

**BEFORE THE WASHINGTON  
UTILITIES & TRANSPORTATION COMMISSION**

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

v.

QWEST CORPORATION D/B/A CENTURYLINK QC

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DOCKET NO. UT-190209

**RESPONSE TESTIMONY OF SUSAN M. BALDWIN  
ON BEHALF OF  
PUBLIC COUNSEL**

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**EXHIBIT SMB-1CT**

January 9, 2020

**Confidential Per Protective Order in Docket UT-190209  
(Confidential Information is Highlighted in Gray)**

PUBLIC VERSION

**DOCKET UT-190209**

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**TABLE OF CONTENTS**

	<u>PAGE</u>
I. INTRODUCTION / SUMMARY .....	1
II. BACKGROUND.....	4
A. Description of event .....	4
B. Staff Recommendation.....	18
C. Prior 911 Outages.....	19
D. 911 Oversight – Larger Context.....	21
III. CONSEQUENCES FOR 911 OUTAGE .....	24
A. Importance of 911 to public safety and welfare.....	24
B. Criteria for assessing appropriate penalty .....	25
IV. CONCLUSION .....	31

**DOCKET UT-190209**

**RESPONSE TESTIMONY OF SUSAN M. BALDWIN**

**EXHIBIT SMB-1CT**

**EXHIBITS LIST**

Exhibit SMB-2	Qualifications of Susan M. Baldwin
Exhibit SMB-3C	CenturyLink response to Public Counsel Data Request No. 2, Confidential Attachment PC-2
Exhibit SMB-4	CenturyLink response to Public Counsel Data Request No. 3
Exhibit SMB-5	CenturyLink response to Public Counsel Data Request No. 4
Exhibit SMB-6C	CenturyLink response to Public Counsel Data Request No. 1, UT-190209 Confidential RCA-7-12-17 State of Washington Final, CP 6.1 (Confidential), CP 6.2 (Confidential)
Exhibit SMB-7C	CenturyLink response to Public Counsel Data Request No. 35C
Exhibit SMB-8	CenturyLink response to Public Counsel Data Request No. 29
Exhibit SMB-9C	CenturyLink response to Public Counsel Data Request No. 27C
Exhibit SMB-10	CenturyLink response to Public Counsel Data Request No. 33C

## I. INTRODUCTION / SUMMARY

1       **Q.     Please state your name and business address.**

2       A.     My name is Susan M. Baldwin. I am an independent consultant, and my business  
3             is located at 13 Church Hill Street, Watertown, Massachusetts 02472.

4       **Q.     On whose behalf are you testifying?**

5       A.     I am testifying on behalf of the Public Counsel Unit of the Attorney General's  
6             Office of Washington ("Public Counsel").

7       **Q.     Have you testified previously before the Washington Utilities &  
8             Transportation Commission (WUTC or "Commission")?**

9       A.     Yes. On behalf of Public Counsel, I testified in 1999, in Docket UT-981367 (In  
10            re: Application of Bell Atlantic Corporation and GTE Corporation for Approval  
11            of the GTE Corporation - Bell Atlantic Corporation Merger); in 2003, in Docket  
12            030614 (Qwest Petition for Competitive Classification of Business Services); and  
13            in 2018, in Docket UT-171082 (CenturyLink's Obligations Under the  
14            Commission's Line Extension Rules). Also, presently, I am assisting Public  
15            Counsel with its participation in Docket UT-190574 (the proposed Frontier-  
16            Northwest Fiber transaction), and in consolidated Dockets UE-190529 and  
17            UG-190530 (Puget Sound Energy). Outside of litigated proceedings, I am also  
18            working with Public Counsel in the ongoing Universal Service Fund rulemaking  
19            (Docket UT-190437).

1       **Q.     Please summarize your educational background and professional experience.**

2       A.     Since 1984, I have specialized in the economics, regulation, and public policy of  
3             utilities, with a long-standing focus on telecommunications markets and, more  
4             recently, consumer issues in electric and gas markets. I have testified before 24  
5             state public utility commissions nationwide, including Arkansas, California,  
6             Colorado, Connecticut, District of Columbia, Idaho, Illinois, Indiana, Iowa,  
7             Maryland, Massachusetts, Nevada, New Hampshire, New Mexico, New Jersey,  
8             New York, Ohio, Pennsylvania, Rhode Island, Tennessee, Vermont, Washington  
9             State, West Virginia, and Wyoming. I have also participated in dozens of Federal  
10            Communications Commission (FCC) proceedings.

