qualify for both TRSBPP support and Lifeline/Link Up support to take support under both programs, but not to purchase duplicative services utilizing both programs.<sup>42</sup> So, for example, we propose to allow a single household or residence to obtain a broadband connection supported by the TRSBPP and traditional telephone service supported by Lifeline and Link Up. We do not propose to allow a single household or residence to obtain one broadband connection supported by the TRSBPP and a separate broadband connection supported by the Lifeline and Link Up programs. We seek comment on whether to allow a single household or residence to obtain one broadband connection supported by both the TRSBPP and the Lifeline and Link Up programs. Our intent is to ensure that households and residences most in need of support for access to the nation’s communications services are not forced to choose which members of their households will receive assistance.

## V. CERTIFICATION AND VERIFICATION

23. Our obligation to minimize waste, fraud, and abuse in Commission programs necessitates that we require individuals who are eligible for TRSBPP support be required to certify as to their eligibility and periodically verify their continued eligibility.<sup>43</sup> Given the Commission’s experience in administering the Lifeline and Link Up programs, we below propose to adopt the Lifeline and Link Up certification and verification rules ultimately adopted in the *Lifeline and Link Up Modernization NPRM*, modified as necessary to reflect the differences between the Lifeline program and the proposed TRSBPP.

24. We note that certification and verification practices vary among the non-federal default states.<sup>44</sup> We propose, however, to use only the federal default rules as our foundation. Reliance on a single set of federal rules will make the program simpler to administer, reduce confusion among VRS

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<sup>41</sup> See section V.A, Appendix D.

<sup>42</sup> To the extent that the TRSBPP qualification rules differ from those established for the Lifeline and Link Up programs, we expect that a household or residence would need to meet both sets of criteria independently. Depending on the rules that are adopted in this proceeding and in the *Lifeline and Link Up and Modernization NPRM* proceeding, qualification for the TRSBPP would not necessarily indicate that a household or residence is qualified for Lifeline or Link Up.

<sup>43</sup> “Certification” refers to the initial determination of eligibility for the program; “verification” refers to subsequent determinations of ongoing eligibility. See *Lifeline and Link Up Reform and Modernization NPRM*, 26 FCC Rcd at 2822-24, paras. 158-66; see also *2010 Recommended Decision*, 25 FCC Rcd at 15606-15611, paras. 23-34.

<sup>44</sup> *Lifeline and Link Up Reform and Modernization NPRM*, 26 FCC Rcd at 2823, para. 162. States that do not maintain their own low-income programs are known as federal default states. There currently are ten default states (eight states and two territories). The non-federal-default states do not follow all federal rules. *Id.* at para. 19. According to GAO, 16 states permit self-certification under penalty of perjury, 25 states require documentation of enrollment in a qualifying program, and 9 states have in place automatic enrollment of eligible consumers. *Id.*, citing 2010 GAO REPORT at 51. 4 states conduct random audits of Lifeline recipients, 20 states require periodic submission of supporting documents, 13 states require an annual self-certification, 13 states use an online verification system using databases of public assistance participants or income reports, and 17 states conduct verification by confirming the continued eligibility of a statistically valid sample of Lifeline recipients. *Id.*, citing 2010 GAO REPORT at 51.

providers and consumers, and is consistent with our treatment of VRS as a federal program.<sup>45</sup> We seek comment on this proposal.

25. *Initial Certification.* Section 54.409(d) of the Commission's rules permits consumers in federal default states to prove eligibility for Lifeline by either: (1) self-certifying that they are eligible for Lifeline support based on participation in certain federal programs; or (2) providing documentation showing that they meet the income threshold requirements set forth in our rules.<sup>46</sup>

26. The Commission has proposed, however, to eliminate the option of self-certifying Lifeline eligibility and to require all consumers in all states to present documentation of program eligibility when enrolling.<sup>47</sup> The Commission continues to consider the record in the proceeding. Some commenters have opposed this requirement, while others have supported it.<sup>48</sup> We propose to adopt requirements that are consistent with our ultimate decision in the *Lifeline and Link Up Modernization NPRM* proceeding. Should we require that eligible consumers present documentation of program eligibility, we further propose that records of such certification be maintained in the form directed by the TRS Fund Administrator, after consultation with CGB, or by Commission rules.<sup>49</sup> We seek comment on these proposals.

27. *Verification.* Currently, in the federal default states, eligible telecommunications carriers (ETCs) must annually verify the continued Lifeline eligibility for a statistically valid random sample of their customers.<sup>50</sup> Specifically, those subscribers that are sampled must present or submit a copy of their Lifeline-qualifying public assistance card and self-certify under penalty of perjury that they continue to participate in that program. Subscribers qualifying based on income must present documentation of income, and self-certify the number of individuals in the household and that the documentation presented accurately represents their household income. ETCs are required to retain copies of the self-certifications (but not the underlying documentation of income).

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<sup>45</sup> See, e.g., *Lifeline and Link Up Reform and Modernization NPRM*, 26 FCC Rcd at 2820-21, 2823, paras. 154-55, 165.

<sup>46</sup> 47 C.F.R. § 54.409(d).

<sup>47</sup> *Lifeline and Link Up Reform and Modernization NPRM*, 26 FCC Rcd at 2819, 2822-2831, paras. 150, 158-198.

