BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

UM 1481
Phase III – ISSUE B

In the Matter of	)
PUBLIC UTILITY COMMISSION OF OREGON	)
Staff investigation of the Oregon Universal Service Fund	)

OPENING TESTIMONY

OF

AUGUST H. ANKUM, Ph.D.

ON BEHALF OF

THE OREGON CABLE TELECOMMUNICATIONS ASSOCIATION

April 24, 2014

PUBLIC

Confidential Data are marked with ***___***

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Exhibit List

OCTA 301 (Public) "Excerpts from OCTA UM 1481 Phase II Testimony"
OCTA 301 (Confidential) "Calculation of Voice Allocation Factors"

I. Introduction and Summary

Q. PLEASE STATE YOUR NAME, TITLE AND BUSINESS ADDRESS.

A. My name is August H. Ankum. I currently serve as Senior Vice President and Chief Economist of QSI Consulting, Inc. My business address is 429 North 13th Street, Apt. 2D, Philadelphia, Pennsylvania 19123.

Q. ARE YOU THE SAME AUGUST H. ANKUM WHO SUBMITTED PREFILED DIRECT AND REBUTTAL TESTIMONY IN PHASE II OF THIS CASE?

A. Yes.

Q. ON WHOSE BEHALF ARE YOU FILING THIS DIRECT TESTIMONY?

A. I am filing this testimony on behalf of the Oregon Cable Telecommunications Association ("OCTA" or the "Association").

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to address Item 4(b) of the parties' Stipulation in Phase II of this docket. In Order No. 13-162, the Commission formulated the issue as follows:

> Consideration of a methodology to allocate Incumbent Local Exchange Carriers (ILEC) network costs between basic telephone service and other services, including a review of the cost models used to calculate OUSF support. Apply the methodology to the support calculation for all companies receiving OUSF support.[1]

[1] Order No. 13-163 at 4.

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. It is commonly recognized that modern ILEC networks carry not only voice, but also broadband services. For example, basic telephone and broadband services of an ILEC residential customer are typically provisioned over the same loop facility that connects this customer to the ILEC central office. Cost models used to calculate OUSF support, however, were developed before this *sharing* of the network between voice and broadband services became common place. These cost models assume no sharing and, instead, assign 100% of the loop cost to voice services. As a result, the cost estimates based on these models overstate the actual cost of providing basic telephone services (i.e., the services expressly supported by OUSF). Therefore, the need for OUSF funding is also overstated and the subsidies are inappropriately inflated. To correct this overstatement, I propose a cost allocation methodology of loop cost based on the *bandwidth usage* of voice services compared with broadband services. Specifically, my proposal is as follows:

- Calculate the "Voice Allocation Factor" for each ILEC as follows: Measure voice and broadband bandwidth usage in terms of digital speeds (such as megabits per second) associated with voice and residential broadband services. For broadband, account for the broadband take rates among ILEC customers. The formula is as follows:

  *Voice Allocation Factor = Voice Speed / (Voice Speed + Broadband Speed * Broadband Take Rate)*

- Calculate LEC-specific Voice Allocation Factors by using the LEC FCC Form 477 data as a source for prevalent broadband speeds and the Oregon Annual Report Form O (specifically Form L) as the source for broadband take rates.

- Use the above calculated Voice Allocation Factor to reduce loop costs within the modelled per Line Cost: Apply the Voice Allocation Factor to those network components that are shared by the two services. For example, subscriber line

cable and wire loop facilities costs are allocated because such facilities are shared by voice and broadband services, while the cost of loop electronics is not allocated because voice and broadband each require separate specialized electronics.

This approach is consistent with the long-standing practice in telecommunications to apportion "shared" cost based on engineering considerations and usage.[2] It is also consistent in principle with the underlying approach recommended by the Commission Staff in prefiled testimony in Phase II of this docket. It is important to recognize that failure to properly allocate costs between basic telephone service and broadband results in carriers being overcompensated for their universal service obligations. In my prefiled testimony in Phase II of this proceeding, I discuss in detail the extent to which excessive universal service support hurts the competitive process and is in fact counterproductive to universal service principles and objectives. The relevant portions of my prefiled Phase II testimony is attached hereto and marked as Exhibit OCTA 301.

II. Broadband Shares Network with Basic Telephone Services

Q. PLEASE DESCRIBE THE EXTENT TO WHICH BROADBAND SERVICES SHARE THE NETWORK WITH TELEPHONE SERVICES.

A. Present-day ILEC networks are generally used to provide not only telephony, but also broadband services. A recent Oregon Telecommunications Association ("OTA") *Petition*

[2] Much of the FCC's jurisdictional separations system relies on engineering considerations and usage. For example, wideband and exchange trunk facilities are allocated between jurisdictions based on the relative number of minutes of use (47 CFR ¶36.155), interexchange cable and wire facilities – based on circuit kilometer counts (47 CFR ¶36.156), and host/remote cable and wire facilities – based on minutes-of-use kilometers (47 CFR ¶36.157). Note that in 2001 the FCC "froze" these separations factors, meaning that currently the year 2000 minutes of use, circuit kilometer counts and minutes-of-use kilometer relations are used in the federal separations studies. (See the FCC CC Docket No. 80-286 *In the Matter of Jurisdictional Separations and Referral to the Federal-State Joint Board*, Report and Order adopted on May 11, 2001 (*"Separations Freeze Order"*)).

to Amend the Definition of Basic Telephone Service in OAR 860-032-0190 to Include Access to Broadband,[3] which the Commission declined for other reasons, argued that "adding 'access to broadband' as part of the definition of basic service is simply a recognition of what has already taken place."[4] The OTA Petition noted that "[u]nder modern telecommunications standards, work that is done on the network infrastructure to provide voice service also has the ability to provide access to broadband service."[5] Indeed, in a typical arrangement, voice and broadband services provided to a residential or small business customer are provisioned over the same cable loop facility that connects this customer to the ILEC central office.

The overwhelming majority of ILEC residential[6] customer locations are capable of offering broadband services. For example, in its recent Petition for Price Plan, Frontier stated that broadband is available to over 96% of its subscriber households.[7] Similarly, in the prefiled testimonies supporting CenturyLink's recently filed petitions to amend the Qwest Price Plan and for a new Price Plan for its legacy CenturyTel and United exchanges, CenturyLink quotes FCC statistics that show 92% of ILEC residential

[3] *Petition to Amend the Definition of Basic Telephone Service in OAR 860-032-0190 to Include Access to Broadband*, dated November 4, 2013, Docket AR 577, p. 1.

[4] *Id*, p. 10.

[5] *Id.*

[6] Residential lines constitute the majority of lines supported by OUSF.

[7] Docket UM 1677, Petition of Frontier Communications Northwest Inc. for Price Plan dated December 6, 2013, p. 3 ("*Frontier Price Plan*").

customers in Oregon have access to high speed Internet service.[8] CenturyLink's testimony in these dockets also states that "it is clear that broadband availability and subscribership will increase over time, especially given the recent initiative by the FCC to provide universal service funding for broadband."[9] In short, today's telecommunications networks are capable of and are carrying both broadband and basic telephone services.

Q. HOW DOES THE FCC INITIATIVE TO PROVIDE UNIVERSAL SERVICE FUNDING FOR BROADBAND COME INTO PLAY IN THIS PROCEEDING?

A. The FCC USF reform was based in part on the recognition that the same networks support not only voice but also broadband services, and that these "dual-use" networks present a problem for a USF that is designed to support only voice services. For example, in the *USF/ICC Transformation Order*, the FCC acknowledged that "in the absence of any federal mandate to provide broadband, rate-of-return carriers have been deploying broadband to millions of rural Americans, often with support from a combination of loans from lenders such as RUS and ongoing universal service support."[10]

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[8] Direct Testimony of John M. Felz dated January 23, 2014 filed in Docket UM 1354, Amended Petition of Qwest Corporation for Revision of Price Plan ("*CenturyLink UM 1354 testimony*"), p. 40 and Direct Testimony of John M. Felz dated January 23, 2014 filed in Docket UM 1686, Petition for Price Plan of CenturyTel of Oregon, Inc. d/b/a CenturyLink, CenturyTel of Eastern Oregon, Inc. d/b/a CenturyLink, United Telephone Company of the Northwest d/b/a CenturyLink ("*CenturyLink UM 1686 testimony*"), p. 33 (data as of June 2012).

