

**BEFORE THE PUBLIC UTILITY COMMISSION  
OF OREGON**

In the Matter of	)	
	)	
PUBLIC UTILITY COMMISSION OF	)	
OREGON	)	Docket No. UM 1481
	)	
Staff Investigation of the Oregon Universal	)	Phase III
Service Fund	)	

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**OPENING TESTIMONY OF**

**JACK D. PHILLIPS**

**FRONTIER COMMUNICATIONS NORTHWEST INC.**

**APRIL 24, 2014**

1           **INTRODUCTION**

2           **Q.   PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

3           A.   My name is Jack D. Phillips. My business address is 14450 Burnhaven Drive,  
4           Burnsville, Minnesota 55306.

5

6           **Q.   ON WHAT COMPANY'S BEHALF IS THIS TESTIMONY SUBMITTED?**

7           A.   This testimony is submitted on behalf of Frontier Communications Northwest Inc.

8

9           **Q.   WHAT IS YOUR POSITION AND WHAT ARE YOUR AREAS OF  
10           RESPONSIBILITY?**

11          A.   I am the director of government and external affairs for the West and Central regions of  
12          Frontier Communications Corporation, including Frontier Communications Northwest  
13          Inc. ("Frontier"). I have overall responsibility for state regulatory and legislative matters.

14

15          **Q.   PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND.**

16          A.   I received a B.A. in Business Administration and Economics from William Penn  
17          University; an M.B.A. from Minnesota State University - Mankato; and an M.S. in  
18          Telecommunications from Saint Mary's University of Minnesota.

19

20          **Q.   PLEASE SUMMARIZE YOUR BACKGROUND IN THE  
21          TELECOMMUNICATIONS INDUSTRY.**

22          A.   I began in the industry with Centel in 1978 as a budget and forecasting coordinator.  
23          Responsibilities included preparation of operating budgets and revenue forecasting. In

1 1980, I assumed the position of regulatory administrator with responsibilities in cost  
2 development for local services, rate case preparation and various local service tariff  
3 responsibilities. From 1983 through 1996, I was access planning manager with overall  
4 responsibility for separations and access cost studies, state and federal access issues,  
5 universal service, inter-company compensation issues and access tariff development for  
6 Centel's Minnesota, Iowa and Missouri operations and subsequently all of Frontier  
7 Communications' properties in the Midwest. In 1996, my responsibilities were expanded  
8 to include state regulatory responsibilities. In 2001, I assumed my current position of  
9 director of government and external affairs for the Frontier/Citizens companies in the  
10 Central Region. Since 2005, my responsibilities were expanded to include various states  
11 throughout the central and western areas of the country. I am currently responsible for  
12 Oregon, Washington, California, Nevada, Montana, Idaho, Illinois, Indiana, Michigan,  
13 Wisconsin, Minnesota, Iowa and Nebraska.

14  
15 **Q. WHAT IS THE PURPOSE OF FRONTIER'S OPENING TESTIMONY IN THIS**  
16 **PROCEEDING?**

17 **A.** In its May 2, 2013 Order in UM 1481, Phase II, the Public Utility Commission of Oregon  
18 ("the Commission") set forth, at the recommendation of the parties to that proceeding, a  
19 Phase III investigation. Phase III was to separately address three designated issues,  
20 including issue "b", the focus of my testimony, "Consideration of a methodology to  
21 allocate Incumbent Local Exchange Carriers' (ILEC) network costs between basic

1 telephone and other services, including a review of the cost models used to calculate  
2 OUSF support.”<sup>1</sup>

3 Frontier is sponsoring two witnesses in this opening round of testimony. My testimony  
4 will: 1) provide background of the OUSF and address public policy issues the  
5 Commission should consider in deciding this phase of the proceeding; 2) discuss the type  
6 of cost model that will best fulfill the intended purpose of the OUSF; 3) discuss cost  
7 allocation for purpose of the OUSF calculation; and 4) recommend to the Commission a  
8 methodology for determination of OUSF support for Oregon’s two non-rural carriers,  
9 Frontier Communications and CenturyLink.

10 Mr. Randy Brockmann, Frontier’s Manager, Regulatory - Economic Costing, will: 1)  
11 present forward-looking cost results for serving Frontier’s service territory; 2) compare  
12 the cost results from that study to both Frontier’s total revenues and Frontier’s basic  
13 service revenues to demonstrate Frontier’s continued need for OUSF; and 3) describe and  
14 support the recommended forward-looking costs model and its inputs.

15  
16 **BACKGROUND AND PUBLIC POLICY CONSIDERATIONS**

17 **Q. PLEASE BRIEFLY DESCRIBE THE HISTORY OF THIS PROCEEDING.**

18 A. The Oregon Universal Service Fund was implemented in 2000 as a result of docket UM  
19 731.<sup>2</sup> This docket established the initial cost methodology for non-rural companies using  
20 the FCC Synthesis Model with some adjustments for Oregon specific inputs. Support  
21 was designated at the wire center level and a \$21.00 benchmark was established.

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<sup>1</sup> Order (May 2, 2013), In the Matter of Public Utility Commission of Oregon “Staff Investigation of the Oregon Universal Service Fund”, Docket UM-1481, Phase II, p. 4

<sup>2</sup> Order 00-312 (June 16, 2000), In the Matter of Public Utility Commission of Oregon Universal Services Investigation, Docket UM 731, Phase IV.

1 Individual wire center support was calculated using the economic cost per switched  
2 access line (calculated by the FCC-SM model), less the benchmark, less the Federal  
3 Universal Service Fund amount per line, less the Federal compensation per line (reduced  
4 by the Long Term Support (LTS) amount per line). The Commission also ordered that  
5 the support be “revenue-neutral” and required companies receiving support to reduce  
6 their rates to remove the “implicit” subsidies that would become “explicit” when they  
7 started receiving support from the OUSF. For Frontier Communications Northwest Inc.  
8 (formerly Verizon Northwest Inc.) this equated to \$17.5 million in rate reductions across  
9 a variety of services. Support for the non-rural companies is tied to the number of access  
10 lines and since those lines have eroded significantly over the last 12 years due to  
11 competition, Frontier’s OUSF support has shrunk from the initial \$17.5 million in  
12 targeted support in 2000 when the fund was established to \$10.2 million in 2013. The  
13 rural companies were added to the OUSF in 2003 (Docket UM 1017) using embedded  
14 costs to calculate support and reviewing costs and adjusting support every three years.<sup>3</sup>  
15 The rural companies agreed to forego additional support in the first two triennial reviews,  
16 however, in 2012, Staff’s triennial review indicated that under the established policy, the  
17 rural companies were entitled to increase their support from \$6.8 million to \$30 million  
18 per year because of continued erosion of minutes of use and the impact of the FCC’s  
19 transformation Order on access revenues. This would have resulted in the OUSF  
20 surcharge being revised upwards to 10%.<sup>4</sup> Parties agreed via a memorandum of  
21 understanding to contain the surcharge to 8.5% and accept \$15,650,933. The  
22 Commission approved the memorandum of understanding (MOU) and at the same time

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<sup>3</sup> Order 03-595 (October 2, 2003), In the matter of Public Utility Commission of Oregon Expansion of Oregon Universal Service fund, Docket UM 1017.