<sup>48</sup> For comments in WC Docket Nos. 03-109, 11-42, and CC Docket No. 96-45 in support of a rule requiring consumers to provide documentation of program-based eligibility, see, e.g., CenturyLink Comments at 16-17; InComm Reply Comments at 4; NYS PSC Comments at 7; MI PSC Comments at 8; Ohio PUC Comments at 18; Leap Wireless Reply Comments at 13; DC PSC Comments at 5; Missouri PSC Comments at 13; Nebraska PSC Comments at 12; Letter from Commissioner Anne Boyle, Nebraska Public Service Commission, to Julius Genachowski, Chairman, Federal Communications Commission, WC Docket Nos. 03-109, 11-42, CC Docket No. 96-45 (dated July 13, 2011) (stating that self-certification exacerbates the potential for waste, fraud, and abuse in the Lifeline program). For comments in WC Docket Nos. 03-109, 11-42, and CC Docket No. 96-45 opposing this proposal, see, e.g., AARP Comments at 9 (stating that there is no basis to believe that large numbers of consumers will fraudulently assert eligibility for Lifeline, particularly if verification surveys are conducted on a yearly basis); COMPTEL Comments at 19-20; Consumer Groups Comments at 24-25; GCI Comments at 48; Keep USF Fair Coalition Comments at 2; Media Action Grassroots Network Comments at 20; NASUCA Reply Comments at 13-14; Nexus Reply Comments at 11; USTelecom Comments at 6; RainbowPUSH Comments at 1; OpenAccess, et. al Comments at 4; TracFone Comments at 28-29; Yourtel Comments at 12-13; State of Alaska Reply Comments at 3; see also Letter from Commissioner Deborah Taylor-Tate, Federal Communications Commission, to Julius Genachowski, Chairman, Federal Communications Commission, WC Docket Nos. 03-109, 11-42, CC Docket No. 96-45, at 2 (Aug. 1, 2011).

<sup>49</sup> See, e.g., 47 C.F.R. § 54.417.

<sup>50</sup> *Id.* § 54.410(c).

28. We seek comment on whether the sampling methodology utilized for the Lifeline program is appropriate for the TRSBPP. Given that the number of low income individuals who use ASL and are deaf, hard of hearing, deaf-blind, or have speech disabilities in the United States likely is a small percentage of the total number of low income individuals in the United States, we expect far fewer individuals to qualify for TRSBPP support than do for Lifeline and Link Up support. Would a more thorough verification process be appropriate? Should all TRSBPP support recipients be required to validate their eligibility annually, every other year, or some other period of time? Should verification requirements be limited to income eligibility, or should proof of eligibility across all qualifications be required? Should the entity responsible for verification be required to retain proof of verification? How long should they have to maintain such proof? Should the Administrator and Commission have access to such information upon request? Should the entity that verified the person as being eligible for support be responsible for repayment of support provided to ineligible recipients?

## VI. ELIGIBILITY TO PROVIDE SUPPORTED SERVICES

29. The National Broadband Plan recommended that any broadband provider meeting criteria established by the Commission – whether wired or wireless, fixed or mobile, terrestrial or satellite – should be eligible to participate in Lifeline/Link Up.<sup>51</sup> We seek comment on how to define “eligible broadband provider.” Specifically, we seek comment on whether all broadband providers meeting such criteria should likewise be able to provide services supported by the TRSBPP, and other criteria unique to the universal service programs – such as ETC designation – should also be required for TRSBPP participation.

30. We note that all ETCs are required to offer Lifeline and Link Up services.<sup>52</sup> We seek comment on whether there are steps the Commission could take to ensure that there are broadband providers available and willing to participate in the TRSBPP. Should all broadband providers, or whatever subset of broadband providers is eligible to provide services supported by the TRSBPP, be *required* to provide broadband services supported by the TRSBPP? Should these same entities be required to promote the availability of the program? If so, should the Commission establish minimum standards with respect to the type or amount of promotion required? How should the Commission measure or assess whether the entity is meeting such a requirement?

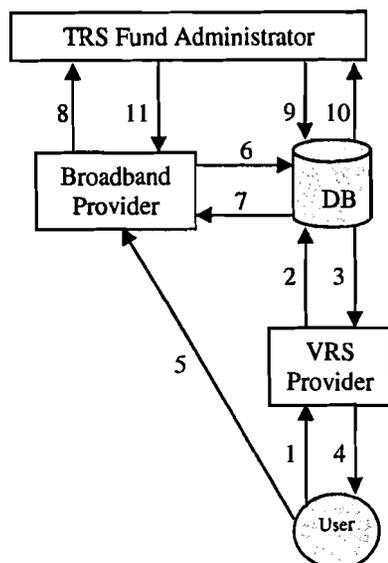
## VII. ENROLLMENT PROCEDURES

31. *Enrollment.* Should we choose to adopt a per-user compensation system, VRS providers will have a strong incentive to facilitate TRSBPP enrollment for qualifying consumers, as they will be the primary financial beneficiaries of the addition of new VRS users and the increased assistance for existing low-income users. We therefore propose to place the primary responsibility for managing the TRSBPP enrollment and eligibility verification process on VRS providers by making a VRS user’s default provider responsible for a consumer’s enrollment, initial certification, and verification of eligibility for TRSBPP support. We propose that consumer enrollment in TRSBPP be conducted as illustrated and described in Figure 1.

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<sup>51</sup> NATIONAL BROADBAND PLAN at 173.

<sup>52</sup> 47 C.F.R. § 54.405.



#### Enrollment

1. User certifies TRSBPP eligibility to VRS provider
2. VRS provider queries DB to determine if TRSBPP support already being provided at residence
3. A. If answer from DB to query in step 2 is "yes," DB returns "not eligible" and process ends.  
B. If answer from DB to query in step 2 is "no," TRSBPP flag in BP set as "eligible" for user, unique user ID returned to VRS provider.
4. VRS provide returns unique eligible user ID to user
5. User applies to subscribe to supported service with broadband provider, provides unique eligible user ID as part of signup process
6. Broadband provider submits unique eligible user ID to DB to validate user eligibility
7. A. If answer from DB to query in step 6 is "not eligible," process ends.  
B. If answer from DB to query in step 6 is "eligible," broadband provider subscribes user to supported service.

#### Reimbursement

8. Broadband provider submits to TRS Fund Administrator (a) list of unique eligible user IDs and (b) amount of discount for subsidized service.
9. TRS Fund Administrator submits unique eligible user IDs to DB for eligibility validation
10. DB returns "eligible" or "not eligible" for each unique eligible user ID submitted
11. TRS Fund Administrator reimburses broadband provider in the amount of: (amount of discount for subsidized service) \* (total number of unique eligible user IDs identified as "eligible" in step 10)

Figure 1 – Enrollment and Reimbursement Flow

32. We seek comment on this proposed TRSBPP enrollment process. Are there additional or different steps that should be included? Should different information be provided in any of the steps identified? Should a consumer be able to challenge an ineligibility determination? If so, how and by whom should such challenges be addressed?