[9] *CenturyLink UM 1354 testimony*, p. 39 and *CenturyLink UM 1686 testimony, p. 32.*

[10] *See In the Matter of 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 an Unified Intercarrier Compensation Regime, Federal-State Joint Board on Universal Service, Lifeline and Link-Up, Universal Service Reform – Mobility Fund*, WC Docket No. 10-90, GN Docket No. 09-51, WC Docket No. 07-135, WC Docket No. 05-337, CC Docket No. 01-92, CC Docket No. 96-45, WC Docket No. 03-109, WT Docket No. 10-208, Report and Order and Further Notice of Proposed Rulemaking, FCC 11-161, released on November 18, 2011 ("*USF/ICC Transformation Order*"), ¶ 22.

The FCC addressed this problem by expanding the definition of supported services to include broadband.[11] For price cap carriers, including all Oregon entities that belong to the holding companies of CenturyLink and Frontier, the FCC created a new funding source to "support deployment of networks providing both voice and broadband services"[12] – the Connect America Fund ("CAF") Phase II. Funding under CAF Phase II will rely on a new forward-looking model that is currently being developed. Based on the most recent illustrative results, the Oregon price cap ILECs would have available $19.11 million annually under CAF Phase II, including $5.9 million for Qwest, $5.6 million for CenturyTel and $2.9 million for Frontier Northwest.[13]

Q. WHAT SERVICES ARE SUPPORTED BY OUSF?

A. In Oregon, only basic telephone service – *and not broadband* – is supported by OUSF.[14] Just recently, the Commission declined to include broadband in the definition of OUSF

[11] *USF/ICC Transformation Order*, ¶ 17.

[12] *See USF/ICC Transformation Order*, ¶ 205. *See also* relevant excerpts from my prefiled Opening testimony in Phase II attached here as Exhibit OCTA 301 for additional evidence that the federal high-cost moneys are used by LECs to fund broadband deployment.

[13] *See* FCC Public Notice in docket WC 10-90 dated March 21, 2014 containing the link to illustrative results released with that Notice. As explained in the Public Notice, these results are based on a $52.50 benchmark, which is calculated as monthly ARPU of $75 times take rate of 70%. Note that these results depict the potential funding that will be offered to carriers in exchange for statewide commitment to offer affordable broadband service in high-cost areas (excluding very high cost areas) underserved by unsubsidized competitors. *See USF/ICC Transformation Order*, ¶ 24.

[14] *See* ORS 759.425(1): "The Public Utility Commission shall establish and implement a competitively neutral and nondiscriminatory universal service fund. Subject to subsection (6) of this section, the commission shall use the universal service fund to ensure basic telephone service is available at a reasonable and affordable rate." *See also* OAR 860-032-0190: "'Basic telephone service' means retail telecommunications service that is single party, has voice grade or equivalent transmission parameters and tone-dialing capability, provides local exchange calling, and gives customers access to but does not include: (a) Extended area service (EAS); (b) Long distance service; (c) Relay service for the hearing and speech impaired; (d) Operator service such as call completion assistance, special billing arrangements, service and trouble assistance, and billing inquiry; (e) Directory assistance; and (f) Emergency 9-1-1 service, including E-9-1-1 where available."

supported (basic telephone) service.[15] Yet, the per line cost estimates that were used to establish OUSF support for each ILEC (prior to the Phase II settlement) are calculated based on an assumption that only voice service uses the loop (not broadband services). As a result, the cost of providing basic telephony is overstated. The OUSF support is, inappropriately, subsidizing broadband services. Therefore, the OUSF support calculations need to be fixed to remove the unintended funding of broadband services.

III. OCTA Proposed Cost Allocation Method

(a) Derivation of Voice Allocation Factors

Q. WHAT METHOD OF ALLOCATING COST BETWEEN BASIC TELEPHONE SERVICE AND BROADBAND ARE YOU PROPOSING?

A. The method I am recommending is basically the same as the method I proposed in my prefiled Phase II Reply testimony: An allocation based on the relative bandwidth used by voice and broadband services.

Q. PLEASE DISCUSS THIS METHOD IN MORE DETAIL.

A. In the digital world, bandwidth is typically expressed as the volume of information per unit of time that a service can handle, such as the number of bits per second. It is often referred to as "speed." The maximum speed of a voice channel, when measured in kilobits per second ("kbps"), is no more than 64 kbps.[16] I use this value as a measure of Voice Speed in the formula that I present below. Broadband speeds vary by provider, and the predominant form of broadband is asymmetric broadband (such as xDSL

[15] Docket AR 577 Order No, 14-113 dated April 7, 2014.

[16] This is the theoretical capacity of a voice grade equivalent digital signal channel DS0.

service), for which "upstream" (upload) broadband speeds are typically lower than "downstream" (download) broadband speeds.

As explained in my prefiled Reply testimony in Phase II,[17] each ILEC would likely offer more than one speed plan. The current FCC target broadband speeds (speeds necessary to receive federal CAF support) are 1 Mbps upstream / 4 Mbps downstream.[18] The FCC tracks statistics on all connections with speeds of at least 200 kbps.[19] Based on the most recent FCC *Internet Access Report* that tracked broadband availability in the ILEC networks (data as of June 2012), 92% of Oregonians had access to DSL broadband speeds of at least 200 kbps in locations where the ILEC was offering local telephone service.[20] The FCC gathers this information by compiling individual LEC data, which the ILECs report in FCC Form 477. This form contains the counts of broadband connections in service by upload and download speeds, which are defined as ranges such as "greater than 200 kbps and less than 768 kbps."[21]

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[17] *See* Exhibit OCTA 301 to this testimony, pp. 9-10.

[18] *USF/ICC Transformation Order*, ¶ 94.

[19] *See*, for example, the FCC Report *Internet Access Services: Status as of June 2012* ("*FCC Internet Access Report*"), p. 1.

[20] *FCC Internet Access Report*, Table 22. A more recent (data as of December 2012) FCC Internet Access Report is available, but it does not contain information on broadband availability in the ILEC networks by state.

[21] The specific layout of Form 477 may change later this year: It is anticipated (pending the federal Office of Budget and Management approval of the new Form 477) that beginning with the June 2014 reporting period (filed in September 2014), the Form 477 subscription data will no longer be filed using FCC-specified upload and download tiers. Service providers will be required to file subscription data according to their own advertised speed tiers (upload/download). See, for example, http://www.fcc.gov/encyclopedia/changes-coming-form-477-data-collection. The change in the specific layout of Form 477 does not affect the general logic of cost allocation proposed here.

Q. HOW DO YOU PROPOSE TO DETERMINE BROADBAND SPEEDS FOR PURPOSES OF ALLOCATING COST BETWEEN VOICE AND BROADBAND?

A. I propose to use individual ILEC Form 477 data to determine "prevalent" (median) speeds offered by each Oregon ILEC OUSF recipient. For example, based on Frontier's 2013 Form 477 for Oregon,[22] Frontier's broadband connections in Oregon vary in download speeds from a range of *** ___ *** to a range of *** ___ ***. At the same time, the majority (approximately *** ___ ***) of Frontier's broadband connections are in the download speed range of *** ___ ***. For the purpose of my analysis, I conservatively use the lower boundary of this speed range (*** ___ ***) as a measure of Frontier's prevalent download speeds. I average it with the lower boundary of the Frontier prevalent upload speed to come up with a single Broadband Speed figure for Frontier, which I determined to be *** ___ ***.[23] This analysis is repeated for each ILEC that receives OUSF support. The ILEC-specific upload and download broadband speeds determined through the above described procedure are shown in Exhibit OCTA 302 to this testimony.

[22] Provided in Data Request OCTA-FT 24. Other ILECs provided Form 477 data in responses to the following data requests: OCTA-CTL-24 (CenturyLink) and OCTA-OTA 26 (OTA member RLECs).

[23] Note that several ILECs, including CenturyLink and Frontier, file their Forms 477 on a consolidated basis (one form per state). In these cases, the reporting entity is larger than the entity for which the cost is being estimated (study area level cost). However, the level of accuracy is likely sufficient given the alternatives: either assuming the same level of broadband speeds for all companies; or not allocating cost to broadband at all. A third alternative – to require the ILECs provide study-area broadband speed information – is likely similarly undesirable as it would impose additional data collection cost on the ILECs.