11                    In 1990, the Massachusetts Legislature enacted legislation that established  
12                    a funding mechanism and mandate for a statewide enhanced 911 (“E-911”)  
13                    system. As the Director of the Telecommunications Division for the  
14                    Massachusetts Department of Public Utilities, I was responsible for advising the  
15                    then three-member Commission on the request for proposals and for the selection  
16                    of the 911 provider.

17                    I have prepared a detailed Statement of Qualifications, which is filed with  
18                    this testimony as Exhibit SMB-2.

19       **Q.     What exhibits are you sponsoring in this proceeding?**

20       A.     In addition to this testimony, I am sponsoring Exhibits SMB-2 through SMB-10,  
21             which are listed below.

SMB-2	Qualifications / CV
SMB-3C	CenturyLink response to Public Counsel Data Request No. 2, Confidential Attachment PC-2 (Power Point file)
SMB-4	CenturyLink response to Public Counsel Data Request No. 3
SMB-5	CenturyLink response to Public Counsel Data Request No. 4
SMB-6C	CenturyLink response to Public Counsel Data Request No. 1, UT-190209 Confidential RCA-7-12-17 State of Washington Final, CP 6.1 (Confidential), CP 6.2 (Confidential)
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SMB-9C	CenturyLink response to Public Counsel Data Request No. 27C
SMB-10	CenturyLink response to Public Counsel Data Request No. 33C

1       **Q.     Please summarize your testimony and recommendations.**

2       A.     I analyze the events surrounding and including the 911 outage that occurred on  
3             July 12, 2017, and, based on that evaluation, recommend that the Commission  
4             impose the maximum penalty of \$220,000 on Qwest Corporation d/b/a  
5             CenturyLink QC (“CenturyLink”). The penalty is necessary so that CenturyLink  
6             bears responsibility for the outage. The penalty will signal to present and future  
7             911 providers that they, too, are accountable to regulators and policymakers,  
8             residents, and businesses in Washington to provide safe, reliable 911 service. I  
9             further recommend that providers be required to submit Network Outage  
10            Reporting System (NORS) reports to the Commission.

1       **Q.     Please describe generally the sources of information upon which you relied to**  
2       **prepare your testimony.**

3       A.     I rely on Staff’s detailed Investigative Report, filed in April 2019, which is included  
4       as Exhibit MLT-2 to Staff’s testimony. I also rely on responses to discovery  
5       propounded by Public Counsel and Staff, which I summarize above in the list of  
6       exhibits to this testimony. Finally, I rely on public sources of information regarding  
7       911, which I cite throughout my testimony. I am also informed by my 36 years  
8       working in the area of telecommunications policy, regulation, and economics.

## II. BACKGROUND

### A. Description of Event

9       **Q.     Please describe generally the July 2017 911 outage.**

10      A.     A three-hour outage of Washington’s 911 system, which affected a large part of  
11      western Washington, prevented 222 out of 1,405 calls (i.e., 16 percent of calls)  
12      from reaching 911, and may have prevented more calls from reaching 911.<sup>1</sup> As  
13      described by Staff, “Washington residents experienced a widespread, partial outage  
14      of the state’s 911 system, which severely disrupted emergency and public safety  
15      communications.”<sup>2</sup> The 911 system partially failed at 5:52 a.m. on July 12, 2017, and  
16      was restored approximately three hours later, at 8:39 a.m.

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<sup>1</sup> Michael L. Turcott, Exh. MLT-2 (Commission Investigative Report CenturyLink, April 2019). In its report, Staff states that it “will never know exactly how many Washington residents lost access to 911.”

<sup>2</sup> *Id.* at 4.