<sup>4</sup> Docket UM 1017, Staff Report of Roger White, June 5, 2012 Public Meeting Memo

1 opened the next phase of UM 1481 (Phase II) to determine what changes, if any, need to  
2 be made to the OUSF.<sup>5</sup> The parties reached a settlement in this phase of the proceeding  
3 by agreeing to reduce the size of the fund by phasing in targeted USF reductions over a  
4 three year period. The stipulation provided for a three year phase down period to reduce  
5 support for the non-rural companies (CenturyLink and Frontier) from \$27.2 million to  
6 \$17.5 million by 2016 and a \$1 million reduction in support for the rural companies  
7 beginning July 1, 2015. The stipulation also set forth a structure for the remaining  
8 issues in the docket (a) accountability for non-rural companies (b) consideration of a  
9 methodology for allocation of ILEC network costs between basic telephone service and  
10 other services and (c) consideration of a methodology for identifying areas in which there  
11 is unsubsidized competition and whether OUSF should be provided in such areas.<sup>6</sup>  
12

13 **Q. WHAT ARE THE CARRIER OF LAST RESORT OBLIGATIONS OF**  
14 **INCUMBENT LOCAL EXCHANGE CARRIERS?**

15 **A.** State law regarding allocation of territories (ORS 759.500-759.570) provides a  
16 framework that is commonly described as carrier of last resort obligations. ORS 759.506  
17 requires utilities, cooperatives and municipalities that provide local exchange service to  
18 (a) provide adequate and safe service to the customers of this state, (b) serve all  
19 customers in an adequate and non-discriminatory manner and (c) the obligations  
20 described in this section may be referenced as carrier of last resort obligations. This  
21 means that Frontier and other similarly situated utilities must have a network ready or be

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<sup>5</sup> Order 12-206 (June 6, 2012), In the matter of Public Utility Commission of Oregon Expansion of Oregon Universal Service Fund, Docket UM 1017

<sup>6</sup> Order 13-162 (May 2, 2013), In the Matter of Investigation into the Oregon Universal Service Fund, Docket UM 1481

1 prepared to build the network in order to serve every customer that requests service  
2 subject to the line extension requirements in the local exchange tariff. In the 2009  
3 legislative session HB 2097 was enacted to provide utilities some carrier of last resort  
4 relief in very narrow circumstances. The PUC conducted a rulemaking under docket AR  
5 551 to implement the process to petition for exemption of carrier of last resort obligations  
6 for situations where a property with four or more single family dwellings where the  
7 developer or owner has (1) permitted an alternative service provider to install its facilities  
8 or equipment used to provide local telecommunications service based on a condition of  
9 exclusion of the telecommunications utility (2) accepted or agrees to accept incentives or  
10 rewards from an alternative service provider that are contingent upon the provision of any  
11 or all local telecommunications services by one or more alternative service providers to  
12 the exclusion of the telecommunications utility or (3) collects from the occupants or  
13 residents of the property mandatory charges for the provision of any local  
14 telecommunications service provided to the occupants or residents by an alternative  
15 service provider in any manner, including, but not limited to, collection through rent, fees  
16 or dues. The rules also provide a process to reinstate carrier of last resort obligations if it  
17 is in the public interest.

18  
19 **Q. HOW DO THESE CARRIER OF LAST RESORT OBLIGATIONS IMPACT THE**  
20 **NEED FOR OUSF?**

21 **A.** It is important to understand that these carrier of last resort obligations significantly  
22 increase the cost of providing service for ILECs. The network must be constructed and  
23 maintained to be able to provide ubiquitous service within a reasonable period of time of

1 a request. There is a public policy benefit to having a network available throughout the  
2 entire footprint of a designated service area and there is a resulting network cost, even if  
3 customers are not using it. The carrier of last resort obligation imposes costs on the  
4 carriers bearing those obligations. This becomes an untenable situation when the  
5 obligation to serve both high and low cost areas is imposed on a single carrier yet  
6 competitors have the cost advantage of being able to compete only in high-density, low-  
7 cost areas.

8  
9 **Q. HAS THE OUSF FUNDING MECHANISM THAT HAS BEEN IN-PLACE SINCE**  
10 **2000 KEPT PACE WITH MARKET CONDITIONS?**

11 **A.** No, it has not. The funding mechanism was established at the infancy of the competitive  
12 local voice communications market. There is a fundamental flaw in the support  
13 mechanism that was established in 2000 (and was implemented in 2001) and was in place  
14 through 2013 when the level of funding was decoupled from the quantity of access lines  
15 served in supported wire centers. Prior to 2014, OUSF support was based on a fixed  
16 level of support per access line, calculated at each supported wire center that had been  
17 determined to be "high-cost" as described earlier in my testimony. The initial level of  
18 OUSF support reflected the level of support needed for those wire centers. However,  
19 access lines for supported high-cost wire centers declined from 101,527 in 2001 to  
20 43,340 in 2013 resulting in a decline in support from the initial \$17.5 million target to  
21 \$10.2 million during this period<sup>7</sup>. The fundamental flaw in the support mechanism from  
22 its implementation in 2001 through 2013 is that costs do not decline in a linear manner  
23 relative to access lines lost. As an incumbent local exchange carrier with carrier of last

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<sup>7</sup> Frontier Communications Northwest Inc. OUS3 reports filed with the OUSF Administrator



1 resort obligations, Frontier needs to maintain a network throughout its footprint to be  
2 positioned to provide service upon request, within a reasonable period of time. Frontier  
3 incurs costs regardless of whether customers subscribe to or retain Frontier services. As  
4 the number of access lines served within an area declines, density (access lines per square  
5 mile) declines and the cost per unit served increases.

6 The fundamental flaw of the OUSF mechanism in-place from 2001 through 2013 was  
7 that OUSF support was determined in direct proportion to the number of access lines in  
8 high cost wire centers. However, the costs in these areas did not decline in direct  
9 proportion to access line losses.

10 The 2013 settlement agreement in Phase II, which was approved by the Commission,  
11 decoupled the link between the level of funding and the quantity of served access lines  
12 but nevertheless still perpetuated a level of support that was below the level of need to  
13 support high cost areas.

14  
15 **Q. DO YOU HAVE RECOMMENDATIONS TO AVOID THIS FLAW IN THE**  
16 **FUTURE?**

17 **A.** Yes. Future funding should not be directly correlated to access lines but should be set in  
18 this proceeding as a fixed, monthly amount for each census block group and then updated  
19 on a regular, periodic basis through a compliance filing to reflect changes in both density  
20 of lines served and the revenue benchmark, and whatever variables the Commission  
21 approves for use in setting funding levels. Updating the density on a triennial basis  
22 seems to strike a reasonable balance between cost of updating results and the benefit of  
23 setting funding at a more precise level.

1

2 **Q. IS THERE A PUBLIC POLICY INTEREST IN RETAINING AN OUSF**  
3 **SUPPORT MECHANISM FOR THE FORESEEABLE FUTURE?**

4 A. Yes. Very simply, OUSF is needed to sustain affordable voice rates in the high cost  
5 service areas of Oregon into the future.

6 There are many public policy interests in maintaining affordable rates for voice  
7 telecommunications services throughout Oregon, regardless of the underlying cost of  
8 serving those areas. While other modes of communication (e.g., text and video) are  
9 increasingly growing in importance, voice communication service continues to be  
10 essential to society and commerce. Availability of voice communication is essential for  
11 public safety and for the economic viability of rural communities. Having voice  
12 communication service available to all households and businesses throughout the state at  
13 reasonable and affordable rates is a desirable public policy goal.

14 Maintaining affordable rates for voice communication service throughout the state  
15 benefits all Oregonians. There is a "network effect" where the value of a person's phone  
16 service is enhanced with the number of other individuals and businesses that may be  
17 called or from which calls can be received. A person in a low-cost service area receives  
18 value and has an interest in customers in high-cost areas having affordable service and,  
19 therefore, being available to be "on the network". There is also a public interest in being  
20 able to access to emergency services in high-cost areas, whether a person lives in these  
21 areas or only occasionally travels to or through these areas.

22 As will be discussed later in my testimony and supported in the testimony of Mr.  
23 Brockmann, there is a large disparity in the cost of serving different areas of Oregon.