Q. HOW DO YOU COMBINE VOICE AND BROADBAND SPEEDS TO CALCULATE YOUR COST ALLOCATION FACTORS?

A. I combine voice and broadband speeds by adjusting broadband speeds down by the broadband take rate. Here I assume that the voice take rate is 100% because the goal is to calculate cost to locations where voice (basic telephone) service is provided. I calculate the Voice Allocation Factor as:

*Voice Speed / (Voice Speed + Broadband Speed * Broadband Take Rate)*

Q. HOW DO YOU DETERMINE BROADBAND TAKE RATES?

A. I use information contained in the LEC Oregon PUC Annual Reports, Form O (Form L).[24] Specifically, Table G11 of this form contains local exchange (voice) line counts by region, while Table I2 contains DSL (broadband) connection counts by region. The ratio of broadband connection counts to local exchange lines produces the ILEC broadband take rates. I employ a slightly different approach for nonrural and rural ILECs: The support for nonrural ILECs (Qwest and Frontier Northwest) was originally set at a wire center level. For these ILECs, I calculate region-specific broadband take rates and voice allocation factors. I then match these region-specific voice allocation factors with the corresponding wire centers. For the RLECs, the cost studies used to calculate OUSF support were conducted on a company-wide basis. Therefore, I calculate a single RLEC-specific (but not region-specific) broadband take rate and the resulting voice allocation factor.

[24] These forms were provided by the ILECs in responses to the following data requests: OCTA-CTL-27 (CenturyLink 2013 Form L), OCTA-FT-27 (Frontier 2013 Form L), OCTA-OTA-30 (OTA 2013 Forms L for its member RLECs, except for Eagle and Nehalem, for which the 2013 Forms L were not provided) and OCTA-OTA-25 (Forms L for Eagle and Nehalem for 2012).

Q. WHAT ARE THE TYPICAL BROADBAND TAKE RATES OBSERVED IN THE OREGON PUC FORM L DATA?

A. Broadband take rates tend to exceed 50%.[25] Among the RLECs that are currently supported by OUSF, the average broadband take rate is approximately 56% based on 2013 Form L data. For some RLECs broadband take rates approach or exceed 100% (*** ___ ***). Only four RLECs have broadband take rates below 40%.[26]

As for the nonrural ILECs, the Frontier Northwest broadband rates are also high at *** ___ *** on average across its serving territory. CenturyLink Qwest's broadband take rates *appear* to be low (at *** ___ ***) if calculated based on the Form L data. CenturyLink explained in response to data request OCTA-CTL 28 that the legacy Qwest entity does not report on the Oregon PUC Form O (Form L) broadband connections utilizing fiber to the node ("FTTN") technology. The same data response explained that FTTN broadband connections are reported on the FCC Form 477. Based on the Form 477 data, I estimate that, if CenturyLink Qwest's FTTN broadband connections were

[25] This discussion is based on year 2013 data, except that for Eagle and Nehalem, for which OCTA has not received the 2013 Forms L, I used the 2012 Form L data.

[26] These RLECs are *** ___ ***. In addition, another RLEC, *** ___ , ___ *** broadband take rates if calculated using the Oregon PUC Form L data. However, this low take rate is a unique case as this company provides many more additional broadband lines via cable modem connections (as is evident from its FCC Form 477).

properly included, the resulting "true" broadband take rate would be approximately *** ___ ***.[27]

Q. WHAT IS THE RANGE OF THE RESULTING VOICE ALLOCATION FACTORS?

A. The range of the resulting voice allocation factors is between *** ___ *** depending on the ILEC. The ILEC-specific voice allocation factors determined through the above described procedure are contained in Exhibit OCTA 302 to this testimony.

(b) Application of Voice Allocation Factors to the Model Cost Estimates

Q. DO YOU PROPOSE THAT THE COMMISSION USE THE SAME ALLOCATION METHOD FOR BOTH NONRURAL AND RURAL LECS?

A. In principle, the answer is "yes." Mechanically, however, there will be differences given methodological and structural differences between the forward looking Synthesis Model, used to establish the original OUSF support for nonrural ILECs, and the embedded cost studies, used for calculating the support for RLECs. But, such differences aside, both the Synthesis Model and the RLEC embedded cost studies include the cost of the dual-use/shared-use network component, namely local loop facilities. Both models calculate the cost of basic telephone service *as if local loop facilities were used only by voice services*. While this approach may have been valid 13 or so years ago when broadband adoption was relatively limited, this is no longer an acceptable approach. As discussed

[27] This estimate of the total (FTTN and non-FTTN) Qwest broadband connections is calculated as total broadband connections reported by CenturyLink on the FCC Form 477 (which reflects consolidated [legacy Qwest, CenturyTel and United] counts) minus Oregon Form L broadband connections for CenturyTel and United. As explained in CenturyLink's data response to OCTA-CTL-28, the non-reporting of FTTN applies only to the legacy Qwest Form L reporting.

above, today the same physical loop facility is used to provision both basic telephony and broadband services. Since these services *share* the loop, it is only appropriate to allocate loop cost between these two services, rather than assign all the cost of the loop to voice service. Otherwise, subsidies are artificially inflated.

Q. IS YOUR PROPOSAL TO ALLOCATE LOOP COST BETWEEN VOICE AND BROADBAND SERVICES A NOVEL APPROACH?

A. No, allocation of cost of jointly used/shared facilities is not a novel concept, but a standard approach rooted in regulatory economics[28] and cost modelling practices. In the Synthesis Model, cable and wire *structures* (poles and trenches) are assumed to be shared between telephone and other services, such as services provided by electric utilities and cable operators. Telephony is assigned only a portion of pole and other related structure costs.[29] My proposal to allocate a portion of the loop costs to another service – broadband – is simply an extension of the already employed approach.

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[28] The need for allocating shared and common facilities arises when regulators are faced with setting prices. In telecommunications, examples of shared and common facilities include spare capacity, corporate overhead and vehicles used to maintenance the network. Various methodologies of allocating shared and common cost were discussed extensively in relation to developing prices of Unbundled Network Elements. See for example, FCC CC Docket Nos. 96-98 and 95-185, *In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, Interconnection between Local Exchange Carriers and Commercial Mobile Radio Service Providers*, First Report and Order adopted on August 1, 1996 (Local Competition Order), ¶¶ 694 and 696.

[29] CC Docket Nos. 96-45, 97-160, In the Matter of Federal-State Joint Board on Universal Service, Forward-Looking Mechanism for High Cost Support for Non-Rural LECs, Tenth Report And Order, Adopted: October 21, 1999, ¶¶ 241-44. The values for the percent structure assigned to telephony adopted by the FCC ranged from 35% to 50% for poles and from 55% to 100% for trenches depending on the density zone. These values were also adopted in the OUSF Model run per Order 00-312 p. 16.

Further, the concept of cost allocation is well known in accounting and embedded cost studies. Historically (until the FCC froze separations factors in 2001[30]), various parts of telephone plant were allocated between interstate and intrastate services based on minutes of use – a measure that was appropriate in a voice-centric network. Some parts of the plant were allocated based on other measures such as circuit kilometer counts (interexchange cable and wire facilities per 47 CFR ¶36.156) or minutes-of-use kilometers (host/remote cable and wire facilities per 47 CFR ¶36.157). Investment in *jointly used subscriber line cable and wire facilities* ("local loop") has been allocated under the frozen fixed proportions 75% intrastate / 25 % interstate.

Q. HOW WOULD YOU APPLY YOUR VOICE ALLOCATOR TO THE COST MODEL ESTIMATES?

A. I would start with the cost model estimates that were used to set the most recent per line support amounts. For the nonrural ILECs, these are the Synthesis Model costs per line contained in the Model output files. For the RLECs, these are the embedded cost studies run by Staff in 2012 prior to the settlement that was approved in Order 12-204.[31]

Q. PLEASE DISCUSS IN MORE DETAIL HOW YOU WOULD APPLY THE VOICE ALLOCATOR FOR THE SYNTHESIS MODEL, USED FOR THE NONRURAL ILECS.

A. For the Synthesis Model runs, I would use the following mechanics to arrive at my adjustments: I would start with the observation that the total Model per line cost is the

[30] See *Separations Freeze Order.*

[31] Both sets of cost studies were provide to OCTA in Staff's data responses to OCTA-10 and OCTA-11.

sum of Loop per line cost and several other (non-Loop) per line cost such as Line Port, End Office Switching and Transport. Within the Synthesis Model, the Loop cost consists of four broad categories – Network Interface Device ("NID"), Distribution, Concentrator and Feeder. [32] I would apply the voice allocation factor to three out of four of these categories, namely NID, Distribution and Feeder. These are "loop" network components, such as cable and wire that are shared by voice and broadband services. For example, distribution and feeder are cable and wire facilities that carry both voice and data signals from the customer premises to the central office, while the NID represents the point of connection between ILEC cable and wire facilities and customer inside wire. Concentrator in the Synthesis Model includes both "passive" remote terminals and electronics such as Digital Loop Carriers ("DLC"). It is my understanding that some (but not all) of these electronics may be specialized (voice-only or broadband-only). Conservatively, I would assume that none of the Concentrator is used by broadband. Accordingly, I would not apply the voice allocation factor to Concentrator cost. The result of my cost allocation would be a reduction in the NID, Distribution and Feeder cost, which in turn would reduce Loop and Total per Line Model Cost.