### VIII. PROVIDER REIMBURSEMENT PROCEDURES

33. Under our Lifeline rules, ETCs provide discounts to eligible consumers and receive reimbursement directly from the USF Administrator under administrative procedures determined by the

Administrator.<sup>53</sup> We propose to adopt this approach for discounts provided under the TRSBPP program, and seek comment on this proposal. Specifically, we propose that TRSBPP support for providing TRSBPP supported broadband services shall be reimbursed directly to the eligible broadband provider providing the service, based on the number of qualifying households or residences it serves, under administrative procedures determined by the TRS Fund Administrator in consultation with the Commission.

34. We further propose that an eligible broadband provider may receive TRSBPP support reimbursement for each qualifying household or residence served. For each household or residence receiving TRSBPP supported service, the reimbursement amount shall equal the amount determined pursuant to the discussion in Appendix A, section III.

35. We propose that in order to receive TRSBPP support reimbursement, the eligible broadband provider must keep accurate records of the revenues it forgoes in providing TRSBPP supported services. Further, we propose that such records be kept in the form directed by the Administrator and provided to the Administrator at intervals as directed by the Administrator or as provided by the Commission.

36. The reimbursement process contemplated by the above proposals is illustrated and described in figure 1 above. We seek comment on this proposed TRSBPP reimbursement process. Are there additional or different steps that should be included? Should the different information be provided in any of the steps identified?

## IX. DE-ENROLLMENT

37. Consistent with the *Lifeline and Link Up Modernization NPRM*, we propose to require that a consumer notify his or her default VRS provider and broadband provider within 30 days if the consumer has knowledge that he or she no longer qualifies for TRSBPP support.<sup>54</sup> A consumer would be required to notify the default provider and broadband provider upon knowledge that he or she no longer meets the income criteria, no longer participates in a qualifying program, is receiving duplicate support, no longer possesses a qualifying disability, or otherwise no longer qualifies for program support. We seek comment on this proposal.

38. We also propose to require that a default VRS provider or broadband provider that has knowledge that a consumer no longer qualifies for TRSBPP support – whether by notice from that consumer or any other means, including evidence of inactivity – take such actions as are necessary to ensure that TRSBPP support is no longer provided for that consumer. We seek comment on this proposal, and on what actions should be required of default VRS providers and broadband providers. For example, at what point should a default VRS provider be obligated to update a user's TRSBPP eligibility status in the Unique User Database? Should broadband providers that determine that a user is not eligible for TRSBPP support be obligated to inform the VRS user's VRS provider, the TRS Administrator, or some other party?

39. What type of notice should consumers be provided before de-enrollment occurs? Should a consumer subject to de-enrollment have an opportunity to challenge this determination prior to termination of the support? How and by whom should such challenges be addressed?

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<sup>53</sup> See *id.* §54.407.

<sup>54</sup> See *Lifeline and Link Up Reform and Modernization NPRM*, 26 FCC Rcd at 2825, para. 172.

**X. ROLE OF TRS FUND ADMINISTRATOR**

40. We seek comment on what steps we must take to ensure that the TRS Fund Administrator is empowered to effectively administer the TRSBPP program.

41. *Administrative Procedures.* As discussed in the foregoing sections, we propose to allow the TRS Fund Administrator to develop and implement administrative procedures for reimbursement and other aspects of the program. We propose that such administrative procedures be developed by the TRS Fund Administrator with the advice and consent of the Commission. We seek comment on this proposal.

42. *Reporting.* Section 64.604(c)(5)(iii)(C) of our rules requires TRS providers to “provide the administrator with true and adequate data necessary to determine TRS Fund revenue requirements and payments.” We have proposed to place the primary responsibility for managing the TRSBPP enrollment, certification, and eligibility verification processes on VRS providers. We also seek comment on whether VRS providers should be required to collect and maintain user enrollment, initial certification, and verification of eligibility for TRSBPP support documentation for submission upon request to the TRS Fund Administrator or the Commission. We also seek comment on what additional data, if any, the TRS Fund Administrator should be empowered to collect under the proposals in this *Further Notice*. For example, what information should broadband providers that receive disbursements from the TRS Fund be required to report to the Administrator or the Commission?

43. *Audits.* Section 64.604(c)(5)(iii)(C) of our rules states that the TRS Fund Administrator “and the Commission shall have the authority to examine, verify and audit data received from TRS providers as necessary to assure the accuracy and integrity of fund payments.” We seek comment on whether the TRS Fund Administrator or the Commission requires additional authority to conduct audits relating to the TRSBPP under the rules we propose in this *Further Notice*.

**XI. POTENTIAL IMPACT OF TRSBPP ON MAKING VRS AVAILABLE TO MORE USERS**

44. As discussed above, the purpose of the TRSBPP would be to provide discounted broadband Internet access to low-income deaf, hard of hearing, deaf-blind, and speech disabled Americans who use ASL as their primary form of communication.<sup>55</sup> Such a program would be consistent with the recommendations of the National Broadband Plan,<sup>56</sup> the Commission’s broader efforts to meet the 21st century communications needs of low-income consumers,<sup>57</sup> and the Act,<sup>58</sup> and will help to ensure that Fund resources are not spent on merely churning users between providers instead of expanding the availability of VRS to more users.<sup>59</sup>

45. We are mindful, however, of the need to manage responsibly the contributions of millions of Americans to a program that disburses over half a billion dollars a year. We therefore seek comment on the costs and benefits of implementing a TRSBPP to make VRS available to more users. For example, as discussed in section III.A of this *Further Notice*, there is no definitive estimate of the number of Americans with hearing or speech disabilities who are fluent enough in ASL to use VRS, or how many of those individuals would benefit from VRS but cannot afford the necessary broadband Internet access

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<sup>55</sup> See *supra* para. 30.

<sup>56</sup> See NATIONAL BROADBAND PLAN at 172.

<sup>57</sup> See *Lifeline and Link Up Reform and Modernization NPRM*, 26 FCC Red at 2849-62, paras. 255-302.

<sup>58</sup> See 47 U.S.C. § 225(b)(1) (“... shall ensure that [TRS is] available . . . to hearing-impaired and speech-impaired individuals in the United States”).