1 Staff found that Washington residents were denied access to vital  
2 emergency services during the nearly three-hour outage.<sup>3</sup>

3 **Q. When did CenturyLink first notify public safety answering points (PSAPs) of**  
4 **the outage?**

5 A. CenturyLink first notified 28 of the 29 PSAPs potentially affected by the outage  
6 by email on July 12, 2017, at 3:50 p.m., more than five hours after the outage was  
7 restored. CenturyLink first notified the 29th PSAP (Washington State Patrol –  
8 King County), also by email, on August 4, 2017, 25 days after the outage.<sup>4</sup>

9 **Q. When did CenturyLink first notify the Commission of the 911 outage?**

10 A. I am not aware of any information that indicates that CenturyLink notified the  
11 Commission of the 911 outage. The Commission learned of the outage from an  
12 email sent by the Washington Military Department.<sup>5</sup>

13 **Q. Did CenturyLink notify Public Counsel of the outage?**

14 A. My understanding is that it did not.

15 **Q. Was the outage considered a major outage?**

16 A. No. WAC 480-120-021 defines a major outage as:

17 [A] service failure lasting for thirty or more minutes that causes the  
18 disruption of local exchange or toll services to more than one  
19 thousand customers; total loss of service to a public safety  
20 answering point or emergency response agency; intercompany  
21 trunks or toll trunks not meeting service requirements for four hours  
22 or more and affecting service; or an intermodal link blockage (no  
23 dial tone) in excess of five percent for more than one hour in any  
24 switch or remote switch.

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<sup>3</sup> *Id.*

<sup>4</sup> *Id.* See also *id.* at 15-24.

<sup>5</sup> *Id.* at 12, citing Appendix B (page 25), which reproduces an email sent at 4:31 on July 12, 2017 (Page 12 of the Staff report seemingly has a typo because it refers to a date of August 12, 2017.)



1 The outage did not meet this definition of a major outage. Nonetheless, as I  
2 explain in my testimony, any outage of 911 is a serious matter.

3 **Q. Please describe generally the Staff’s investigative report regarding the 911**  
4 **outage.**

5 A. Staff’s investigative report, dated April 2019, includes a detailed description of  
6 the incident.<sup>6</sup> Staff undertook its investigation to determine whether CenturyLink  
7 complied with the requirement to provide 911 service and also considered  
8 whether CenturyLink complied with the requirement to promptly and effectively  
9 notify affected customers and stakeholders during the outage.<sup>7</sup>

10 **Q. What was CenturyLink’s responsibility regarding the state’s 911 system at**  
11 **the time of the outage?**

12 A. When the 911 outage occurred, CenturyLink was the statewide provider of 911  
13 services under a contract with the Washington State Military Department (“WMD”).  
14 CenturyLink was, therefore, responsible for ensuring its network delivered 911 calls  
15 placed in Washington to the appropriate Washington PSAPs.<sup>8</sup>

16 **Q. Please identify and describe the role of CenturyLink’s 911 vendor in the outage.**

17 A. CenturyLink contracted with a third-party vendor to provide components of  
18 Washington’s 911 system. CenturyLink’s 911 vendor, West (formerly Intrado),  
19 operates two Emergency Communications Management Centers (ECMCs), which  
20 are located in Englewood, Colorado, and Miami, Florida. A failed software

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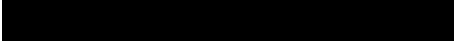
<sup>6</sup> Turcott, Exh. MLT-2.

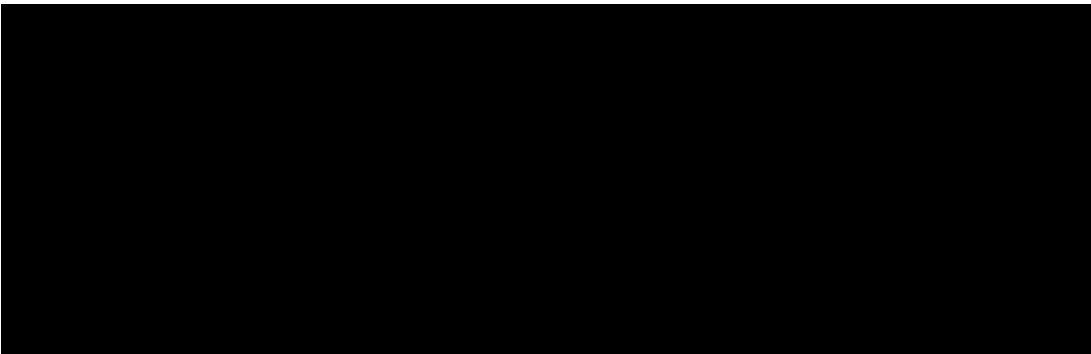
<sup>7</sup> *Id.* at 4.