Q. PLEASE DISCUSS IN MORE DETAIL HOW YOU WOULD APPLY THE VOICE ALLOCATOR FOR THE RLEC EMBEDDED COST MODELS.

A. For the RLEC embedded cost models, I would use the following mechanics to arrive at my proposed adjustments. I would apply the ILEC-specific voice allocation factor to

[32] *See* Tab "Investment Input:" Total Monthly Cost per Line is contained in column IC; this column is a sum of several columns, including column HU (Loop). Column HU (Loop) is derived from columns GL (Distribution), GM (NID), GN (Concentrator) and GO (Feeder).

Category 1.3 Subscriber Line (Common) Cable and Wire Facilities Investment. These are jointly used cable and wire ("loop") facilities such as copper and fiber distribution and feeder plant. The result would be a reduction in this investment category. I would also proportionally reduce other accounts that are associated with cable and wire facilities[33] – Accumulated Depreciation for Cable and Wire Facilities; Operating Expense for Cable and Wire Facilities, and Depreciation Expense for Cable and Wire Facilities.[34] The resulting reductions in cable and wire investment and expense accounts would cause a reduction in the Per Line Cost generated by the embedded cost studies. Finally, when calculating the OUSF support associated with these adjusted per Line Cost estimates, I would also adjust the voice allocation factor to reflect federal High Cost Loop Support, which is the federal subsidy that is subtracted from the Per Line Cost in the OUSF support formula. As explained above, local loops utilized for broadband are supported in part by the federal high-cost fund and, therefore, when allocating the cost of loop for purposes of calculating OUSF support, it is also fair to allocate the corresponding federal high-cost support for those loops. This adjustment would increase total OUSF size (other things being equal).

[33] These depreciation and expense accounts associated with cable and wire facilities are reported only at an aggregate level (inclusive of all categories of cable and wire facilities – Category 1.3 Subscriber Line (Common), as well as Dedicated Line, Interexchange Trunk and other categories). Therefore, Voice Allocation Factors should not be applied directly to them. Instead, I would derive a secondary factor – a proportion by which the aggregate Cable and Wire investment reduces after I apply the voice allocation factor to Category 1.3 Subscriber Line (Common) Investment. I would reduce the depreciation and expense accounts for cable and wire facilities by this secondary factor (proportion).

[34] I would implement these adjustments in Tabs "200X Form I pg 1&2" and "200X Form I pg 3-7" of the RLEC embedded cost models.

Q. YOUR ALLOCATION METHODOLOGY DOES NOT TAKE INTO CONSIDERATION VIDEO SERVICES. CAN YOU PLEASE EXPLAIN WHY?

A. I did not consider video services because I am not aware of data sources that would permit calculation of video take rates among Oregon ILEC customers. However, if such data were available, it would be logical and appropriate to include video services in the allocation methodology. The relevant video services would be video services that utilize the local loop facilities such as Internet Protocol TV.

Q. THE SYNTHESIS MODEL DOES NOT NECESSARILY REFLECT THE COST OF ALL FACILITIES NECESSARY TO OFFER BROADBAND SERVICE. PLEASE EXPLAIN WHY THIS FACT DOES NOT IMPACT YOUR ALLOCATION METHODOLOGY.

A. It is not necessary for *all* broadband costs to be in the model in order to appropriately allocate those broadband costs that ***are*** in the model. While some *specialized* network components necessary to provision broadband services (e.g., DSLAMs, routers, backbone facilities) are not included in the Synthesis Model, this does not change the fact that a nonspecialized/shared-use network component, the local loop, is included in the model *as if it were used only by voice services,* while in today's reality *it is shared by voice and broadband services.*

The Synthesis Model already assumes certain sharing between services. It assumes that structures such as poles and trenches are shared by ILECs, electric utilities, cable operators, etc. Therefore, to accurately calculate the cost, the Synthesis Model assigns only a portion of the pole and trench costs to telephony. The fact that the Synthesis

Model does not contain "all cost" necessary to operate an electric utility does not affect the need to account for structure sharing by allocating certain costs to electric utilities. This is exactly what my allocation methodology does with respect to those broadband-related costs that ***are*** reflected in the Synthesis Model. What matters is that the Synthesis Model included local loop facilities, and loop facilities constituted a significant portion of the total cost upon which OUSF support for nonrural ILECs was calculated. The Synthesis Model used actual customer locations to design loop facilities to the nonrural ILEC central offices. The majority of those central offices and customer locations are still here today. However, in 2000 (at that time the Synthesis Model was run to generate these cost estimates), local loop facilities carried mostly voice services. Today the same facilities carry not only voice but also broadband services. For example, based on Frontier Northwest's 2013 Annual Report Form L, its statewide broadband take rate – calculated as a ratio of broadband lines and local exchange lines is *** ___ ***.[35] Because a "new" (relative to year 2000) service is now riding on local loop that used to support only voice services, it is only fair that the "new" and the "old" services split the cost.

[35] Frontier's Form L was provided in its data response to OCTA-FT- 27. I calculated this take rate as the ratio of total (broadband line) in Table I2 to total (residential and business lines) in Table G11.

Q. WHAT ABOUT THE RLEC EMBEDDED COST STUDIES: DOES THE FACT THAT LOOP ELECTRONICS USED TO PROVISION BROADBAND SERVICES ARE ALREADY ALLOCATED TO BROADBAND IN THE RLEC EMBEDDED COST STUDIES IMPACT YOUR ANALYSIS?

A. No. My proposal is to allocate local loop facilities that are *shared* by voice and broadband. I do not propose to adjust electronics or any other network cost that is directly associated with broadband.

I only allocate a relatively narrow category – *jointly used subscriber line cable and wire facilities cable and wire ("Loop") cost* – a category that would not contain electronics or any other network components that can be directly assigned to broadband. The jointly used cable and wire facilities are split between the intrastate and interstate jurisdictions in proportions 75% intrastate / 25% interstate in the RLEC embedded cost studies. As explained by the FCC,

> When the loop is used to deliver both voice and broadband transmission services on a Title II basis, the loop is considered a "joint use" loop.[36]
>
> Loop costs associated with joint-use facilities are allocated between the state and federal jurisdictions on a 75/25 percent basis. These joint-use loops may receive [High Cost Loop Support] and [Interstate Common Line Support]. The costs of these joint-use facilities, therefore, are recovered through a combination of intrastate end user charges for voice service, interstate charges (such as the subscriber line charge) and universal service support. Typically, the only costs recovered through the special access tariff for the broadband transmission service are the incremental costs associated with making the loop broadband-capable.[37]

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[36] Docket No. WC 10-90, Public Notice *Wireline Competition Bureau Seeks Comment on Option to Promote Rural Broadband in Rate-of-Return Areas,* released on May 16, 2013 ("*FCC Rural Broadband Public Notice*"), p. 2 (footnote omitted).

[37] *FCC Rural Broadband Public Notice*, p. 3, footnote 9.

In other words, I propose to allocate the cost of facilities that is currently assigned to voice services but that in reality is shared between voice and broadband services.

Q. IS IT A NOVEL IDEA TO USE BROADBAND TAKE RATES IN COST ALLOCATION?

A. No. In fact, this method was proposed by several RLEC associations[38] in the federal USF docket, and was one of the issues on which the *USF/ICC Transformation Order* sought further comment. The *USF/ICC Transformation Order* explained this proposal as follows:

> The Rural Associations propose that costs be shifted to the interstate jurisdiction based on an individual carrier's "Broadband Take Rate," which equals its total broadband lines divided by its total working access lines.[39]
>
> Under the Rural Association Plan, loop costs would be allocated to the interstate jurisdiction based on the current 25 percent allocator or the individual carrier's broadband adoption rate, whichever is greater. [40]

The Rural Associations justified the use of broadband take rates in loop cost allocation as follows:

> The "Broadband Take Rate" in the RLEC Plan offers a reasonable proxy for reflecting increased use of loop plant for these interstate services. Specifically, as individual customers within the RLEC customer base adopt broadband, the RLEC's loop plant becomes increasingly associated with interstate usage, and the

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[38] *The National Exchange Carrier Association, Inc.; National Telecommunications Cooperative Association; Organization For The Promotion And Advancement Of Small Telecommunications Companies; and The Western Telecommunications Alliance.*

[39] *USF/ICC Transformation Order,* ¶1039.