1 Much of Oregon is very rural and according to the 2010 US Census Bureau's 2010  
2 census, Oregon ranks 39<sup>th</sup> in the nation for population density.<sup>8</sup> Service would be  
3 unaffordable in many areas of the state if individual consumer rates in those areas  
4 reflected the underlying cost of serving those areas. OUSF provides an explicit  
5 mechanism for supporting affordable rates in high cost areas.

6  
7 **Q. HOW HAS COMPETITION IMPACTED THE NEED FOR THE OUSF?**

8 A. The need for the OUSF is even greater as the level of competition grows. In a market  
9 with a single voice communications provider, the public policy goal of maintaining  
10 affordable rates across areas with disparate cost levels could be largely accomplished  
11 through averaging of rates. Under rate-of-return regulation all of the carrier's regulated  
12 costs were put into a company-wide revenue requirement calculation and costs were  
13 averaged. Rates were established so that all customers served by a particular carrier,  
14 within a particular class of service (typically residential or business), typically paid the  
15 same rate. In fact, business customers have traditionally paid higher rates reflecting an  
16 often unspoken public policy goal of maintaining affordable residential rates and  
17 reflecting value of service despite generally lower costs of providing business services.  
18 In a macro sense, this wasn't a problem because, for all practical purposes, there was only  
19 one provider and the customers in low-cost serving areas that were helping to pay for  
20 high-cost areas really had few other alternatives for voice communications service.  
21 Local competition has changed all of that. Facility-based competitors have largely  
22 targeted low-cost, high value customers thereby reducing the level of implicit support the  
23 customers in those low-cost areas provided toward supporting high-cost areas through

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<sup>8</sup> <http://www.census.gov/geo/reference/us/urban-rural-2010.html>

1 statewide averaged rates. Staff has continued to support the public policy benefit of  
2 maintaining statewide average rates in price plan proceedings in order to keep affordable  
3 rates for all Oregon customers. As a result, competition and public policy continues to  
4 enhance the value and need for an explicit OUSF support mechanism.

5  
6 **Q. WHAT SHOULD BE THE ROLE OF OUSF IN A COMPETITIVE**  
7 **ENVIRONMENT?**

8 A. The implicit contribution that rates in low-cost areas provided to recovery of costs in  
9 high-cost areas has diminished with the high loss of access lines in those most  
10 competitive, low-cost areas that attract facilities-based competitors. The OUSF support  
11 mechanism should be structured to help replace that implicit support with explicit support  
12 targeted to very granular high-cost areas so that voice service will continue to be  
13 available at affordable rates.

14  
15 **COST MODEL TO BE USED TO CALCULATE OUSF SUPPORT**

16 **Q. WHAT TYPE OF COSTS SHOULD BE RECOVERABLE FROM THE OUSF?**

17 A. There was considerable discussion in Phase IIIa of this proceeding about which expenses  
18 should be included in accountability monitoring for non-rural companies, including  
19 Frontier. Staff was generally focused on non-rural companies reporting maintenance  
20 costs for high-cost service areas, areas that currently receive support.

21 In Phase IIIa, Frontier and CenturyLink recommended reporting that included some, but  
22 not all, of the other costs that should be considered in determining OUSF support. Costs  
23 of providing voice communications services go far beyond simply maintaining the

1 network. And the costs go far beyond all of the other operating expenses (e.g., billing  
2 costs, repair centers, operations support systems, and administrative costs). Costs include  
3 recovery of the investment made in the network and the entire supporting infrastructure  
4 (land, buildings, and operations support systems). In accounting terms, this is known as  
5 depreciation and amortization expense.

6 Cost also includes cost of capital - a cost that is just as real and just as essential as the  
7 cost incurred in repairing a damaged cable or pedestal. Carriers such as Frontier need to  
8 pay up-front for construction of the network and do so by using investor capital -  
9 typically a combination of shareholder capital or investments made by debt holders, both  
10 of which "demand" an expected return. For without an expected return, they will be  
11 unwilling to invest and without investment, there would be no network. While capital  
12 cost was not included in the costs Frontier recommended be reported to the Commission  
13 on a monthly basis, those are certainly costs that should be included in setting funding  
14 levels.

15 It is essential that all of these types of costs be considered in setting the level of funding  
16 as they are all absolutely essential to providing service.

17 The cost model presented and supported by Mr. Brockmann is intended to identify these  
18 costs.

19 **Q. HOW GRANULARLY SHOULD COST BE CALCULATED?**

20 A. Under the current OUSF support mechanism, high-cost areas are defined at the wire  
21 center level. In reality, there are typically large cost "per line" variances among areas  
22 within each wire center, even in the competitive Portland Metropolitan Area. Some areas  
23 of currently defined "high-cost wire centers" are actually higher density and lower cost

1 than some areas of the non-high cost wire centers. For example, McMinnville is  
2 designated as a low-cost wire center under the costing mechanism that formed the basis  
3 for current OUSF support. But when viewed at a more granular census block group  
4 level, monthly costs range from \$ [REDACTED] to \$ [REDACTED] per location. Conversely, there are  
5 high-cost wire centers that served the basis for the current OUSF mechanism that have  
6 relatively low-cost areas which are receiving support that is not needed. To more  
7 precisely target funding to only those areas that are high cost and in need of support,  
8 Frontier recommends that high-cost areas be defined at a more granular level to target  
9 support to only those areas that are truly highest-cost.

10  
11 **Q. HOW GRANULARLY SHOULD HIGH-COST AREAS BE DEFINED?**

12 A. In theory, it would be ideal to identify support at the household level but determining  
13 support at hundreds of thousands of premise locations would be administratively  
14 impractical. Use of census blocks seems also impractical. Frontier has approximately  
15 40,000 census blocks within its service area making this level of granularity  
16 administratively challenging for what would likely be very little incremental benefit over  
17 use of census blocks. Frontier recommends the Commission adopt census block groups  
18 as the ideal level of granularity, striking a reasonable balance between precision and  
19 administrative practicality. Frontier has approximately 700 census block groups within  
20 its service footprint.

21  
22 **Q. HAVE OTHER STATES BASED STATE UNIVERSAL SERVICE SUPPORT ON**  
23 **COSTS BELOW A WIRE CENTER LEVEL?**

1 A. Yes, of the states for which I have responsibility, two funds are based on targeting state  
2 universal service support to a sub-wire center level.  
3 California's large company "B-Fund" provides support at the census block level. Costs  
4 of providing voice communications service was determined at the census block group  
5 level. To the extent the "per line" cost in a census block group exceeds a benchmark  
6 level, monthly support is provided on a "per line" basis for each line served in the census  
7 block group.  
8 The basis for Nebraska's universal service support fund was initially determined by  
9 segregating each wire center into a "donut" and a "hole". The "hole" consisted of the  
10 denser census block groups generally comprising the municipal area of the wire center.  
11 These areas do not typically get support. The remainder of the wire center or "the donut"  
12 generally comprises the rural or non-municipal area of the wire center and typically is an  
13 area that receives support.

14

15 **ALLOCATION OF COSTS BETWEEN BASIC AND OTHER SERVICES**

16 **Q. ONE PURPOSE OF PHASE III OF DOCKET UM 1481 IS TO CONSIDER A**  
17 **METHODOLOGY TO ALLOCATE ILEC NETWORK COSTS BETWEEN**  
18 **BASIC TELEPHONE AND OTHER SERVICES. IS THIS THE ONLY WAY TO**  
19 **RECOGNIZE THAT OTHER SERVICES JOINTLY USE SOME NETWORK**  
20 **COMPONENTS FOR PURPOSE OF DETERMINING OUSF SUPPORT**  
21 **LEVELS?**

22 A. No. Without discussing at this point in my testimony the merits of whether it is  
23 appropriate to make adjustments to the OUSF calculation for other services, it should be

1 noted that there is at least one other way for the Commission to recognize other services  
2 jointly use some network components. As will be discussed later in my testimony, the  
3 network first and foremost exists to provide voice service. Only the incremental costs  
4 over and above the design of the basic phone network are directly attributable to non-  
5 basic voice service. Any allocation of costs of the basic voice network to other services  
6 is arbitrary. An alternative to the arbitrary allocation of costs to non-basic service is to  
7 recognize that the revenues derived from other services may "contribute" toward the  
8 recovery of joint and common costs to the extent the service first recovers its direct costs.  
9 In lieu of an arbitrary cost allocation methodology, the Commission should consider and  
10 adopt a more appropriate approach of establishing a benchmark level at the level of  
11 granularity matching the cost granularity, which recognizes the revenue or rate  
12 contribution provided by other services toward recovery of common and joint costs.