<sup>59</sup> See *supra* para. 39.

service. We seek information and data from commenters on the total number of potential new users that may register with a VRS provider as a result of the TRSBPP. How would changes in the way the TRSBPP is implemented affect those numbers? For example, how would different discount levels affect signup rates? How would those differences affect the total demand on the Fund?

46. Would cost savings from compensating all providers at the at-scale “target base rate” discussed in Appendix C be sufficient to offset the cost of supporting broadband service through the TRSBPP? Should the TRSBPP be implemented only if such cost savings are realized? Would it be appropriate to “phase in” the TRSBPP so as to avoid rapid increases in Fund demand, by, for example, setting a budget for program expenditures or phasing the program in for limited geographic areas (*e.g.*, a small number of states)? What other steps could the Commission take to ensure that the benefits of the TRSBPP outweigh the costs?

## APPENDIX B

## iTRS Access Technology Standards

## I. OBJECTIVES – GENERAL

1. In section IV.B.2 of this *Further Notice*, we sought comment on whether the effectiveness of our interoperability requirements could be improved by the creation of VRS access technology standards.<sup>1</sup> In this Appendix B we address the need for and set forth a proposal to establish such standards. We note at the outset that until relatively recently, VRS was accessed almost exclusively via one form of VRS access technology – the VRS videophone.<sup>2</sup> As discussed in section IV.B.1, however, we have witnessed a proliferation of different forms of iTRS access technologies, ranging from off-the-shelf videophones that can be modified to access VRS with relatively little effort to software applications that run as an application on a computer or mobile device and platforms that can be accessed through any web browser. Unfortunately, however, these new iTRS access technologies thus far have often posed challenges to our goals of interoperability and portability, and potentially to ensuring compliance with our 911 obligations.<sup>3</sup>

2. iTRS access technology standards are a means for meeting the Commission's policy objectives for Video Relay Service. These objectives are essential to an open, competitive market in communication service, and they include interoperability, portability, affordability, supportability and compatibility as explained below.

3. *Interoperability.* By interoperability we mean the ability of a VRS user to (1) freely connect to and communicate through any of several VRS providers, and (2) directly connect to and communicate with other individuals using various forms of VRS access technology.

4. *Portability.* By portability we mean the ability of a VRS user to continue to use their existing VRS access technology, their assigned ten-digit phone number, and certain enhanced features when switching from their current VRS Provider to a different VRS Provider.

5. *Affordability.* By affordability we refer to the objective of enjoying the cost advantages of off-the-shelf consumer devices produced for a significantly larger market.

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<sup>1</sup> See *Further Notice* section IV.B.2. We define the terms "iTRS access technology" and "VRS access technology" in section IV.B.2 of the *Further Notice*. We note that this discussion precludes video devices that operate within a closed network environment using vendor-specific standards, such as Apple FaceTime running on various Apple products, from being defined as iTRS access technology. Such devices likely require a standardized gateway support to connect to VRS and to Internet-based VRS videophones. We intend that specifying standardized gateway support can be addressed by the standardization process described below.

<sup>2</sup> Videophones are devices that allow a user to communicate visually and, if desired, audibly with another end user over an Internet access service. Videophones generally have fallen into two categories: unmodified off-the-shelf videophone products whose software has not been adapted for VRS use (e.g., the TANDBERG 150 MXP [http://www.tandberg.com/products/video\\_systems/tandberg\\_150\\_mxp\\_promotion.jsp](http://www.tandberg.com/products/video_systems/tandberg_150_mxp_promotion.jsp)) and VRS-enhanced videophones where such modifications have been applied. The most popular VRS enhanced videophone currently is Sorenson's VP-200. See Sorenson, VP-200 Videophone Info, [http://www.sorensonvrs.com/products/vp200\\_info](http://www.sorensonvrs.com/products/vp200_info) (last visited Sept. 9, 2011).

<sup>3</sup> See, e.g., Letter from John T. Nakahata and Christopher J. Wright, Counsel for Sorenson Communications, Inc., CG Docket No. 03-123 (April 1, 2011); Convo Aug. 16, 2011 Comments, CG Docket No. 10-51 ("A key functional difference between most [traditional videophones] and [VRS access via personal computers, mobile netbooks/laptops, and the new breed of smart phones] is the ability of the former to be assigned 10-digit numbers and to enable communications with E-911 services.); CSDVRS Apr. 1, 2011 Comments, CG Docket No. 10-51 at 7 ("It must also be noted that none of the existing off-the-shelf technologies automatically supports E911.").

6. *Supportability.* By supportability we refer to the objective of enjoying the efficiencies related to installation, customer service, ongoing maintenance, upgrading and replacement that is available to off-the-shelf consumer devices produced for a significantly larger market.

7. *Compatibility.* By compatibility we refer to the objective of maintaining interoperability during a transition from one device signaling and support standard to another (*e.g.*, the current transition from signaling and support based on the H.323 Visual Telephone System technology to signaling and support based on SIP technology).

8. Standardization of certain VRS access technology communications interfaces and data exchange structures, as discussed below, is simply the means for attaining these objectives. VRS providers are free to offer innovative features and user interfaces beyond the basic standard communications interfaces proposed herein so as to differentiate VRS access technology offerings and provide user choice.

## II. BACKGROUND

9. Videophones and other software and devices that send video via the Internet operate using specific call signaling protocols that connect the two endpoints of the call. The selected signaling protocol will generally be matched with a set of other supplementary protocols for managing such functions as device configuration and registration. In order to meet the Commission's objectives of interoperability and portability in a network with multiple service provider platforms and VRS access technologies from a variety of sources, the protocols must conform to publically-available standards under the control of an open, industry-consensus process. "H.323" has been commonly used to designate one such set of standards for transmitting real-time voice and video over packet-based networks.<sup>4</sup> The Session Initiation Protocol ("SIP") is similarly used to designate another, newer, such set of standards.<sup>5</sup>

10. When we first sought comment in 2006 on whether devices used to access VRS should be required to support a particular standard, commenters were divided on the issue.<sup>6</sup> At the time, the majority of VRS-enhanced videophones in use supported the H.323 protocols standards. Thus, in response to the Commission's 2006 Interoperability ruling, VRS providers voluntarily standardized on a basic H.323 communications capability for all VRS-enhanced videophones and provider systems. As a result, VRS achieved a level of multi-provider and multi-device interoperability that exceeded that of other multi-provider Internet-based voice and video services.