[40] *USF/ICC Transformation Order,* footnote 322 to ¶204.

costs should in turn be allocated to the interstate jurisdiction under the axiom that revenues and costs should be matched to the extent possible.[41]

The filings of the Rural ILEC Associations related to its proposal further validate my approach of allocating cost estimates calculated under the "traditional" voice-centric methodology between voice and broadband. Specifically, the several RLEC associations are currently advocating the creation of a targeted federal high-cost support mechanism for "data-only broadband service."[42] These RLEC associations propose loop cost funding for this service based on the same loop cost formula as the formula used for the "regular" federal High Cost Loop Support.[43]

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes.

[41] FCC WC Docket No. 10-90, GN Docket No. 09-51, WC Docket No. 07-135, WC Docket No. 05-337, CC Docket No. 01-92, CC Docket No. 96-45, WC Docket No. 03-109, WT Docket No. 10-208, *Initial Comments Of The National Exchange Carrier Association, Inc.; National Telecommunications Cooperative Association; Organization For The Promotion And Advancement Of Small Telecommunications Companies; and The Western Telecommunications Alliance* dated January 18, 2012, p. 14 (footnote omitted).

[42] FCC Docket WC 10-90, Comments Of NTCA – The Rural Broadband Association; The National Exchange Carrier Association, Inc.; The Western Telecommunications Alliance; And The Eastern Rural Telecom Association ("*June 17 2013 Rural Broadband Comments*"), June 17, 2013, p. 3, explains that this service is a standalone broadband transmission service "that provides a connection between an end user and a connection point with an Internet Service Provider ("ISP"). The service uses the same loop facilities currently provided by RLECs to enable customers to access the Public Switched Telephone Network ("PSTN") or its functional equivalent, but is sold without traditional voice services." Footnote omitted.

[43] *June 17 2013 Rural Broadband Comments*, p. 5 and Attachment I p. 1 (proposed rule § 54.322).

QSI consulting, inc.

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

UM 1481
Phase III – ISSUE B

In the Matter of	
PUBLIC UTILITY COMMISSION OF OREGON	
Staff investigation of the Oregon Universal Service Fund	

EXHIBIT OCTA 301

TO

OPENING TESTIMONY

OF

AUGUST H. ANKUM, Ph.D.

ON BEHALF OF

THE OREGON CABLE TELECOMMUNICATIONS ASSOCIATION

April 24, 2014

PUBLIC

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

UM 1481

In the Matter of	)
PUBLIC UTILITY COMMISSION OF OREGON	)
Staff investigation of the Oregon Universal Service Fund	)

DIRECT TESTIMONY

OF

AUGUST H. ANKUM, Ph.D.

ON BEHALF OF

THE OREGON CABLE TELECOMMUNICATIONS ASSOCIATION

December 10, 2012

REDACTED

Confidential Data are marked with ***___***

Q. ON WHOSE BEHALF ARE YOU FILING THIS DIRECT TESTIMONY?

A. I am filing this testimony on behalf of the Oregon Cable Telecommunications Association ("OCTA" or the "Association").

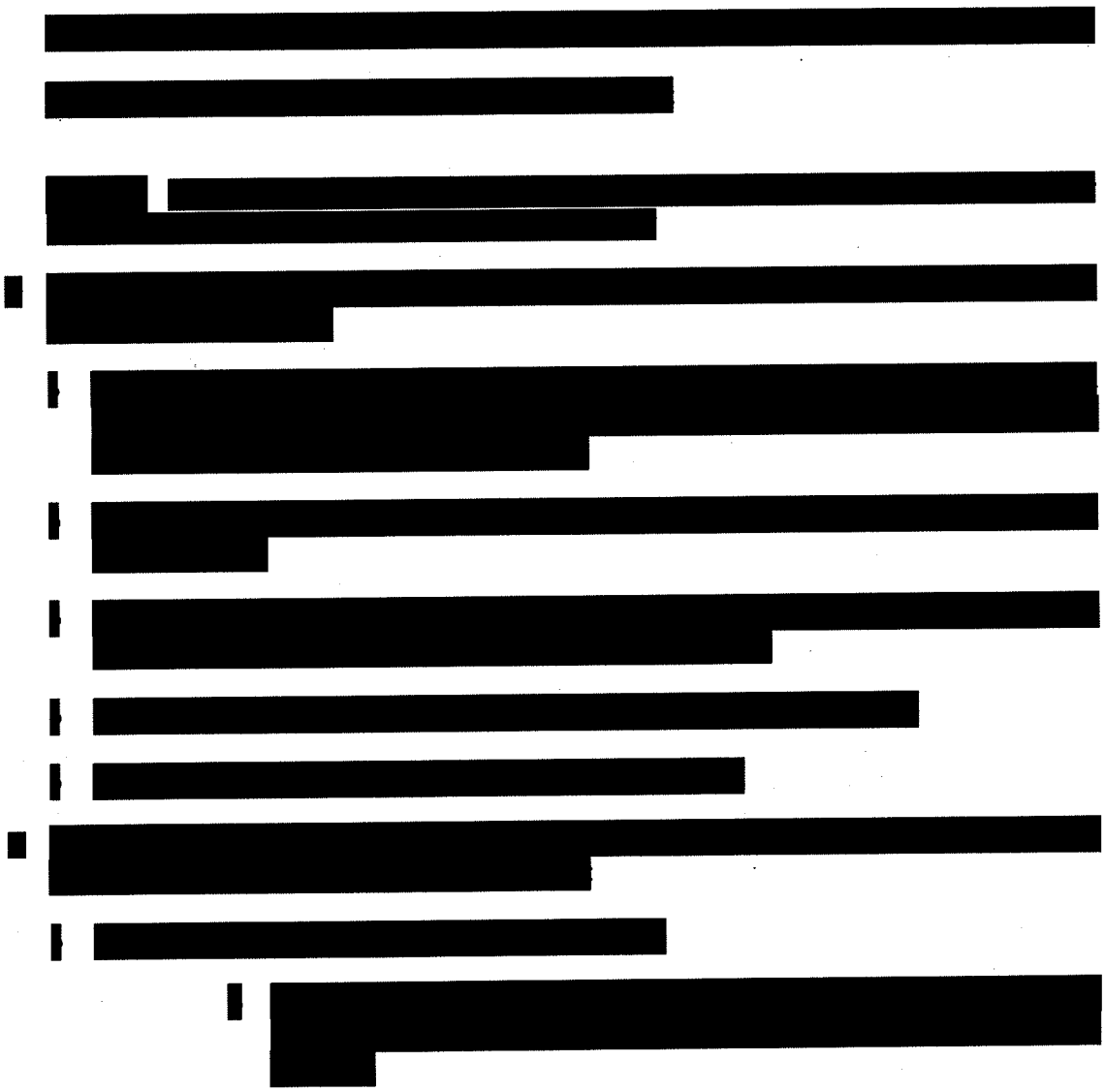
Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. The purpose of a universal service fund is to ensure that affordable telecommunications service is available to all citizens. In Oregon, the express statutory purpose of the Oregon Universal Service Fund ("OUSF") is "to ensure basic telephone service is available at a reasonable and affordable rate.[2] The purpose of a universal service fund, therefore, is to benefit customers, not carriers.[3]

By contrast, the OUSF has evolved in a manner in which the benefits are directed to incumbent carriers rather than to end-user customers. This has led to a number of distortions. The OUSF surcharge rate is one of the highest in the country and is growing. A high surcharge can hurt the relative competitiveness of the state as businesses may choose to locate in other states. A broad base of end-users, including customers of competitive carriers and urban customers, pays into the fund but receives no tangible benefits. Customers of rural carriers enjoy artificially low rates for basic service and access to Fiber to the Home services – service that is ironically not available to most customers of non-rural incumbents. The fund pays support to incumbent carriers in areas served by unsubsidized competitors, which conflicts with the statutory mandate of being competitively neutral and stunts the much needed development of competition. The

[2] ORS 759.425(1).
[3] United States Court of Appeals For The Fifth Circuit, No. 98-60213, *Alenco Communications, Inc. v. FCC*, 201 F.3d 608 (5th Cir. 2000).

current support calculation methodology pays for the total cost of telecommunications network, failing to recognize the reality of today's telecommunications in which voice services share the same network with broadband services. As a result, the OUSF supports not only basic voice services, but also – contrary to statutory intent – broadband services. The specific methods used to implement the statutory support formula contribute to waste and inefficiency.



[redacted]

Broadband Shares Network with Voice Services

Q. YOU HAVE SAID THAT THE OUSF IS TO ENSURE THE AVAILABILITY OF BASIC VOICE SERVICE AT REASONABLE AND AFFORABLE RATES. ARE THE NETWORKS ON WHICH OUSF DOLLARS ARE SPENT USED TO PROVIDE ONLY BASIC VOICE SERVICE?