13

14 **Q. HOW WOULD OUSF SUPPORT LEVELS BE DETERMINED UNDER THE**  
15 **BENCHMARK METHOD?**

16 A. Rather than attempting to establish an arbitrary cost allocation methodology, the  
17 Commission would consider the extent to which total cost of service for each high-cost  
18 block group exceeded the revenue benchmark for each census block group.

19

20 **Q. IS USE OF A BENCHMARK A GENERALLY ACCEPTED CONCEPT?**

21 A. Yes. The OUSF mechanism established in 2000 in Docket No. UM 731 used a  
22 benchmark of \$21.00.

23



1 **Q. WOULD IT BE APPROPRIATE FOR THE COMMISSION TO UPDATE THE**  
2 **BENCHMARK IN THIS PROCEEDING TO REFLECT THE CONTRIBUTION**  
3 **OF NON-BASIC SERVICES IN LIEU OF ADOPTING A COST ALLOCATION**  
4 **METHODOLOGY?**

5 A. Yes. This would be consistent with the original OUSF methodology and would be  
6 consistent with Frontier's proposal in this Phase of the current proceeding to update the  
7 cost model and its inputs.

8

9 **Q. IF THE COMMISSION DECIDES AGAINST USE OF A RATE OR REVENUE**  
10 **BENCHMARK, WHAT ARE THE PUBLIC POLICY ISSUES THE**  
11 **COMMISSION SHOULD CONSIDER WHEN DECIDING WHETHER TO**  
12 **ALLOCATE SOME OF THE COSTS OF PROVIDING VOICE SERVICE TO**  
13 **OTHER SERVICES THEREBY EXCLUDING THOSE ALLOCATED COSTS**  
14 **FROM THE OUSF CALCULATION?**

15 A. There a couple of public policy issues the Commission should carefully consider when  
16 deciding whether to allocate costs out of the OUSF calculation to other services.

17 First, the Commission should take care in making certain that it does not create the  
18 unintended consequence of discouraging deployment of services such as high-speed  
19 Internet in rural, high-cost areas.

20 Second, as a carrier of last resort, the Commission should recognize that the networks of  
21 Frontier and other ILECs must be deployed and maintained throughout our respective  
22 service area to be available to provide voice service, regardless of how many subscribers

1 actually take service. This obligation influences of whether any common and joint cost  
2 should be removed for non-voice service when calculating the level of OUSF support.

3

4 **Q. HOW COULD IMPLEMENTATION OF A COST ALLOCATION**  
5 **METHODOLOGY THAT WOULD REMOVE COSTS FROM THE OUSF**  
6 **CALCULATION DISCOURAGE DEPLOYMENT OF BROADBAND IN HIGH-**  
7 **COST SERVICE AREAS?**

8 A. Costs in the highest cost service areas of the state, those very areas where OUSF support  
9 should be targeted, have costs that are so high that allocation of costs to broadband (for  
10 purpose of the OUSF calculation) on a percentage basis could very well reduce OUSF  
11 support by more than could possibly be recovered through broadband service rates. This  
12 would thereby have the unintended consequence of discouraging deployment of  
13 broadband in high-cost service areas.

14

15 **Q. PLEASE PROVIDE AN ILLUSTRATIVE EXAMPLE OF HOW THIS COULD**  
16 **OCCUR.**

17 A. The monthly rate for Frontier's broadband service offering is generally in the range of  
18 \$19.00 to \$29.99 per month. For purpose of this example, assume the monthly  
19 broadband rate is \$29.99. Referring to Mr. Brockmann's Exhibit 5, the monthly cost per  
20 subscriber served in census block group #410710304004 in the McMinnville wire center  
21 is \$[REDACTED].<sup>9</sup> If a policy was established to allocate some percentage, say 20% of the  
22 network cost, for those customers subscribing to Frontier broadband service, this equates

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<sup>9</sup> Total monthly cost of \$[REDACTED] divided by 21 lines served equals \$[REDACTED].

1 to \$ [REDACTED] in allocated broadband cost per month, exceeding the revenue derived from the  
2 service.

3 If the Commission established a policy of allocating, in this example, 20% of cost for  
4 each broadband customer served in each census block group, there is a disincentive to  
5 offer broadband in high cost service areas. The first and foremost reason the network  
6 exists in the highest cost service areas is to fulfill the public policy interest of providing  
7 voice service. Any scheme to allocate cost out of the OUSF calculation that exceeds the  
8 incremental margin derived from offering the broadband service, discourages a carrier  
9 from offering the service.

10

11 **Q. WHAT ROLE DOES THE CARRIER OF LAST RESORT OBLIGATION HAVE**  
12 **IN DETERMINING A COST ALLOCATION METHODOLOGY?**

13 A. The network exists throughout the ILECs' wire centers for one singular purpose: to fulfill  
14 the carrier of last resort obligation for voice service. This is an obligation unlike that of  
15 any non-ILEC service providers. The sustainability of this obligation in a competitive  
16 environment requires an explicit support mechanism. OUSF is necessary to make this  
17 network available to offer affordable voice service within a reasonable time following a  
18 request. Despite the increasing use of the network to offer broadband service, there is no  
19 carrier of last resort obligation for offering broadband. The network has been built and is  
20 being maintained to be available to provide voice service to high-cost areas. There are  
21 areas to which the network would not have been built if not for the carrier of last resort  
22 obligation or a single-provider market where the cost of serving customers in high-cost

1 areas could be recovered from a broad group of customers through the implicit  
2 contributions in rates in low cost service areas.

3 As discussed earlier in my testimony, it is appropriate to consider the contribution non-  
4 basic service such as broadband provides toward recovery of joint and common costs of  
5 providing basic voice service, the service for which there is a carrier of last resort  
6 obligation.

7 **CONCLUSION AND RECOMMENDATION**

8 **Q. WHAT ROLE DOES THE OUSF PLAY IN MAINTAINING AFFORDABLE**  
9 **VOICE COMMUNICATION RATES THROUGHOUT OREGON??**

10 A. A goal of the OUSF is to maintain affordable access to voice communications service  
11 throughout Oregon, a state with highly disparate population densities and highly different  
12 levels of cost to provide voice communications service. OUSF support helps bridge the  
13 gap between the cost of providing service in Oregon's high-cost areas and a reasonable,  
14 affordable rate level.

15 The monthly cost per household and business varies from \$ [REDACTED]<sup>10</sup> for the Somerset West  
16 wire center to \$ [REDACTED]<sup>11</sup> in the Lostine wire center. And there is even wider disparity in  
17 the cost of serving household and business locations within wire centers. For example, in  
18 the McMinnville wire center costs vary among census block groups from \$ [REDACTED]<sup>12</sup> to  
19 \$ [REDACTED]<sup>13</sup> per household and business location. It should be noted that these are costs per  
20 location, not by subscriber or access line, meaning the cost per revenue generating unit

<sup>10</sup> Brockmann Exhibit 1, Somerset West, \$ [REDACTED] monthly cost divided by 38,652 household and business locations equals \$ [REDACTED]

<sup>11</sup> Brockmann Exhibit 1, Lostine, \$ [REDACTED] monthly cost divided by 349 household and business locations equals \$ [REDACTED]

<sup>12</sup> Brockmann Exhibit 5, CBG 410710308011

<sup>13</sup> Brockmann Exhibit 5, CBG 410710309002

1 can be multiples higher than the cost per location. While not a codified goal of the  
2 OUSF, infrastructure to support high-speed Internet in low density, high-cost service  
3 areas is a collateral and worthy benefit of the infrastructure that supports basic voice  
4 service. The long-term availability of an affordable communications connection and  
5 continued investment in infrastructure in the high-cost areas of Oregon cannot be  
6 sustained in the long-term without an external support mechanism that provides a  
7 contribution toward the cost of providing that connection.