<sup>8</sup> Direct Testimony of Michael L. Turcott, Exh. MLT-1T at 4-5.

1 update in the Englewood ECMC during the early morning hours of July 12, 2017,  
2 disrupted delivery of automatic number identification (ANI), automatic location  
3 identification (ALI), and voice carrier traffic, causing the Englewood Emergency  
4 Management Center to reject 222 calls from eight unique wireline numbers and  
5 140 unique mobile numbers placed to 911.<sup>9</sup>

6 **Q. Please describe the software update further and elaborate on the cause of the**  
7 **failed software update.**

8 A. As described by CenturyLink, the update 

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14 CenturyLink explains further:

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<sup>9</sup> Turcott, Exh. MLT-2 at 4.

<sup>10</sup> Susan M. Baldwin, Exh. SMB-3C at 5 (CenturyLink response to Public Counsel Data Request No. 2, Confidential Attachment PC-2).

1       **Q.     Please describe the timing of the 911 outage relative to the transition of**  
2           **management of Washington’s 911 system from CenturyLink to Comtech**  
3           **Telecommunications Corp (“Comtech”).<sup>11</sup>**

4       A.     As of the July 12, 2017 outage, CenturyLink had not yet transitioned any public  
5           safety answering points to Comtech. The amendment to CenturyLink’s agreement  
6           with the Military Department was signed in mid-July of 2017. At the time of the  
7           outage, CenturyLink was just starting the network provisioning that would  
8           eventually connect CenturyLink and Comtech. Actual PSAP cutovers to Comtech  
9           did not begin until May 2018, and the full transition of PSAPs to Comtech as the  
10          state 911 provider occurred on March 7, 2019. Comtech took over as the  
11          Automatic Location Identifier database provider on May 31, 2019.<sup>12</sup>

12       **Q.     What is your understanding of CenturyLink’s view of its management’s role**  
13           **in the 911 outage?**

14       A.     CenturyLink objected to Public Counsel’s discovery that sought an organizational  
15           chart for the management of the 911 system for three distinct periods of time: 1)  
16           up until the April 2014 outage, 2) between the April 2014 outage up until the July  
17           2017 outage, and 3) between the July 2017 outage up until the completion of the  
18           transition of the 911 system to Comtech. CenturyLink’s objection stated  
19           “Management of the 911 system from 2014-2017 has no bearing on the 2017

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<sup>11</sup> For more information about Comtech see: <http://www.comtechtel.com/home>.

<sup>12</sup> Baldwin, Exh. SMB-4 (CenturyLink response to Public Counsel Data Request No. 3).

1           outage as that outage occurred as the result of a machine error that occurred  
2           during a maintenance upgrade to CenturyLink’s vendor’s (West’s) equipment.”<sup>13</sup>

3           **Q.    In your view, can “machine” errors be separated from human ones?**

4           A.    No. Ultimately, humans build, control, maintain, and oversee the operation of  
5           machines. By way of example, if my car breaks down because I fail to maintain it  
6           properly, blaming the car failure on the machine fails to acknowledge my  
7           responsibility to maintain my car. Indeed, one document describing the root cause  
8           of the outage refers to [REDACTED]

9           [REDACTED]<sup>14</sup>

10          **Q.    Please describe the information provided to the originating service provider<sup>15</sup>**  
11          **when the 911 system failed to process a 911 call from the OSP’s customer.**

12          A.    As explained by CenturyLink, [REDACTED]

13          [REDACTED]

14          [REDACTED]

15          [REDACTED]

16          [REDACTED]

17          [REDACTED]

18          [REDACTED]

<sup>13</sup> Baldwin, Exh. SMB-5 (CenturyLink response to Public Counsel Data Request No. 4).