A. No. The networks operated by OUSF recipients are generally used to provide both basic (supported) services as well as non-basic (non-supported) services. For example, it is common practice in a typical arrangement, for voice and broadband services of a residential customer to be provisioned over the same cable loop facility that connects this customer to the ILEC central office. This presents challenges for the OUSF because both the Synthesis Model and the embedded cost study assign 100% of the loop facility cost to basic voice service. As a result, a USF subsidy that is based on these cost estimates would subsidize not only the supported (voice) services, but also unsupported services that use the same loop. This flaw should be resolved in the OUSF mechanism going forward by making the adjustments I propose below.

This flaw of a narrowband USF mechanism is widely recognized. For example, in the *USF/ICC Transformation Order*, the FCC acknowledged that "in the absence of any federal mandate to provide broadband, rate-of-return carriers have been deploying broadband to millions of rural Americans, often with support from a combination of loans

from lenders such as RUS and ongoing universal service support."[56] The US Government Accountability Office explained that "[w]hile access to advanced services, such as broadband, is not included among the designated list of services supported by the high-cost program, the program has indirectly facilitated broadband deployment in many rural areas. In recent years, some carriers have been using high-cost program support to upgrade their telephone networks, including upgrading to fiber optic cable and extending it closer to their customers… In rural areas served by rural carriers, the high-cost program allows the carrier to recoup a large portion of the investment that facilitates broadband service since, as we mentioned earlier, these carriers receive high-cost program support based on their costs."[57] A Congressional Office Budget paper reported that "[r]ecent surveys of investment patterns among rural carriers offer more-direct evidence of the dual purpose of such investments. In a survey of its rural members, the National Telecommunications Cooperative Association found that 81 percent of respondents were using their investment in fiber loop to extend the reach of DSL service."[58] And finally, an executive of Pine, the Oregon RLEC that receives the highest per line support in the State, recently stated that "Pine Telephone and other small rural phone companies have utilized financial assistance from the Universal Service Fund to make the necessary network upgrades for full-scale broadband networks… Thanks to the Universal Service

[56] See *USF/ICC Transformation Order*, ¶ 205.

[57] United States Government Accountability Office, Report to Congressional Committees, *Telecommunications. FCC Needs to Improve Performance Management and Strengthen Oversight of the High-Cost Program*, June 2008, p. 22 (footnote omitted).

[58] Congressional Budget Office, *Factors That May Increase Future Spending from the Universal Service Fund,* June 2006, p. 26 (footnote omitted).

Fund, we've successfully brought our customers affordable broadband Internet service."[59]

Q. DOES THIS ISSUE CONCERN COST ESTIMATES OF BOTH RURAL AND NON-RURAL ILECS?

A. Yes. The cost estimates resulting from either the Synthesis Model (used by the non-rural carriers) or the embedded cost studies (used by the rural carriers) overstate the actual cost of providing basic voice services because they assign 100% of network cost to voice services, while in reality the network cost is shared between basic and non-basic services.[60]

That said, the problem is likely more pronounced for rural LECs because their USF funding is directly linked to their embedded (or book) cost, such that each dollar the rural carrier actually invests in its telecommunications plant increases that rural carrier's average cost per loop and, in turn, increases potential USF support. This is in contrast to non-rural carriers whose OUSF funding is determined based on the costs of a hypothetical efficient carrier and not based on their actual book investment. As a result, rural carriers have an incentive to "gold plate" their network and RLEC customers often have access to advanced services that are, ironically, not available in urban areas. For example, many Oregon RLECs offer Fiber to the Home ("FTTH") service to their

[59] See John B. Hemphill, Vice President, Pine Telephone System, Inc. *Rural Broadband Access Could Take a Huge Step Backwards*, Hells Canyon Journal, Vo. 29 No. 38, September 21, 2011 available at http://www.pinetel.com/JBHOPEDSEPT21.HTML.

[60] Other non-voice services such a video may be using the same network facilities. I am focusing here on broadband services because they are widely available through ILECs and/or their affiliates.

residential customers,[61] a service that is not available to the CenturyLink (Qwest) residential customers in the Portland metropolitan area.[62]

[redacted]

[61] Some examples include Pine (see http://www.pinetel.com/internet.html offering FTTH at speeds 6Mbps/2Mbps for $37.95); Molalla (see http://www.molalla.com/internet.html offering FTTH branded "XFon" (Xtreme fiber optic network) product at speeds 50Mbps/20Mbps starting at $29.95 per month for the first 3 months); Monitor (see http://www.monitorcoop.com/index.php/community/fiber-to-the-home-update -- offering FTTH; pricing and speeds not listed); Stayton and Peoples (see http://www.sctcweb.com/internet/ offering FTTH at speeds 15Mbps/3Mbps at 49.95 and 50Mbps/5Mbps for $64.95 per month).

[62] It is my understanding that some Frontier residential customers in the Portland metropolitan area may have grandfathered Verizon FiOS FTTH service.

[63] Order No. 12-309, Attachment 1.

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

UM 1481

In the Matter of	)
PUBLIC UTILITY COMMISSION OF OREGON	)
Staff investigation of the Oregon Universal Service Fund	)

REBUTTAL TESTIMONY

OF

AUGUST H. ANKUM, Ph.D.

ON BEHALF OF

THE OREGON CABLE TELECOMMUNICATIONS ASSOCIATION

January 30, 2013

PUBLIC

Confidential Data are marked with ***___***

Q. IN LIGHT OF THE ALJ RULING ON OCTA'S MOTIONS TO COMPEL AND TO CERTIFY, WHAT METHOD OF ALLOCATING (APPORTIONING) COST BETWEEN BASIC LOCAL TELEPHONY AND BROADBAND SHOULD THE COMMISSION CONSIDER?

A. A fair and reasonable method of apportioning the available cost estimates between basic local telephony and broadband is a method based on the relative bandwidth used by each service. Bandwidth measures capacity of the connection, typically expressed as the volume of information per unit of time that a service can handle, such as the number of bits per second. The capacity of a voice channel, when measured in kilobits per second ("kbps") is no more than 64 kbps.[9] Broadband speeds vary by provider, and for residential customers, "upstream" (upload) broadband speeds are typically lower than "downstream" (download) broadband speeds. CenturyLink is currently offering three tiers of broadband service, with the lowest speed tier being between 768 kbps and 3 megabits ("Mbps"), the middle tier being from 7 to 12 Mbps, and the fastest tier being between 20 and 40 Mbps downstream.[10] Frontier offers three speed tiers (15, 25 and 35 Mbps) over FiOS network[11] (where available). The current FCC target broadband speeds (speeds necessary to receive federal CAF support) are 1 Mbps upstream / 4 Mbps

[9] This is the theoretical capacity of a voice grade equivalent digital signal channel DS0.

[10] Current CenturyLink's "generic" (not location-specific) offerings. *See* http://www.centurylink.com/home/internet/ (Tab "Speeds"). Speeds up to 12 Mbps are available in metro Portland (zip code 97068).

[11] Current Frontier's offering in Oregon (zip code 97229). *See* http://www.frontierforhome.com/fios/services.php.

downstream.[12] However, historically the FCC tracked statistics on all connections with speeds of at least 200 kbps.[13] Based on the most recent FCC *Internet Access Report* (data as of June 2011), 91% of Oregonians had access to DSL broadband speeds of at least 200 kbps in locations where the ILEC was offering local telephone service. [14] In addition, 67% of Oregon households subscribed to broadband with speeds at least 200 kbps in one direction,[15] and 48% of Oregon households subscribed to broadband speeds that were at least 768 kbps upstream and 3 Mbps downstream.[16]

Given the lack of data available in this docket, I modify my original proposal to use revenue-based allocation[17] in favor of the allocation based on bandwidth use.

Q. PLEASE PROVIDE AN ILLUSTRATION OF YOUR PROPOSAL TO ALLOCATE THE COST BASED ON BANDWIDTH USE.

A. The following table utilizes the above cited FCC broadband speed and take rate figures to provide an illustration of my proposal. As noted above, ILEC broadband speeds can vary from 200 kbps to at least 35 Mbps. In this table, I provide calculations for two conservative cases. The first case assumes that the speed is only 200 kbps (column

[12] *In the Matter of 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 an Unified Intercarrier Compensation Regime, Federal-State Joint Board on Universal Service, Lifeline and Link-Up, Universal Service Reform – Mobility Fund*, WC Docket No. 10-90, GN Docket No. 09-51, WC Docket No. 07-135, WC Docket No. 05-337, CC Docket No. 01-92, CC Docket No. 96-45, WC Docket No. 03-109, WT Docket No. 10-208, Report and Order and Further Notice of Proposed Rulemaking, FCC 11-161, released on November 18, 2011 ("*USF/ICC Transformation Order*"), ¶ 94.