8 Maintaining affordable voice communication rates in the high cost service areas of the  
9 state is a sound public policy goal. An update of the OUSF support model and its inputs,  
10 combined with more granular targeting of support to high-cost areas, will help assure this  
11 goal is fulfilled.

12

13 **Q. WHAT CHANGES SHOULD THE COMMISSION MAKE TO THE OUSF COST**  
14 **MODEL AND SUPPORT MECHANISM?**

15 A. First, the Commission should continue the use of a forward-looking cost model although,  
16 after 14 years, the model and its inputs should be updated.

17 Second, the level of granularity should be increased to more precisely target support to  
18 areas of need. In the example referenced above, McMinnville has census block groups  
19 that are relatively low cost yet has others that are higher cost and need support.

20 Third, funding should be de-linked from access lines served because after funding levels  
21 are set, the changes in access lines served do not highly correlate to changes in cost.

22

1    **Q.    SHOULD THE COMMISSION CREATE A COST ALLOCATION PROCESS**  
2    **FOR NON-VOICE SERVICES FOR PURPOSE OF THE OUSF SUPPORT**  
3    **CALCULATION?**

4    A.    No, there is a more rational alternative to cost allocation for purpose of determining  
5    OUSF support. While it appropriate to exclude direct costs associated with non-voice  
6    services from the OUSF calculation, allocation of joint and common costs is an arbitrary  
7    process and can lead to unintended and otherwise irrational service deployment decisions.  
8    The network was deployed in high-cost service areas to fulfill a carrier of last resort  
9    obligation for voice service, not broadband. The economic justification of deploying  
10   broadband infrastructure in high-cost areas is difficult enough without the potential of  
11   arbitrarily allocating fixed costs from other services to broadband. As described in my  
12   testimony, above, allocation of costs to broadband services in the highest cost service  
13   areas could very well result in more cost being allocated to broadband than is generated  
14   by the service resulting in a disincentive to invest in broadband in high-cost service areas.  
15   If the Commission wishes to recognize that broadband services are provisioned using  
16   some joint and common costs, it would be more rational to recognize the contribution this  
17   service provides towards recovery of these costs through an increase in the benchmark.  
18   By doing so, the Commission would effectively be saying that a portion of the revenues  
19   generated by broadband services in each census block group will “contribute” toward the  
20   recovery of joint and common costs in those high-cost areas that receive support.

21  
22   **Q.    DOES THIS CONCLUDE YOUR TESTIMONY?**

23   A.    Yes, it does.

**BEFORE THE PUBLIC UTILITY COMMISSION  
OF OREGON**

In the Matter of	)	
	)	
PUBLIC UTILITY COMMISSION OF	)	
OREGON	)	Docket No. UM 1481
	)	
Staff Investigation of the Oregon Universal	)	Phase III
Service Fund	)	

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**FRONTIER COMMUNICATIONS NORTHWEST INC.**

**OPENING TESTIMONY OF  
RANDALL J. BROCKMANN**

**APRIL 24, 2014**

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

2 A. My name is Randall J. Brockmann and my business address is 180 South Clinton  
3 Avenue, Rochester, New York. I am the Manager of Economic Costing for Frontier  
4 Communications Corporation, including Frontier Communications Northwest, Inc.  
5 ("Frontier").  
6

7 **Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND,**  
8 **TELECOMMUNICATIONS BUSINESS EXPERIENCE AND PRIMARY JOB**  
9 **RESPONSIBILITIES.**

10 A. I am a Certified Public Accountant in the State of New York and hold memberships in the New  
11 York State Society of Certified Public Accountants and the American Institute of Certified Public  
12 Accountants. I received an MBA in Finance and Entrepreneurship from the William E. Simon  
13 Graduate School of Business at the University of Rochester and a Bachelor of Science degree in  
14 Accounting from Rochester Institute of Technology in Rochester, New York. I have worked for  
15 Frontier Communications for over 27 years. During this period I have held various Managerial  
16 positions which have included supervising work in economics, cost analysis, statistical and  
17 budget analysis, forecasting demand, cost of capital and conducting financial and service  
18 cost studies. In my current position as Manager, Economic Costing, I am responsible for the  
19 management of the cost study function for the consolidated Frontier local exchange telephone  
20 properties. For Frontier Communications this includes 91 ILEC study areas operating over 27  
21 states, and covering 2,668 customer serving wire centers. In addition, my responsibilities  
22 include managing company compliance with the FCC's Intercarrier Compensation Reform Plan,  
23 completion of cost models to support contract pricing for pole attachments and conduit rentals,



1 management of the economic costing function for individual case pricing requests for the East  
2 Region, management and preparation of service cost studies and financial analysis in support of  
3 Federal and State tariff filings, and providing cost testimony and support in proceedings before  
4 State regulators, as required. Prior to my career at Frontier Communications, I held various  
5 management positions in both Public Accounting and Private Industry.  
6

7 **Q. HAVE YOU TESTIFIED IN OTHER TELECOMMUNICATION COST**  
8 **PROCEEDINGS?**

9 A. Yes. I have testified in several State Commission cost proceedings in New York,  
10 Pennsylvania, California, Tennessee, Michigan and West Virginia. Topics include the  
11 following: in New York, a UNE Loop & Resale proceeding, a Reciprocal Compensation  
12 proceeding, and a Directory Listing and Publishing proceeding; in California, a Cost  
13 Study supporting the development of Switching and Transport Cost Floors; in Tennessee,  
14 a Cost Study supporting the development of cost floors for Basic Business and Versaline  
15 Centrex service; in Michigan cost studies to support a Telecommunications' Relay  
16 Service charge and a cost recovery charge for Lifeline credits; and in West Virginia,  
17 testimony in review of cost allocation procedures and affiliate cross-subsidy issues and  
18 testimony in support of costs to support a statewide enhanced E-911 emergency network.  
19

20 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?**

21 A. The purpose of my testimony is to introduce forward-looking proxy model results for the  
22 Frontier Northwest properties in Oregon to demonstrate the level of need for Oregon

1 State USF support (OUSF) to provide basic voice service to all customers in the Oregon  
2 exchanges served by Frontier.

3  
4 **Q. HOW WILL THE FORWARD-LOOKING COST PROXY DATA BE USED?**

5 A. I will demonstrate that the differences between the forward-looking proxy model cost  
6 data significantly exceeds Frontier voice revenues and the current frozen levels of Oregon  
7 Universal Service Fund (OUSF) support received by Frontier. For Frontier to continue its  
8 obligation as the carrier of last resort (COLR) in our service territory, and continue to  
9 invest the capital dollars in our most rural and high cost wire centers in Oregon, Frontier  
10 needs additional USF support as demonstrated in my testimony.