11. The available VRS-enhanced videophone models generally fell into one of two classes: (i) older models, constituting the majority of the installed base, were H.323-only videophones; and (ii) newer models, operating natively as SIP devices but able to support both H.323 and SIP protocols.<sup>7</sup> By the time that the Commission undertook to require VRS providers to assign geographically-appropriate 10-digit telephone numbers to their users in 2008, it was clear that the mass market for Internet-based voice and video devices was settling on the SIP family of standards. We invited comments on the

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<sup>4</sup> See International Telecommunication Union, Packet-based Multimedia Communications Systems, ITU-T Recommendation H.323 (July 2006).

<sup>5</sup> See *VRS Interoperability Declaratory Ruling*, 21 FCC Rcd at 5461-62, para. 55.

<sup>6</sup> See *VRS Interoperability Declaratory Ruling*, 21 FCC Rcd at 5460-62, paras. 51-57; *see, e.g.*, Comments of AT&T, Inc. at 5 (July 17, 2006) ("[T]he Commission could adopt H.323 as the de facto standard, but allow VRS providers the option of using other protocols in lieu of H.323 to the extent such protocols interface with H.323."); Reply Comments of Snap Telecommunications, Inc. at 1 (asserting that opposition to mandatory standards was "near unanimous" and that such standards were "unnecessary" given the Commission's existing rules.).

<sup>7</sup> This latter class is often referred to as "dual-stacked" in reference to the layered protocol architecture.

objective of transitioning VRS to SIP-based end devices and on steps the Commission could take to facilitate the process.<sup>8</sup> The dominant VRS provider, Sorenson Communications, made known that it was drafting a proposed standard for VRS-enhanced videophone support.<sup>9</sup> Subsequently, we encouraged VRS providers “to work together to develop systems and standards that will facilitate compliance with our rules.”<sup>10</sup>

12. In February 2009, Sorenson contributed a *Relay Provider Interface* specification “as a proposal to video relay service providers” and “as a basis for discussion.”<sup>11</sup> Sorenson’s analysis had led to the selection of SIP as the best approach.<sup>12</sup> However, under Sorenson’s proposal, VRS-enhanced videophones would not be required to implement a full SIP protocol suite. The proposal specified a transition step that implemented a subset of the SIP standards required for registration and redirection functions, while continuing to support H.323 for call signaling, as required by most of the installed base of videophones.<sup>13</sup>

13. Other VRS providers were reluctant to accept Sorenson’s proposal as a starting point for discussion and no progress was made on VRS-enhanced videophone standards. This lack of progress on basic standardization has meant that if a user ports his VRS-enhanced videophone to a new default provider, that provider cannot fully support the device.<sup>14</sup> Consequently, the Commission has repeatedly had to waive its rules relating to mandatory minimum standards<sup>15</sup> for those situations in which a user ports iTRS access technology to a new default provider.<sup>16</sup> The Commission’s portability objective has thus gone unmet.

14. Our analysis suggests several reasons for this lack of progress on the standardization needed for interoperability and portability. First, the VRS providers do not have an open, consensus-building technical standardization forum with procedures necessary to instill a sense of fairness among market competitors. Second, the hybrid H.323-SIP transition specification had no counterpart in mass

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<sup>8</sup> *Internet-based TRS Numbering Order*, 23 FCC Rcd at 11630, para. 112.

<sup>9</sup> See Letter from Ruth Milkman, Counsel for Sorenson Communications, Inc., to Marlene H. Dortch, Secretary, FCC, CG Docket No. 03-123, WC Docket No. 05-196 (filed Dec. 18, 2008).

<sup>10</sup> See *Second Internet-based TRS Numbering Order*, 24 FCC Rcd at 822, para. 68.

<sup>11</sup> See Letter from Ruth Milkman, Counsel for Sorenson Communications, Inc., to Marlene H. Dortch, Secretary, FCC, CG Docket No. 03-123, WC Docket No. 05-196, attach. at 1 (filed Feb. 13, 2009).

<sup>12</sup> *Id.*, attach. at 5.

<sup>13</sup> *Id.*

<sup>14</sup> See 47 C.F.R. §64.611(c). The “default” VRS provider is the provider that currently handles the user’s VRS calls.

<sup>15</sup> These minimum standards relate to include handling any type of call as well as handling emergency calls. See, e.g., 47 C.F.R. §§ 64.604(a)(3); 64.605.

<sup>16</sup> The Commission issued a year-long waiver of these requirements in the *Second Internet-based TRS Numbering Order*. See *Second Internet-based TRS Numbering Order*, 24 FCC Rcd at 822, para. 68. The waiver was extended in 2009, 2010, and 2011. See *Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities*, CG Docket No. 03-123, Order, 24 FCC Rcd 14721, 14722, (2009); *Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities, E911 Requirements for IP-Enabled Service Providers*, CG Docket No. 03-123, WC Docket No. 05-196, Order, 25 FCC Rcd 8437 (2010); *Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities, E911 Requirements for IP-Enabled Service Providers*, CG Docket No. 03-123, WC Docket No. 05-196, Order, 26 FCC Rcd 9449 (2011).

market Internet-based videophone devices and would likely result in costly special development by OEM device providers.<sup>17</sup> Third, technical details of the desired SIP-only end state were not defined.