<sup>14</sup> Baldwin, Exh. SMB-6C (CenturyLink Response to Public Counsel Data Request No. 1, Att. A, UT-190209 Confidential RCA-7-12-17 State of Washington Final).

<sup>15</sup> An originating service provider is the telecommunications provider that allows its users (i.e., customers or subscribers) to call 911. If a customer relies, for example, on Frontier for basic local exchange service, Frontier would be that customer’s originating service provider.

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[REDACTED]

[REDACTED]

<sup>16</sup>

[REDACTED]

[REDACTED]

**Q. Please describe further the potential impact of the outage.**

A. Regarding the potential impact of the outage, CenturyLink stated (emphasis added):

[REDACTED]

<sup>17</sup>

<sup>16</sup> Baldwin, Exh. SMB-3C.  
<sup>17</sup> Baldwin, Exh. SMB-6C.

1 **Q. Did Public Counsel seek clarification of the use of the word “may” in the**  
2 **excerpted passage above?**

3 A. Yes. CenturyLink explained as follows:

4 The term “may” was used simply because rerouting is not 100%  
5 impervious to error. Assuming the sending OSP [originating service  
6 provider] was successful in rerouting the 911 call over its alternative  
7 path to the West Miami switch based on the cause code 34, the call  
8 should have completed at Miami without incident. However, there  
9 is always a chance of an interrupting event. For example, trunk  
10 capacity and current usage can influence call completion (i.e., the  
11 size of the trunk group and how busy the trunk group currently is).  
12 If the carrier only had 4 trunks total (2 to Miami and 2 to  
13 Englewood), and there are 6 people trying to dial 911 at the same  
14 time, 4 of those callers are going to hear a busy signal.<sup>18</sup>

15 **Q. Did Public Counsel seek further information regarding the [REDACTED]**  
16 **wireline customers potentially impacted by the outage?**

17 A. Yes. CenturyLink explains that the number corresponds with [REDACTED]

18 [REDACTED]

19 [REDACTED]

20 [REDACTED]

21 [REDACTED]

22 [REDACTED]

23 [REDACTED]

24 [REDACTED]<sup>19</sup>

<sup>18</sup> Baldwin, Exh. SMB-7C (CenturyLink response to Public Counsel Data Request No. 35C).

<sup>19</sup> *Id.*

1       **Q.     Were the 222 failed 911 calls from residential or from business customers?**

2       A.     This is not entirely clear. CenturyLink indicated that two of the eight unique  
3             wireline telephone numbers were assigned to residential customers and six to  
4             business customers. However, the customers associated with the telephone  
5             numbers were not all CenturyLink’s customers, so CenturyLink could not be  
6             entirely certain that this was the case.<sup>20</sup> CenturyLink further indicated that it  
7             lacked data as to whether the wireless numbers were associated with business or  
8             residential customers.<sup>21</sup>

9       **Q.     Did Public Counsel seek information about the service providers associated**  
10            **with the eight unique wireline telephone numbers from which 10 calls to 911**  
11            **failed during the outage?**

12      A.     Yes. CenturyLink provided information about the eight telephone numbers in its  
13             response to Public Counsel Data Request No. 29, which is set forth in my Exhibit  
14             SMB-8.<sup>22</sup> One of these eight telephone numbers is associated with three separate  
15             calls to 911, meaning that the same person (or household) called 911 at least three  
16             consecutive times, and the 911 system rejected each of these calls.

17                     In the table shown in Exhibit SMB-8, “TN” refers to the originating  
18             telephone number, “LNP Status” refers to whether the number had been ported  
19             from another carrier, and “SP” refers to the service provider for the caller on the

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<sup>20</sup> Turcott, Exh. MLT-2 at 33.

<sup>21</sup> *Id.*

<sup>22</sup> CenturyLink provided the complete telephone numbers. For purposes of my exhibit, the telephone numbers are partially redacted.

1 date of the outage. Service providers include MCImetro Former MCI, Frontier,  
2 Sprint PCS, and CenturyLink.