11  
12 **Q. WHAT DO THE PROXY MODEL RESULTS SHOW AS THE MONTHLY  
13 COSTS TO MAINTAIN A NETWORK CAPABLE OF PROVIDING BASIC  
14 VOICE SERVICES AND CAPABLE OF SERVING ALL RESIDENTIAL  
15 HOUSING UNITS BY CENSUS BLOCK GROUP (CBG) IN FRONTIER'S  
16 SERVING TERRITORY?**

17 A. I have summarized the results of the CostQuest State Broadband Cost Model (CQSBCM)  
18 for Frontier in Exhibit 201. The total monthly proxy costs to serve all the residential  
19 housing units and business locations in Frontier's serving territory came to just over  
20 \$ [REDACTED] million per month. These monthly network costs were based on the modeled  
21 investment cost of \$ [REDACTED] million to serve 398,446 residential housing units and 84,998  
22 business locations. As the designated carrier of last resort (COLR) in our service area,  
23 Frontier is obligated to maintain a network capable to serve all potential customer

1 locations. The cost proxy model used by Frontier disaggregates investments and monthly  
2 costs down to the census block (CB) level, and in those cases where a census block is  
3 split across carriers, costs are generated below the census block level. I provided monthly  
4 costs aggregated at the wire center level in this Exhibit.

5  
6 **Q. HOW DO THESE TOTAL NETWORK COSTS COMPARE TO THE PROXY**  
7 **COSTS COMPUTED FOR FRONTIER'S WIRE CENTERS FROM THE FCC'S**  
8 **CONNECT AMERICA COST MODEL (CACM)?**

9 A. Frontier's aggregate network investment costs to serve all of the residential and business  
10 locations as produced by the CostQuest State Broadband Cost Model (CQSBCM) in  
11 Exhibit 201 were within 1.2% of the investment results produced by the FCC's CACM  
12 model for Frontier Northwest. Regarding monthly costs, the results produced by the  
13 CQSBCM in Exhibit 201 were approximately 7.4% lower than comparable costs for  
14 Frontier Northwest from the FCC's CACM model. This reduction in monthly proxy  
15 model costs is primarily due to the use of a lower cost of capital assumption for Frontier  
16 in the CQSBCM model.

17  
18 **Q. WHAT ARE YOUR ACTUAL FRONTIER RESIDENTIAL VOICE REVENUES**  
19 **AND TOTAL REVENUES ON A MONTHLY BASIS?**

20 A. Exhibit 202 presents total Frontier revenues separated between residential voice, business  
21 voice and all other revenues for the month of February 2014. These revenues total \$██████████  
22 million. Voice only revenues represent approximately ██████% of this total. Other  
23 revenues include the following: data revenues - high speed internet and FIOS, switched

1 and special access, UNEs, FIOS TV, long distance, satellite, equipment charges and other  
2 non-recurring charges.

3

4 **Q. WHAT DOES THIS DATA MEAN AS IT REALATES TO FRONTIER'S**  
5 **RESPONSIBILITY AS A CARRIER OF LAST RESPOR?**

6 A. Based purely on the estimated total monthly proxy network costs required to provide  
7 services to all of the residential and business locations in Frontier's serving territory, and  
8 the total monthly revenues disclosed above, Frontier would incur a revenue shortfall of  
9 approximately \$1.8 million per month. Even with the contribution of all other network  
10 and non-network revenues, the estimated monthly costs to maintain the modeled network  
11 to service all household and business locations as the carrier of last resort is larger than  
12 Frontier's total monthly revenues today. What this data also shows is to meet carrier of  
13 last resort obligations, Frontier must generate enough voice-only network revenues,  
14 between customer billing and state universal fund support, to cover the fixed costs of  
15 maintaining a complete network that will provide voice services to all customer locations  
16 within Frontier's service area. As Frontier loses voice market share to competition or  
17 alternative technologies, the need for replacement revenue increases in order to sustain  
18 the required minimum level of investment to be able to provide voice service to all  
19 locations.

20

21 **Q. CAN YOU ISOLATE THE "VOICE ONLY" COSTS OF THE PROXY**  
22 **NETWORK RESULTS YOU HAVE INCLUDED IN EXHIBIT 1?**

1 A. No. The proxy model cost results I introduced above reflect a network design that is  
2 based on current technologies being employed today, current engineering rules, current  
3 road structures, and current potential customer demand locations based on census data  
4 and other available information and current costs and capacities of both voice, broadband  
5 and combination voice-broadband network equipment. Many components in the  
6 modeled proxy network, including the structure, are common and are shared over  
7 multiple services. Any cost allocation methodology one could apply to try to separate out  
8 the investment and monthly costs associated with the delivery of voice services would be  
9 arbitrary. Much of the modeled forward-looking network investment is due to shared  
10 structure costs. Many of these same structure costs would be required in any network  
11 built to support voice service. One possible theoretical argument might be to use another  
12 proxy model network design to construct and cost a telecommunications network  
13 primarily to provide voice service to all residence and business locations in the same  
14 geographic service territory and attribute the differences between proxy model results in  
15 investment and monthly costs to any new services that use the modeled voice network as  
16 the service delivery platform. Of course there could be costing issues with this approach  
17 as well such as trying to find accurate current vendor material costs for equipment and  
18 electronics designed specifically for voice when many suppliers only sell equipment that  
19 supports both voice and data in a forward-looking broadband network. In those cases  
20 where equipment and material costs support multiple services, you would be right back to  
21 the basic cost allocation issue, however, if the equipment is needed to deliver voice  
22 service, it would have to be included in the network costs. For illustration purposes, if I  
23 were to use an estimate of 50% to allocate the proxy model's monthly costs between

1 voice services and all other services, that would mean, based on average billed voice  
2 revenues today, Frontier would incur a revenue shortfall of approximately \$ [REDACTED] million  
3 per month [REDACTED]) or approximately \$ [REDACTED] million on an annual basis.  
4

5 **Q. WHY WOULD A PROCESS TO UNITIZE A COST PER LINE AND COMPUTE**  
6 **OUSF ON A PER ACCESS LINE BASIS OVER AN AVERAGE REVENUE PER**  
7 **UNIT LINE BENCHMARK FAIL TO ACCOUNT FOR THE ECONOMIC**  
8 **REALITIES OF INVESTING AND MAINTAINING A VOICE NETWORK AS**  
9 **THE CARRIER OF LAST RESORT?**

10 A. As I previously stated, Frontier, as the carrier of last resort in our service territory, has the  
11 primary responsibility to respond to new customer requests for service in a relatively  
12 short period of time in all parts of our service territory, whether facilities exist or not.  
13 Where facilities do not exist today and it is uneconomical to build new facilities to meet  
14 the demand and sell those services at tariffed price points well below their respective per  
15 unit costs, Frontier is still required by the COLR rules to incur those costs and absorb  
16 those resultant losses on a per unit basis. As the COLR, Frontier has been receiving  
17 OUSF support to help meet that obligation. Over the last 10 years as competition has  
18 entered Frontier's markets and significantly reduced the average number of residential  
19 subscribers on our network, Frontier, as the COLR, has suffered financially in two ways.  
20 First, by the loss of customer revenue due to the fact the customer has chosen an  
21 alternative service provider and second by the loss of OUSF support due to the loss of  
22 qualifying access lines. While total company revenues have been reduced, the monthly  
23 recurring cost of maintaining the backbone telecommunications network has steadily