[13] *See*, for example, the FCC Report *Internet Access Services: Status as of June 30, 2011* ("*FCC Internet Access Report*"), p. 10.

[14] *FCC Internet Access Report*, Table 24.

[15] *FCC Internet Access Report*, Table 16.

[16] *FCC Internet Access Report*, Table 15.

[17] Ankum Direct testimony, p. 40.

labeled "Low Speed Broadband"), which is likely an absolute lower boundary as I am not aware of any landline companies still offering such low speed service. The second case assumes that the speed is 768 kbps (column labeled "Medium Speed Broadband"), which again is a very conservative assumption as I took the lower speed in the FCC category "at least 768 kbps upstream and 3 Mbps downstream."[18] I calculate the apportionment factors using the same general methodology as the one used to calculate revenue-based apportionment.[19] Under this approach, the broadband bandwidth is adjusted down by broadband take rates, while the voice bandwidth is not adjusted for take rates (since we are calculating cost apportionment factors for customers who subscribe to local basic voice service).

Table 1.

Bandwidth-Based Apportionment of the Cost Study Cost Per Line Between Voice and Broadband Services (Hypothetical Example)

Line	Measure	Low Speed Broadband	Medium Speed Broadband	Formula
L1	Average Cost per Line from the "Traditional" Cost Study	$ 70.00	$ 70.00	input
L2	Bandwidth Used -- Basic Voice Service (kbps)	64	64	input
L3	Bandwidth Used -- Broadband Service (kbps)	200	768	input
L4	Average Broadband Take Rate (% Voice Lines)	67%	48%	input
	Apportionment Factors:			
L5	**Basic Voice**	**32%**	**15%**	L2 / (L2 + L3 * L4)
L6	Broadband	68%	85%	1 - L5
L7	**Average Cost per Line of Basic Voice Service**	**$ 22.63**	**$ 10.36**	**L1 * L5**

[18] This combination is tracked by the FCC such as in the above discussed FCC Internet Access Report, Table 15.

[19] Ankum Direct testimony, p. 41 Table 4.

The resulting apportionment factors for basic local telephony are contained in Line 5 of the table. Under the first scenario (broadband speeds are only 200 kbps) local voice is assigned 32% of cost; under the second scenario (broadband speeds are 768 kbps) local voice is assigned 15% of cost. In general, the higher broadband speeds, the lower the apportionment factor (share of cost) for basic local telephony. As I noted above, 200 kbps is likely the absolute minimum boundary for broadband speeds, meaning that 32% is the absolute maximum share of local basic voice telephony in total cost if bandwidth-based apportionment method is used. Likewise, 768 kbps is likely significantly lower than the "prevalent" speeds in today's consumer markets. Companies with all-fiber networks, as well as companies offering video service over the same (fiber, copper or coaxial) network tend to offer very high broadband speeds, meaning that a significantly smaller portion of bandwidth would be allocated to voice services. For example, as I mentioned above, Frontier's "starting" broadband speed offering associated with its all-fiber FiOS network (network that was designed to carry not only voice and broadband, but also video services) is 15 Mbps, while its fastest tier is 35 Mbps. Speeds offered by providers of "video-centric" networks such as Comcast can be as high as 50 or 105 Mbps.[20]

[20] Current Comcast's generic (not location-specific offering. *See* http://www.comcast.com/internet-service-west.html?iq_id=48056385&CMP=KNC-IQ_ID_48056385-VQ2-g-VQ3--VQ6-31028922576. Speed of at least 50 Mbps is available in metro Portland (zip code 97068).

Q. DO YOU PROPOSE THAT THE COMMISSION USE THE SAME APPORTIONMENT METHOD FOR BOTH NON-RURAL AND RURAL LECS?

A. Yes. The fact that OUSF cost estimates capture the cost of the network that is used to provide not only local basic voice, but also broadband service, is true for all ILECs. Customers of Rural LECs subscribe to broadband services just like customers of non-rural LECs do. Many Oregon RLECs provision their services over fiber-to-the home ("FTTH") loop facilities -- technology that permits even higher broadband speeds than DSL technology (the technology ridding on copper and hybrid copper-fiber loops and employed by CenturyLink in its non-rural wire centers). For example, Mr. Hemphill (OTA) explained in his testimony that his company, Pine Telephone Systems ("Pine"), had been building FTTH in its serving territory in four phases with the intention to have fiber at all locations.[21] He also explained that the last two build out phases were negatively affected by the FCC decision to set target broadband speeds at only 1 Mbps upstream / 4 Mbps downstream,[22] which is lower than what Pine is capable of offering over fiber.[23] Another OTA witness, Mr. Lawrence, testified that his companies (Peoples and Stayton telephone cooperatives) use both DSL and FTTH technology, and offer speeds in the range 1.5 Mbps to 50 Mbps downstream.[24] More generally, a recent nationwide survey conducted by the National Telecommunications Cooperative Association ("NTCA") found that 98% of cooperatives' customers can receive 200 to 768 kbps downstream service, 95% -- 768 kbps to 1.0 Mbps, 91% -- 3.0 to 4.0 Mbps, 90% --

[21] Hemphill testimony, p. 6.

[22] *USF/ICC Transformation Order*, ¶ 94.

[23] Hemphill testimony, p. 5.

[24] Lawrence testimony, p. 3.

4.0 to 6.0 Mbps, etc.[25] The NTCA survey also found that the overall take rate for broadband service among its member companies was 66%.[26] This take rate is very close to the FCC measure, according to which 67% of Oregon households subscribed to broadband with speeds at least 200 kbps in one direction.[27]

Q. ON A RELATED ISSUE, DO YOU AGREE WITH STAFF'S STATEMENT ON PAGE 15 THAT BROADBAND NETWORKS ARE MORE EXPENSIVE THAN VOICE NETWORKS?

A. Not really. I do not think there is enough evidence to make a categorical statement like this, especially considering the joint product nature of the network, which requires a careful allocation of costs between voice and broadband services. While networks for broadband services do require some specialized equipment not generally used by voice networks, the opposite is also true -- voice networks require equipment that is not necessary for broadband services. For example, a switch is a piece of equipment necessary to support voice, but not broadband service. Further, in my direct testimony (on page 24) I cited the FCC opinion that there is "evidence that the forward-looking cost of deploying voice and broadband-capable networks today is generally not significantly higher than deploying voice-only networks."[28] But the key issue in the context of OUSF is not whether broadband networks are more or less expensive than voice networks. The key issue is that to a large extent, broadband services use the same network as voice services. For example, in my direct testimony I cited the preliminary results of the FCC

[25] NTCA *2011 Broadband/Internet Availability Survey Report*, March 2012, p. 3

[26] NTCA 2011 *Broadband/Internet Availability Survey Report*, March 2012, p. 3

[27] FCC Internet Access Report, Table 16.

[28] *USF/ICC Transformation Order*, ¶ 65, footnote 72.

broadband cost model, according to which at least 75% of the total cost of providing broadband consists of cost for cable, trenching, conduit and poles[29] -- which are the same cost components that are present in voice networks.

The joint use of the same network by broadband and voice services is even more evident if we look at the historical ways in which broadband services became available. In order to offer broadband services such as DSL to a location where broadband service was previously unavailable, an ILEC had to install a piece of circuit equipment called a Digital Subscriber Line Access Multiplexer ("DSLAM") on top of existing (voice) loop facilities. In addition, in some cases loop facilities needed to be "conditioned," which means removal of devices such as loading coils -- devices that boost voice signal on long copper loops. Note that when developing the Synthesis Model (the model used to generate current OUSF cost estimates for non-rural ILECs), the FCC explicitly disallowed the use of longer loop lengths and loading coils in the model network design "because their use may impede high-speed data transmission."[30] In other words, the model's loop design (and therefore, OUSF cost estimates generated by the model) reflects a network that is already "conditioned" to offer broadband (high speed data) services.

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[29] *See* FCC WC Docket Nos. 10-90, 05-337 September 13, 2012 Model Workshop presentation "CAF 2 Model Overview, CostQuest Associates" Part 2, p. 114 available at http://www.fcc.gov/events/connect-america-phase-ii-cost-model-workshop. This page shows a pie chart labeled "Review of Current Results" and is associated with network design "Fiber to the Digital Subscriber Line Access Multiplexer" ("DSLAM"). The 75% figure quoted above is based on the visual examination of this chart. Here the main components of "broadband circuit equipment" include DSLAM, routers, modem and optical network terminal ("ONT"). While this chart is for demonstration purposes and may not reflect the current model's output, it reflects a common-sense expectation that the majority of cost of providing broadband service would be associated with cable facilities. (This footnote was inadvertently deleted from the final version of Ankum direct where it should have appeared on page 25 line 5.)