3 **Q. Please explain the potential significance of three calls to 911 being associated**  
4 **with a single telephone number.**

5 A. Public Counsel asked in discovery whether the three calls identified from a single  
6 number represented three separate calls, each of which were rejected by the 911  
7 system. CenturyLink stated that [REDACTED]

8 [REDACTED]<sup>23</sup> The fact that the person  
9 called three consecutive times strongly suggests that this particular caller  
10 persistently sought emergency assistance. However, as a result of the outage, each  
11 of this person's three calls failed to reach 911. The particular circumstances  
12 causing this person to call three times are unknown, but this instance  
13 demonstrates the practical impact of the outage on one particular person.

14 **Q. Did any mobile callers also make repeated calls to 911 during the outage?**

15 A. Yes. Of the calls that failed, 212 calls<sup>24</sup> were made from mobile phones. Those  
16 calls originated from 140 different mobile phones. One can infer a similar pattern  
17 of individual callers attempting repeatedly to reach emergency services. As with  
18 the landline example above, we do not know the consequences of 72 instances of  
19 failed repeat wireless calls to 911, but we can sense the impact the outage had on  
20 individuals.

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<sup>23</sup> Baldwin, Exh. SMB-9C (CenturyLink Response to Public Counsel Data Request No. 27C).

<sup>24</sup> Two-hundred and twenty-two total failed calls minus 10 failed landline calls equals 212.



1       **Q.     Please comment further on the consequences of the failed calls to 911.**

2       A.     One cannot infer from the lack of specific information regarding harm that the  
3             outage caused no harm.<sup>25</sup> The particular consequences to each of the 148 different  
4             callers (eight from wireline numbers and 140 from wireless numbers) who tried  
5             but failed during 222 calls to reach 911 are simply unknown. It is reasonable to  
6             assume that particularly dire outcomes would have become publically known.  
7             However, less dire, but nonetheless harmful consequences could have ensued as a  
8             result of the outage without the public becoming aware. The nature of the  
9             unanswered calls is unknown, but people generally contact 911 when they need  
10            assistance.<sup>26</sup>

11                   In any event, CenturyLink was responsible for providing safe, efficient,  
12                   and sufficient 911 service to all customers and failed to do so during the nearly  
13                   three hours that this outage occurred.

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<sup>25</sup> CenturyLink indicated that it does not perform callbacks on failed 911 calls, but does provide a log of failed calls to PSAPs to make call backs at their discretion. CenturyLink provided the call log to the public safety answering points on July 13, 2017, at approximately 10:00 a.m., more than 24 hours after the outage was restored. Turcott, Exh. MLT-2 at 9.

<sup>26</sup> As described by the 911 industry association: “An emergency is any situation that requires immediate assistance from the police/sheriff, the fire department or an ambulance. If you are ever in doubt of whether a situation is an emergency you should call 9-1-1. It's better to be safe and let the 9-1-1 call taker determine if you need emergency assistance.”

Nat'l Emergency No. Ass'n (NENA), *9-1-1 Basic Information*, available at <https://www.nena.org/page/911GeneralInfo> (last visited Jan. 7, 2020).

NENA, which promulgates industry standards for 911 systems, describes itself as follows: “NENA. The 9-1-1 Association serves the public safety community as the only professional organization solely focused on 9-1-1 policy, technology, operations, and education issues. With more than 15,000 members in 48 chapters across North America and around the globe, NENA promotes the implementation and awareness of 9-1-1 and international three-digit emergency communications systems.”

Nat'l Emergency No. Ass'n, *About and FAQ*, available at <https://www.nena.org/page/aboutfaq2017> (last visited Jan. 7, 2020).

1       **Q.     In the table shown in Exhibit SMB-8, CenturyLink is included among the**  
2       **wireline originating service providers that failed to reroute 911 calls during**  
3       **the outage. Please explain further regarding CenturyLink’s involvement in**  
4       **the outage as an originating service provider.**

5       A.     CenturyLink’s inclusion among the list of service providers that failed to re-route  
6       911 calls is separate and distinct from CenturyLink’s role as the 911 provider at  
7       the time of the outage. The fact that CenturyLink was the originating service  
8       provider for one of the failed calls simply illustrates that the option for service  
9       providers to re-route 911 calls in response to the code 34 message was helpful,  
10      but did not always result in the reliable completion of 911 calls.