1 increased. As demonstrated in the forward-looking model results, by expanding the core  
2 network to meet future voice and broadband demands for existing and potentially new or  
3 returning customers monthly recurring costs have actually increased. The network is built  
4 and maintained on the underlying premise of providing service availability to meet all  
5 household demand and not to just those customers who subscribe to service. There is a  
6 fixed monthly cost associated with the investment and maintenance of a network  
7 designed to provide service availability to all housing units. Over time as a much smaller  
8 percentage of those residents continue to subscribe to voice services over that network, as  
9 is evidenced by the continuing loss of landline voice customers, the contribution margins  
10 to cover the fixed network costs have disappeared and at some point it becomes  
11 uneconomical to continue to invest and maintain a modern network without raising prices  
12 on the remaining subscribers or finding additional sources of revenue required to support  
13 the fixed costs of providing a "ready to serve all" network. OUSF has been there to help  
14 cover some of that need. Without a fair and reasonable amount of future expected OUSF  
15 support, it would be extremely difficult for Frontier to continue to meet all its'  
16 responsibilities as a COLR due to the pure economic realities of the market we find our  
17 self in today. The fact that a large number of future new customers rely solely on high  
18 speed internet access to a broadband network for all their telecommunication needs,  
19 which often includes using the broadband connection for voice using VoIP technology, is  
20 only contributing to this growing economic problem. Average revenues per subscriber  
21 will continue to be reduced as future high speed internet only customers will someday  
22 outnumber voice subscribers. These facts support not unitizing State universal service  
23 support to a single demand unit, such as a residential access line, as long as COLR

1 responsibilities remain with one network provider. The total monthly costs of supporting  
2 a large expansive telecommunications network originally built to serve all households in  
3 a given geographic location, does not change as individual customers drop off the  
4 network or decide to subscribe to the network. Depending on how those costs are  
5 unitized, the unit costs would change, but the total costs would not. Exhibit 205 provides  
6 an illustrative example using one Frontier wire center of how unitizing costs per CBG and  
7 using an average revenue per unit benchmark can produce results that leave many fixed  
8 network costs unrecovered. What this example also points out is that Frontier's current  
9 voice customers represent a much smaller percentage of the total customer locations  
10 passed by the network, and as those customer revenues which support the network  
11 decline over time, it creates the need for either more state universal service support or  
12 further price increases on the remaining customers to continue to meet the fixed network  
13 costs to serve all locations.

14  
15 **Q. PLEASE DESCRIBE THE FORWARD-LOOKING PROXY COST MODEL AND**  
16 **NETWORK DESIGN ASSUMPTIONS USED TO DEVELOP THE PER HOUSE**  
17 **HOLD UNIT COST FOR THE FRONTIER WIRE CENTERS.**

18 A. The forward-looking proxy cost model used by Frontier to develop the residential cost per  
19 housing location at the CBG level is the CostQuest State Broadband Cost Model (CQSBCM).  
20 This cost proxy model uses the same approach as the FCC Connect America Model (version 4.1).  
21 It incorporates two long standing network proxy models to develop the network topology used by  
22 Frontier in this Case: the CostQuest LandLine (CQLL) and the CostQuest Middle Mile  
23 (CQMM). These proxy cost models were all developed by CostQuest Associates, Inc. who are



1 the same people who developed and support the FCC's Connect America Cost Model (CACM)  
2 which has been accepted by the Federal Communications Commission (FCC) and administered  
3 by the Universal Service Administrative Company (USAC) to develop estimated Federal  
4 Broadband Network support amounts under the Connect America Fund (CAF) Phase II  
5 proceeding. The same two underlying proxy models, the CQLL and the CQMM were used to  
6 develop the network topology in the FCC CACM model. The underlying network design, or  
7 network topology, on which Frontier's monthly costs per household passed were developed, was  
8 a Gigabit Passive Optical Network (GPON) fiber to the premises (FTT<sub>p</sub>) network design. This is  
9 the same network model design as used in the most recent FCC CACM model release version  
10 4.1. FTT<sub>p</sub> is a network design where the entire network from the Central Office to the demand  
11 location is built over fiber optic facilities and equipment (see Exhibit 203). In this design the end  
12 user demand point is normally placed within 5,000 feet of the fiber splitter. In this topology an  
13 ONT (Optical Network Terminal) is placed at the demand location, along with a battery for  
14 backup power. Fiber cable then connects to the Central Office. Along the path, the fiber is  
15 concentrated at the Fiber Splitter (PFP (Primary Flexibility Point – PFP or Fiber Distribution  
16 Hub – FDH) in a typical 32 to 1 ratio. At the Central Office, the fiber from the PFP or FDH  
17 terminates on an OLT (Optical Line Terminal). The traffic is then sent to an Ethernet switch. IP  
18 packets are routed to the IP network via a connection to a router. This gateway router can be in  
19 the Central Office or can be located at an intermediate office to support multiple Central Offices.  
20 This network design will support basic voice and broadband with minimum speeds to all  
21 households passed of 4.0 Mbps downstream and 1 Mbps upstream.

1 Q. PLEASE PROVIDE A BRIEF OVERVIEW OF THE CQSBCM PROXY COST  
2 MODEL ARCHITECTURAL COMPONENTS AND THEIR FUNCTION.

3 A. **Understand Demand:** The function whereby consumer and businesses are located.  
4 Results in a representation of potential demand consistent with address level consumer  
5 and business information from GeoResults and US 2010 Census data, updated with 2011  
6 Census county estimates. Service area boundaries are based upon GeoResults 3Q 2012,  
7 wire center boundary and Central Office Location database.

8 **Design Network Topology:** The function whereby network design is determined to  
9 accommodate required service capabilities, demand and geographies. This results in a set of  
10 Network Topologies which are consistent with forward-looking network deployments.

11 **Compute Cost and Develop Solution Sets:** The function whereby network construction and  
12 operating costs are determined and custom Solution Sets are defined. (Note: outputs from the  
13 Cost to Serve Module represent a unitized measure of costs for comparison among Census blocks  
14 and are stored in and referred to as a "Solution Set". Solution Sets are subsequently used by the  
15 Support Module along with specific user parameters to calculate a result.

16 **Define Existing Coverage:** The function whereby existing voice and broadband coverage is  
17 inventoried and associated with deployment technologies, speed and specific geographies. This  
18 results in a representation of voice and broadband coverage, drawing on various sources  
19 including the National Broadband Map (NBM) data.

20

21 Q. WHAT COST MODEL INPUTS WERE USED TO CREATE THE PROXY  
22 MODEL COST PER HOUSEHOLD AT THE CGB LEVEL?

1 A. The inputs used in the CQLL proxy model were primarily based on the same collection of  
2 cost inputs used in the FCC's Connect America Cost Model (CACM) version 4.1. The  
3 FCC's CACM model inputs were originally collected from and reviewed by a coalition of  
4 industry carriers, including Frontier Communications, AT&T, Verizon, CenturyLink and  
5 Windstream. All of the cost inputs, engineering assumptions, equipment capacities, labor  
6 rates, plant mix, capex costs, opex costs, and cost of money were carefully reviewed,  
7 scrutinized and validated collectively with carrier engineering teams and cost modeling  
8 experts across the industry along with the proxy cost model team led by CostQuest  
9 Associates. These inputs reflect the most current and forward looking costs along with  
10 demand capacities for all network components.

11

12 **Q. WHAT SPECIFIC MODEL INPUTS WERE CHANGED BY FRONTIER?**

13 A. While all costs and capacities were reviewed, changes were made by Frontier to reflect  
14 Frontier's weighted average cost of capital based on Frontier Corporation's consolidated  
15 capital structure and cost of debt and equity. In addition the Frontier engineering team  
16 also reviewed the plant mix input table and the percentages of plant allocated to aerial,  
17 buried and underground in the distribution network, the feeder network and interoffice  
18 facilities. We decided to use the national plant mix average as the input, as that input  
19 correlated more closely with the plant mix in the FCC's CACM.