15. The Commission has again raised relevant issues concerning standards for VRS access technologies supplied by VRS providers and the relevant role for the Commission in the *2010 VRS Reform NOI*.<sup>18</sup> Commenters were generally supportive of transitioning to a SIP-based networking environment.<sup>19</sup> However, some expressed reservations about the need for the Commission to actively facilitate the process.<sup>20</sup>

16. As part of ongoing VRS reform efforts associated with the *2010 VRS Reform NOI*, CGB sought additional information via a Public Notice regarding new and emerging technologies that may be used to access VRS, particularly with respect to off-the-shelf technologies.<sup>21</sup> Commenters more strongly supported transitioning to a SIP-based standard and of the need for industry collaboration.<sup>22</sup>

17. Several developments in recent years make it appropriate for the Commission to now take a lead in assisting industry to restart this process of iTRS access technology standardization. Many of the VRS-enhanced videophone devices that had to be specifically designed and built to meet the requirements of VRS have reached end-of-life and need to be replaced. At the same time, mass-market devices now routinely come with the necessary high-quality video capability and standard interfaces available for assistive technologies. The SIP suite of communications protocols is well-established in these devices such that off-the-shelf technology can be easily adapted for VRS purposes.

18. The Commission has acted before to stimulate industry standardization in markets in which the participants have not progressed in meeting the goals of device interoperability and portability. For example, during the 1970s and 1980s when the requirements for interoperability and portability revolved around physical connectors and electrical signaling techniques, the Commission promulgated the

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<sup>17</sup> See *supra* para. 12.

<sup>18</sup> See *2010 VRS Reform NOI*, 25 FCC Rcd at 8609, paras. 34-35. (“Should we require updated protocols based on common, industry-consensus standards to be used by videophone equipment distributed by VRS providers? In the context of our existing rules, should videophone equipment supplied by VRS providers, and the networks on which they operate, also be standardized so that they retain a mandatory minimum set of functionalities regardless of the provider selected by the VRS user?”)

<sup>19</sup> See, e.g., CSDVRS Aug. 8, 2010 Comments, CG Docket 10-51 at 23 (“CSDVRS submits that the minimum standards that should be adopted are SIP, RFC 3261, H.323v2, H.264, and G.722. Again, CSDVRS would urge the Commission to facilitate the creation of a VRS Working Group which meets on a periodic basis to ensure interoperability for all videophone devices.”)

<sup>20</sup> See, e.g., Sorenson Sept. 2, 2010 Reply Comments, CG Docket No. 10-51 at 2 (“Thus, the Commission should allow the marketplace to dictate changes in equipment... Sorenson recognizes that SIP has some advantages over H.323, but believes that as those advantages become more apparent, companies will move from H.323-based protocols to SIP-based protocols of their own accord, without any interference from the FCC.”)

<sup>21</sup> See *VRS Technology Public Notice* at 2 (“What specific features or functions of off-the-shelf equipment, services, and software are needed to effectively use VRS?”).

<sup>22</sup> See, e.g., Rehabilitation Engineering Research Center on Telecommunications Access April 18, 2011 Reply Comments, CG Docket No. 10-51 at 2 (“The RERC-TA is pleased to see the general support for standard communication protocols, including the strong support in favor of SIP by VRS providers that in the past have relied on H.323. Although at present SIP itself is not free of interoperability problems, it provides a strong base on which efforts toward interoperability can build.”); Sorenson April 18, 2011 Reply Comments, CG Docket No. 10-51 at 2 (“Compatibility, however, requires multilateral coordination among all providers and equipment developers, not just unilateral efforts by solitary companies. Accordingly, Sorenson supports the development of industry-wide standards and testing events...”)

Part 68 standards for the interconnection of telecommunications equipment with the Public Switched Telephone Network.<sup>23</sup> Competitive suppliers were able to build and deploy a wide variety of voice and data equipment for use with the public network, without seeking prior permission from the Commission or the service providers. In 2001 the Commission turned over responsibility for standardizing interconnection to the PSTN to a forum established by private industry, the Administrative Council for Terminal Attachments.<sup>24</sup> Today, VRS requirements for standards-based device interoperability and portability revolve around software-based communications protocols rather than electrical levels and connectors.

### III. STANDARDIZATION – GENERAL

#### A. Network Relationships

19. Figure 1 identifies basic VRS functions that are performed by the user's VRS access technology, the user's Internet Service Provider (ISP) service, the VRS Provider's service,<sup>25</sup> and the FCC's iTRS Numbering Directory service. These functions are described in more detail below. It is important to note that the manner in which entities implement internal components is not specified. For example, the Registration and Redirection functions of VRS may be implemented as part of a single application or as separate applications, potentially on separate systems.

20. The purpose of Figure 1 is to depict the communications interfaces which are discussed here. We are principally addressing standardized communications protocols for the VRS access technology services supplied over a high-speed Internet access service, designated as "A1," "A2" and "A3." We also describe certain functional requirements that the VRS access technology's graphical user interface "B" must meet, but the details on how these requirements are met and visually rendered is left to the implementer. The "C" interface between the VRS and the iTRS Numbering Directory is specified by the FCC's contractor for this service; it is depicted here for completeness.

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<sup>23</sup> 47 C.F.R §§ 68.1 *et seq.*; 1975 Part 68 Order, 56 FCC 2d at 598, para. 16.

<sup>24</sup> See 2000 Part 68 Order, 15 FCC Rcd at 24944, para 2.

<sup>25</sup> An individual VRS user may interact with multiple VRS providers. We define the "initial" VRS provider as the provider configured into the VRS access technology when the user first acquires the VRS access technology. Such an initial VRS provider may offer full VRS service or only allow the VRS user to choose a full-function provider when first contacted. The initial VRS provider is also colloquially known as the "out-of-the-box" provider. The "default" VRS provider is the provider that currently handles the user's VRS calls. The "new" VRS provider is the new default provider that assumes the VRS service responsibility once the user completes the porting process. If not further qualified, the term VRS provider implies default VRS provider.