[30] *See* FCC CC Docket Nos. 96-45, 97-160, Fifth Report & Order, adopted: October 22, 1998 ("Model Platform Order) ¶ 67.

Q. DOES YOUR DISAGREEMENT WITH STAFF ON WHETHER BROADBAND NETWORKS ARE MORE EXPENSIVE THAN VOICE NETWORKS AFFECT YOUR POSITION ON STAFF'S RECOMMENDATION THAT A PORTION OF THE COST SHOULD BE ALLOCATED TO NON-VOICE SERVICES?

A. Not at all. Staff's recommendation to allocate a portion of loop cost to services other than basic local telephone service is correct. Based on Staff's observation that the loop is shared (used) by several services, including basic local telephone service and broadband, I agree with Staff's recommendation to allocate the costs of the loop.[31]

Q. ALSO ON A RELATED TOPIC, OTA'S WITNESS MR. RENNARD CLAIMS THAT THERE IS NO "CROSS-SUBSIDIZATION" OF RLECS' UNREGULATED ACTIVITES BY OUSF FUNDING BECAUSE ACCOUNTING RULES DO NOT ALLOW THAT.[32] DOES THIS STATEMENT CONFLICT WITH YOUR PROPOSAL THAT OUSF COST ESTIMATES SHOULD BE ALLOCATED/APPORTIONED BETWEEN VOICE AND BROADBAND SERVICES?

A. No. First, Mr. Rennard's statement covers only a very narrow case in which an RLEC offers a non-regulated service. It is my understanding that broadband end-user service is typically offered by ILEC affiliates, rather than by the regulated entity. Second, the very issue here is that accounting cost allocation rules do not work well with broadband service because they were developed before offerings of broadband services over

[31] In fact, as described more fully above, given ORS 759.218, such an allocation appears to be required in order to ensure that ILEC basic service does not subsidize non-regulated services.

[32] Rennard testimony (OTA), pp. 6-7.

"common" telephone lines became broadly available. For example, page 14 of Staff's testimony references a white paper on the "separations" accounting rules (a paper prepared to the state members of the Federal-State Joint Board on Universal Service).[33] This paper noted that "[h]aving been written before broadband was widely used, separations rules do not aptly measure broadband cost provided over DSL facilities."[34] It also noted that because the FCC treats stand-alone broadband Internet access transmission as regulated service,[35] "DSL loop transmission costs are included in the costs used to determine [federal] HCL [High Cost Loop] support, ICLS [Interstate Common Line Support] support, the SLC [Subscriber Line Charges], local rates, and possibly other regulated services for these [rate of return] companies."[36] The same conclusion holds for OUSF support because the RLEC OUSF cost studies are based on essentially the same accounting rules.[37]

[33] Peter Bluhme, Lorraine Kenyon, Robert Loube *Separation,* White Paper to State members of the Federal-State Joint Board on Universal Service, February 7, 2011 ("White Paper on Separations"), provided as attachment to Staff's Response to Verizon's Data Request 2-8 (2nd Set). *See* PUC Response to Verizon-Staff 2-8 and Verizon 2 Exhibit, attached hereto as OCTA/205 (AHA-8).

[34] *White Paper on Separations*, p. 2.

[35] Here the *White Paper on Separations* cites FCC CC Docket Nos. 02-33, 01-337 95-20, 98-10, WC Docket Nos. 04-242, 05-271, Report and Order and Notice of Proposed Rulemaking, Adopted: August 5, 2005 ¶¶ 128-138.

[36] *White Paper on Separations*, p. 7.

[37] More specifically, based on Order No. 03-082 in docket UM 1017, which added rural ILECs to the OUSF, the RLEC OUSF cost studies utilize the unseparated cost of common subscriber lines, the separated (based on 2001 frozen FCC factors) cost of local switching and local transport and etc. (*See* Order No. 03-082, Attachment A, p.5).

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

UM 1481
Phase III – ISSUE B

EXHIBIT OCTA 302

TO

OPENING TESTIMONY

OF

AUGUST H. ANKUM, Ph.D.

ON BEHALF OF

THE OREGON CABLE TELECOMMUNICATIONS ASSOCIATION

April 24, 2014

PUBLIC

OCTA Calculation of Voice Allocation Factors

ILEC	Region	Broadband Take Rate	Median Broadband Upload Speed (Lower Boundary)	Median Broadband Download Speed (Lower Boundary)	Voice Allocation Factor
		Form L DSL Lines divided by Voice Lines	*FCC Form 477 2013 (Mbps)*		*Calculated **
CenturyLink Qwest	Portland Metropolitan	[redacted]	[redacted]	[redacted]	[redacted]
CenturyLink Qwest	Willamette Valley	[redacted]	[redacted]	[redacted]	[redacted]
CenturyLink Qwest	Southwest Interior	[redacted]	[redacted]	[redacted]	[redacted]
CenturyLink Qwest	Coast	[redacted]	[redacted]	[redacted]	[redacted]
CenturyLink Qwest	Central	[redacted]	[redacted]	[redacted]	[redacted]
CenturyLink Qwest	East	[redacted]	[redacted]	[redacted]	[redacted]
Frontier Northwest	Portland Metropolitan	[redacted]	[redacted]	[redacted]	[redacted]
Frontier Northwest	Willamette Valley	[redacted]	[redacted]	[redacted]	[redacted]
Frontier Northwest	Coast	[redacted]	[redacted]	[redacted]	[redacted]
Frontier Northwest	East	[redacted]	[redacted]	[redacted]	[redacted]
Asotin	All	[redacted]	[redacted]	[redacted]	[redacted]
Beaver Creek	All	[redacted]	[redacted]	[redacted]	[redacted]
Canby	All	[redacted]	[redacted]	[redacted]	[redacted]
Cascade	All	[redacted]	[redacted]	[redacted]	[redacted]
Clear Creek	All	[redacted]	[redacted]	[redacted]	[redacted]
Colton	All	[redacted]	[redacted]	[redacted]	[redacted]
Eagle	All	[redacted]	[redacted]	[redacted]	[redacted]
Gervais	All	[redacted]	[redacted]	[redacted]	[redacted]
Helix	All	[redacted]	[redacted]	[redacted]	[redacted]
Home	All	[redacted]	[redacted]	[redacted]	[redacted]
Molalla	All	[redacted]	[redacted]	[redacted]	[redacted]
Monitor	All	[redacted]	[redacted]	[redacted]	[redacted]
Monroe	All	[redacted]	[redacted]	[redacted]	[redacted]
Mt. Angel	All	[redacted]	[redacted]	[redacted]	[redacted]
Nehalem	All	[redacted]	[redacted]	[redacted]	[redacted]
North-State	All	[redacted]	[redacted]	[redacted]	[redacted]
Oregon Tel	All	Not calculated (ILEC does not receive OUSF)			
Oregon-Idaho	All	[redacted]	[redacted]	[redacted]	[redacted]
OTC-MTE	All	[redacted]	[redacted]	[redacted]	[redacted]
People's	All	[redacted]	[redacted]	[redacted]	[redacted]
Pine	All	[redacted]	[redacted]	[redacted]	[redacted]
Pioneer	All	[redacted]	[redacted]	[redacted]	[redacted]
RTI	All	[redacted]	[redacted]	[redacted]	[redacted]
Scio	All	[redacted]	[redacted]	[redacted]	[redacted]
St. Paul	All	[redacted]	[redacted]	[redacted]	[redacted]
Stayton	All	[redacted]	[redacted]	[redacted]	[redacted]
Trans-Cascades	All	[redacted]	[redacted]	[redacted]	[redacted]
CenturyTel	All	[redacted]	[redacted]	[redacted]	[redacted]
Citizens	All	[redacted]	[redacted]	[redacted]	[redacted]
Embarq-United	All	[redacted]	[redacted]	[redacted]	[redacted]

** Voice Allocation Factor = 64 kbps / (64 kbps + Broadband Take Rate * Average of Broadband Upload and Download Speeds * 1000)*

CERTIFICATE OF SERVICE
UM 1481, PHASE III

I certify that, on the 24th day of April, 2014, I served the foregoing OCTA'S OPENING TESTIMONY OF AUGUST H. ANKUM, Ph.D. on the following persons via electronic mail with the original and five copies sent to the PUC Filing Center via UPS Overnight delivery:

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