20

21 **Q. PLEASE EXPLAIN HOW THE FRONTIER WEIGHTED AVERAGE COST OF**  
22 **CAPITAL WAS COMPUTED?**

1 A. The cost model inputs for Frontier's forward-looking weighted average cost of capital  
2 were computed based on the audited 12/31/13 financial data filed in Frontier's SEC 10K  
3 annual report. The cost of equity was computed using the Capital Asset Pricing Model  
4 (CAPM). The percentage of debt and equity in the Company's capital structure was  
5 computed using a combination of the short and long term debt and equity components as  
6 disclosed in Frontier's consolidated Balance Sheet. The cost of debt was computed using  
7 the effective interest rate paid on Frontier's long and short term debt less the income tax  
8 effect for the interest computed as 1 minus the Company's effective tax rate.  
9 The cost of equity was computed using the standard formula in the Capital Asset Pricing  
10 Model, which states the expected return on equity, is equal to the risk-free interest rate  
11 plus Beta times the market risk premium. The Beta coefficient measures how much a  
12 company's share price reacts against the market as whole. To determine Frontier's Beta, I  
13 ran a regression analysis of the returns on Frontier's adjusted closing stock prices against  
14 the market returns using the S&P 500 index closing prices as the proxy for the expected  
15 market returns. This resulted in a Beta coefficient of 0.87 which was then multiplied by  
16 the result of the market risk premium calculation. The market risk premium represents  
17 the return investors expect to compensate them for taking extra risk in the stock market  
18 over and above the risk free rate. It was computed by subtracting the risk free interest  
19 rate, as estimated from the expected yields on long term Treasury Bonds, from the  
20 expected market returns. The cost of equity resulting from these calculations was 9.43%  
21 and the after-tax cost of debt was 5.55%. Multiplying these costs times the percentages  
22 of debt and equity in Frontier's capital structure resulted in a weighted average cost of

1 capital of 6.84%. This value was used in the model as Frontier's forward-looking  
2 weighted average cost of capital.

3  
4 **Q. PLEASE PROVIDE A BRIEF OVERVIEW OF THE KEY COMPONENTS OF**  
5 **THE VOICE AND BROADBAND MODELED NETWORK DESIGN.**

6 A. The voice and broadband-capable network is broken into two key components: loop and  
7 middle mile. The loop portion captures the routing of network facilities from the demand  
8 location (residence or business location) up to a serving Central Office. This routing  
9 captures both the "last mile" (facilities from the demand location to the serving fiber  
10 distribution terminal) and the "second mile" (facilities from the fiber distribution terminal  
11 to the Central Office). The middle mile portion captures what one might typically refer to  
12 as the interoffice network or transport. It captures the routing from a Central Office to the  
13 point at which traffic is passed to "the cloud." Within the model the connection to the  
14 Cloud occurs at a regional tandem (RT) location within a state.

15  
16 **Q. PLEASE PROVIDE A BRIEF OVERVIEW OF THE COSTQUEST LOCAL**  
17 **LOOP (CQLL) MODEL.**

18 A. At a high level, CQLL is a modern "spatial" model that identifies where demand locations exist  
19 and "lays" cable along the appropriate (most efficient path) roads of a service area. As a result, a  
20 cable path that follows the actual roads in the area can literally be traced from each demand  
21 location to the serving Central Office. From the output of CQLL, a network topology is built that  
22 captures the equipment locations and routing required for delivery of voice and broadband  
23 services to an entire service area. Within the model's Capex logic, the network topology is sized

1 to determine appropriate cable and equipment and then combined with equipment prices, labor  
2 rates, contractor costs, and key engineering parameters (e.g., equipment capacities appropriate for  
3 demand) to arrive at the investments required. CQLL is populated with data that incorporate  
4 various types of business locations in addition to Census-true residential locations. Based on  
5 this location data set, CQLL then created the network topology required as well as their  
6 corresponding service requirements. Once the network topology is designed, the network  
7 facilities required for the build out are associated with each provisioning option (broadband,  
8 Special Access fiber) based upon cost-causative drivers or through an appropriate attribution and  
9 assigned to the demand in the Census Block. Only the facilities (or portions thereof) associated  
10 with voice and broadband services are extracted from the CQLL results and pulled into  
11 CQSBCM. As such, the network topology captures the full build of a typical voice and  
12 broadband provider, and only the portion of the network build associated with broadband  
13 provisioning is captured in the CQSBCM results. Voice services are provided using carrier grade  
14 Voice over Internet Protocol (cVoIP). Investments to support voice capabilities are presented to  
15 the model on a per unit of demand basis. The typical cVoIP network consists of the following  
16 components; gateways, feature servers, session managers.

17  
18 **Q. PLEASE PROVIDE A BRIEF OVERVIEW OF THE COSTQUEST MIDDLE MILE**  
19 **(CQMM) MODEL.**

20 A. The CostQuest middle mile (CQMM) model captures the cost of network facilities that provide a  
21 high capacity transport connection from Central Office to Central Office and/or Central Office to  
22 the Regional Tandem. This is known as the middle mile. It also connects Central Offices to an  
23 Internet Gateway. The middle mile is assumed to extend between the service provider's point of

1 interconnection with the internet and the service provider's point of interconnection ("POI" or  
2 CO) with the second and last mile network built to support end user broadband demand  
3 locations. The middle mile architecture and components are illustrated in Exhibit 204.

4 The approach used to determine the middle mile equipment required – and then to compute the  
5 related investment costs – is centered in the spatial relationship between the Central Office and  
6 the nearest access to a Tier 3 Internet Gateway tandem. A surrogate for such access is assumed to  
7 be on a Regional access Tandem (RT) ring within the state. Regional tandem locations (and the  
8 relevant feature groups deployed) are obtained from the LERG @database. Each tandem  
9 identified as providing Feature Group D access in LERG @ 7 is designated an RT. As with  
10 Central Offices, a latitude and longitude is identified for each RT. The underlying logic (and the  
11 process) of developing middle mile investment requirements are grounded in the assumption that  
12 the Internet Gateway peering point is located on the RT ring – meaning that if the modeled  
13 design ensures each Central Office is connected to an RT ring, the corresponding Node0 demand  
14 has access to the Internet.

15 CQMM develops middle mile costs thru the following steps:

16 a. The distance of the RT rings is attributed to each Node0 on the ring in proportion to the  
17 number of locations at each Node0 as compared to the total locations for all the Node0s  
18 attached to the RT Ring. For each spanning tree connection, distance is calculated as  
19 follows. Where a road distance is available, the road distance is used unless the ratio of  
20 the road distance to airline distance is  $> 3.04$ . In that case the airline distance  $\times 3.04$  is  
21 used. If the route is classified as partially submarine (see CACM Methodology  
22 section 8.4),  $1.2 \times$  the airline distance is used to develop the overall distance between the

1 points. Within CQMM the final middle mile distances are multiplied by the  
2 TreeToRingRedundancyFactor in the Capex input (the factor is currently set to 1.2).

3 b. The distance on the Node0 tree back to the RT is attributed much in the same way as  
4 the loop feeder routing. That is, CQMM attributes each route based on the cumulative  
5 locations that can use the route.

6 c. For electronics, CQMM captures the broadband routers (it is assumed that each  
7 CO/POI will connect to two routers to provide redundancy) which connect up to the fiber  
8 at RT/Tier 3 location. Additional electronics of the RT/Tier 3 or the RT ring are not  
9 included as part of the costs.

10 d. For the fiber placement, CQMM assumes a portion of the conduit, buried trenching and  
11 poles already exist for the local access network (this sharing is controlled in the Capex  
12 input workbook). As such, only a portion of additional costs for conduit, buried trenching  
13 and poles is captured for middle mile. CQMM does retain the full cost for fiber which  
14 supports the end user broadband-capable network.

15 e. From the total middle mile costs that are calculated, CQMM captures a portion of the  
16 costs (some costs are assumed to be absorbed by uses other than CQMM voice and  
17 broadband services, e.g., special access services). This sharing assumption is controlled in  
18 the Capex input workbook.

19 f. Finally, CQMM relates the middle mile cost to each Census Block (the basic unit of  
20 geography in CQSBCM) based on the proportion of potential demand locations in the  
21 Census Block (as compared to the total locations in the POI/CO/Node0 serving area).

22  
23 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**



1 A. Yes it does.

2