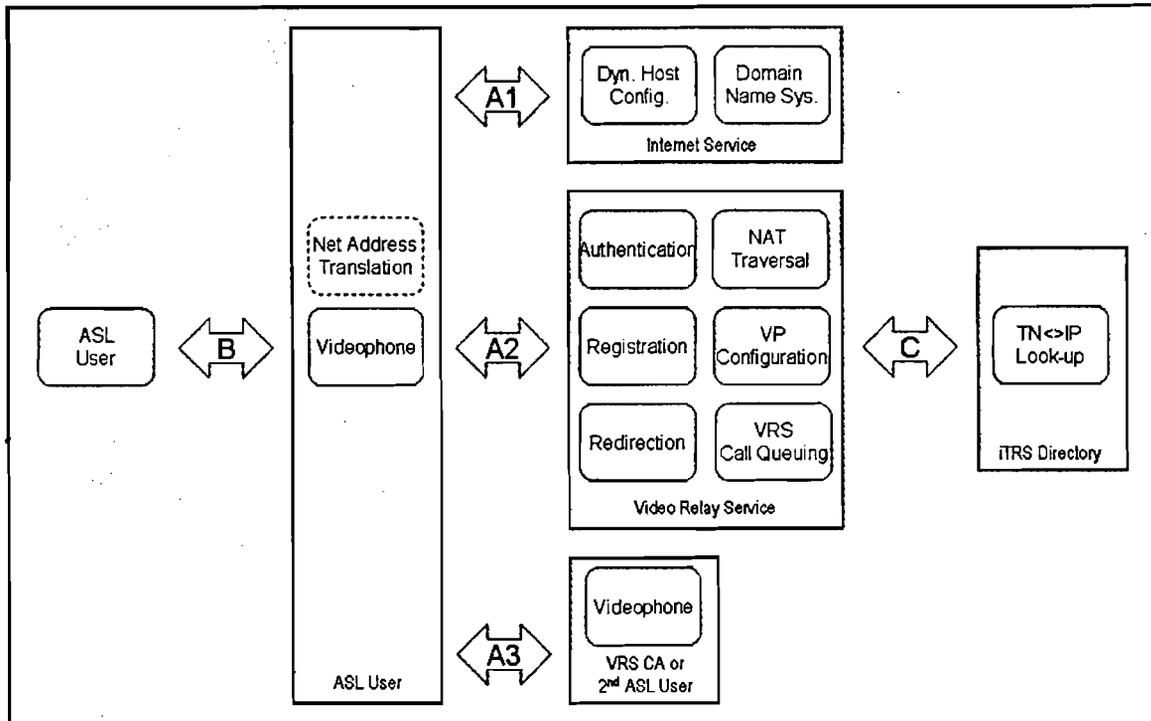


Figure 1. VRS Videophone interfaces.

21. *Need for an ongoing standardization process.* In order to delimit the scope VRS access technology standardization, we outline below the basic functional requirements for a VRS access technology and identify standards which are appropriate for meeting these requirements. We recognize that numerous options and parameter values will need to be selected for any one standard, and we recognize that VRS providers have the most current knowledge of these VRS access technology technical details. Furthermore, we recognize that VRS access technology standards documents will require maintenance, updating and replacement over time. Given the limited size of the industry and the nature of these tasks, we believe that this work would best be undertaken by VRS providers and equipment suppliers under the umbrella of an existing organization open to such members and dedicated to interoperability, in which a Working Group focused on VRS can be established. We envision the Commission's role as that of an active observer of this process.

22. *Need for phased transition.* As discussed above, migrating from H.323 networking technology to SIP via an intermediate phase that is a hybrid of the two technologies is problematic.<sup>26</sup> We propose a SIP-only initial end phase which may thereafter evolve under the ongoing standardization process to keep pace with technology and mass-market SIP devices. It may be, however, that there is a SIP-only intermediate phase that can more easily accommodate existing VRS access technologies and provider platforms while still providing the necessary core functionalities. Thus, we propose a transitional subset of standards for a SIP-based VRS access technology.

23. *Need for conformance and interoperability testing.* Although VRS access technologies have historically demonstrated some level of successful interoperability in a network with multiple device models and service providers, anecdotal evidence suggests that interoperability problems are increasing as

<sup>26</sup> See *supra* para. 14.

new VRS access technologies are being introduced.<sup>27</sup> This underscores the need for rigorous testing of VRS access technologies both for conformance with the selected set of standards and for their ability to interoperate with other VRS access technologies and VRS Provider platforms. Again, given the limited size of the industry and the nature of these tasks, we believe that this work would best be undertaken by VRS providers and equipment suppliers under the umbrella of an existing organization that can support the technical logistics and provide necessary neutral, constructive testing environment. In order to best facilitate the free exchange of test results and the cooperative resolution of issues, we do not envision the Commission having any role in the conformance and interoperability testing process.

24. We solicit comments on our general vision of VRS access technology standardization, and on the means by which the needs outline above can be met. Is the Commission's involvement as outlined above appropriate? What other roles, if any, should the Commission play? Which stakeholder groups should be involved? What forums would be best suited to encouraging broad participation and expedient progress on standardization and testing? For example, would the SIP Forum be a suitable candidate standardization forum? What are other candidates? What options are available for conformance testing? Are the Session Initiation Protocol Interoperability Testing (SIPit) events suitable venues for interoperability testing? How should standardization and transition to subsequent standards in the future be handled?

#### **IV. VRS ACCESS TECHNOLOGY REQUIREMENTS – GENERAL CAPABILITIES**

25. For purposes of discussion, we present below and seek comment on what we consider to be the basic functional requirements that need to be met for VRS access technologies. These are organized into four general areas: communications, remote feature access, user interface, and private data transfer.

##### **A. Communications Requirements**

26. The VRS access technology communications interfaces with ISP and VRS Provider will support the following capabilities. These interfaces are shown as A1 and A2 in Figure 1.

- a. Generation and exchange of a Universally Unique Identifier (UUID) Uniform Resource Name (URN).
- b. Acquisition of IP and DNS settings from the user's ISP.
- c. Acquisition of the VRS access technology's public IP address from the user's ISP.
- d. Establishment of firewall and NAT traversal technique.
- e. Acquisition of Coordinated Universal Time (UTC).
- f. Acquisition of initial configuration information from the VRS Provider, including the address at which to register and registration credentials.
- g. Acquisition of addresses for LIS and LoST servers for 9-1-1 service (for future activation).
- h. VRS access technology authentication and registration by the VRS Provider.
- i. Acquisition of user private data, such as contact and speed-dial lists from the VRS Provider.

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<sup>27</sup> See, e.g., letter from John Nakahata, Counsel for Sorenson Communications, Inc., to Marlene H. Dortch, Secretary, FCC, CG Docket Nos. 03-123, 10-51 (filed Apr. 1, 2011).

- j. Updating VRS Provider user location registration for 9-1-1 service from the VRS access technology.
- k. Priority outbound identification and handling of 9-1-1 emergency calls from the VRS access technology.
- l. For relay and point-to-point calls, outbound calling from the VRS access technology via the default provider using 10-digit numbers; outbound calling via SIP URLs is also allowed.
- m. For relay and point-to-point calls, outbound calling from the VRS access technology via a non-default provider (dial-around) with automatic pass through of the called party's 10-digit number to the non-default VRS Provider.
- n. For relay and point-to-point calls, inbound calling to the VRS access technology.
- o. Conveyance of the 10-digit calling party number on calls from and to the VRS access technology on call setup.

**B. Remote Feature Access**

27. The VRS access technology communications interface will support standard remote access to the following basic features required on VRS access technologies used by the deaf, hard-of-hearing, and deaf-blind (to the extent they have residual vision):

- a. Visual incoming call alerting feature.
- b. Visual message waiting feature (if supported by the VRS access technology).

**C. User Interface**

28. *Configuration.* The VRS access technology user interface will support the following basic features for user-controlled device configuration. This interface is depicted as "B" in Figure 1:

- a. Entry of a VRS Provider's DNS domain, the 10-digit number assigned to the VRS access technology, a username and an associated password.
- b. Entry of an updated user location for E911 location registration, when no network-provided location data is available.
- c. Entry of personal contact list information and speed-dial list information

29. *Calling.* The VRS access technology user interface will allow placing calls using the following interface capabilities:

- a. Entry of a 10-digit phone number of the called party is required; entry of a URL of the called party is optional.
- b. Entry of basic VRS feature preferences is optional (*e.g.*, preferences for a spoken language, for a communications assistant of a particular sex, for announcement of the call as a VRS call).

**D. User Private Data Transfer**

30. The VRS access technology and VRS Provider will support a standard data interchange format for exporting and importing the following user private data between VRS access technologies and

VRS Providers. The means for transferring this information from one provider to another is not depicted in Figure 1 or otherwise specified here.

- a. User personal contacts list (also referred to as address book).
- b. User speed dial list.

#### E. Discussion

31. We seek comment on these basic functional requirements. Does our Figure 1 depiction of VRS access technology communications interfaces and services provide an accurate and adequate architecture for discussion? Are there other basic capabilities that need to be uniformly supported to meet the goals of the statute?

### V. STANDARDS FOR INTERNET-BASED VRS ACCESS TECHNOLOGY

#### A. VRS Profile of Industry-Consensus Standards

32. A variety of alternative standards are available for meeting the VRS access technology functional requirements set out in the previous section. In order to achieve our policy objectives of affordability and supportability we have tried to structure a framework of standards to meet the various functional requirements that is consistent with mass market commercial-off-the-shelf videophone technology directions. Our proposed selections are illustrated in Table 1. We refer to this set of standards as the VRS Access Technology Standards Profile.

Functionality	Protocols	Details	Standards
Internet configuration and transport	IPv4, IPv6, TCP, UDP, TLS, DHCP, DNS	VRS access technologies will support general-purpose Internet protocols including Internet Protocol versions 4 (IPv4) and 6 (IPv6), the User Datagram Protocol (UDP), the Transmission Control Protocol (TCP), Transport Layer Security (TLS), and the Dynamic Host Configuration Protocols (DHCP) and the Domain Name System (DNS) operations appropriate to IPv4 and IPv6 environments.	
NAT traversal	STUN, ICE/STUN	Network Address Translator (NAT) traversal techniques will include the Interactive Connectivity Establishment (ICE) approach for using the Session Traversal Utilities for NAT (STUN).	RFCs 3489, 5389
Web access	HTTP, HTTPS	HTTPS: The secure Hypertext Transfer Protocol (HTTPS) will be used for downloading the VRS access technology's initial configuration information and credentials from a default VRS Provider.	RFCs 2616, 2817
Time synchronization	SNTP	The Simple Network Time Protocol (SNTP) is used to synchronize the VRS access technology's clock.	RFC 4330
NG9-1-1 support	HELD, LoST, DHCP location extensions, SIP	The HTTP-Enabled Location Delivery protocol (HELD) will enable the VRS access technology to obtain its standardized	draft BCP phonebcp

	extensions	geographic location from a Location Information Server (DHCP will also support this function). The Location-to-Service Translation protocol (LoST) will enable the videophone to obtain the PSAP routing appropriate to that VRS access technology's geographic location from a LoST server.	
Device configuration	XCAP	Device configuration and user data will be provisioned using the XML Configuration Access Protocol (XCAP).	RFCs 4825, 4826, 6011
Call signaling	SIP	The Session Initiation Protocol (SIP) will be used as the communications signaling protocol for setting up, modifying and terminating sessions between two VRS access technologies ( <i>i.e.</i> , between a VRS user and VRS Provider CA, or between two deaf or hard-of-hearing VRS access technology users).	RFC 3261
Message waiting indication*	SIP MWI	Allows the VRS access technology to determine whether and how many recorded messages are waiting.	RFC 3842
Session description	SDP	The Session Description Protocol (SDP) will be used for describing and negotiating the common capabilities of the communicating VRS access technologies.	RFC 4566
Media transport	RTP/RTCP	The multimedia communication of video, audio and text between the VRS access technologies will be carried by the Real-time Transport Protocol (RTP) and Real-Time Control Protocol (RTCP) over an underlying User Datagram Protocol (UDP).	RFC 3550
Audio and video	G.711, G.722, H.263v2, H.264	The ITU G-series audio coding algorithms (G.711, G.722) will be available for audio and the H-series video coding algorithms (H.263v2, H.264) will be available for video.	G.711, G.722, H.263 1998, H.264
Real-time text	RTT	For devices with keyboard functionality, parties in the call can exchange real-time text messages using the RTP RTT mechanism.	RFC 4103
Personal contact list	vCard	The user's address book is made available in vCard XML format	RFCs 2425, 2426, draft vcardxml
Speed dial list	TBD	The user's speed dial list is made available in [a suitable XML format.]	

\* = optional feature

Table 1. VRS Access Technology Standards Profile