11      **Q.     Continuing with the example, please explain further how the call that**  
12      **originated with CenturyLink failed to reach 911 as a result of the outage.**

13      A.     As explained by CenturyLink:

14                 West’s Englewood switch would have sent all affected originating  
15                 carriers, including CenturyLink, a cause code 34 during this partial  
16                 outage. West’s switch and cause code response does not change  
17                 based on the identity of the originating carrier. Rerouting capability  
18                 depends on originating service provider (OSP) switch type,  
19                 configuration and response. West has no visibility or control into  
20                 OSP forward/alternate routing capabilities and configurations.  
21                 However, West requires all connecting carriers to have primary and  
22                 alternative path to its two redundant switches. Furthermore, West  
23                 instructs all OSPs that they should have the capability to forward  
24                 route in response to valid cause codes such as the returned cause  
25                 code 34. Additionally, West recommends all OSPs implement load  
26                 balancing and alternative routing configurations.

27                 As noted in previous responses, there was a single call where  
28                 CenturyLink was the originating service provider where the call did  
29                 not re-route. The CenturyLink switch that received the cause code  
30                 34 for this failed call was not capable of re-routing on cause codes,

1 but CenturyLink does have primary and alternate paths to West's  
2 switches. It is possible that the call did not fail over to Miami based  
3 on the explanation provided in response to PC-35(a).<sup>27</sup>

4 **Q. Does the Federal Communications Commission (FCC) require carriers to**  
5 **report outages?**

6 A. Yes. The FCC requires carriers to report outages under the FCC's Network  
7 Outage Reporting System (NORS).<sup>28</sup> When an outage is reported, the carrier is  
8 required to explain the cause of the outage and identify how it proposes to avoid  
9 similar problems going forward. Consent judgments for violation of the FCC's  
10 rules typically contain provisions that obligate the subject carrier to develop  
11 specific plans for improving service reliability going forward.

12 **Q. When did CenturyLink notify the FCC of the incident?**

13 A. CenturyLink submitted a NORS report to the FCC (and to the Commission) on  
14 July 14, 2017.<sup>29</sup> Also, in compliance with a consent decree relating to a more  
15 extensive 911 outage that occurred in 2014,<sup>30</sup> CenturyLink submitted an incident  
16 report to the FCC's Spectrum Enforcement Division on August 4, 2017, which it  
17 subsequently supplemented on August 11, 2017.<sup>31</sup>

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<sup>27</sup> Baldwin, Exh. SMB-10 (CenturyLink response to Public Counsel Data Request No. 33C); Baldwin, Exh. SMB-7C.

<sup>28</sup> John Healy, *Network Outage Reporting System (NORS)*, FED. COMM. COMM'N, available at <https://www.fcc.gov/network-outage-reporting-system-nors> (Last updated July 5, 2018). See link to 47 C.F.R. § 4 on webpage.

<sup>29</sup> Baldwin, Exh. SMB-6C.

<sup>30</sup> *In the Matter of CenturyLink, Inc.*, DA 15-406, Fed. Comm. Comm'n File No. EB-SED-14-00017187, Consent Decree (Apr. 6, 2015).

<sup>31</sup> Baldwin, Exh. SMB-6C.

1 **Q. How did CenturyLink describe the incident in its NORS report?**

2 A. The NORS report explains the cause of the outage as follows:

3 [REDACTED]  
4 [REDACTED]  
5 [REDACTED]  
6 [REDACTED]  
7 [REDACTED]  
8 [REDACTED]

9 The NORS Report states further: [REDACTED]

10 [REDACTED]

11 [REDACTED]

12 [REDACTED]<sup>32</sup>

13 CenturyLink explained that [REDACTED]

14 [REDACTED]<sup>33</sup>

15 **Q. What corrective actions did CenturyLink implement as a result of the 911**  
16 **outage?**

17 A. CenturyLink implemented the following corrective actions:

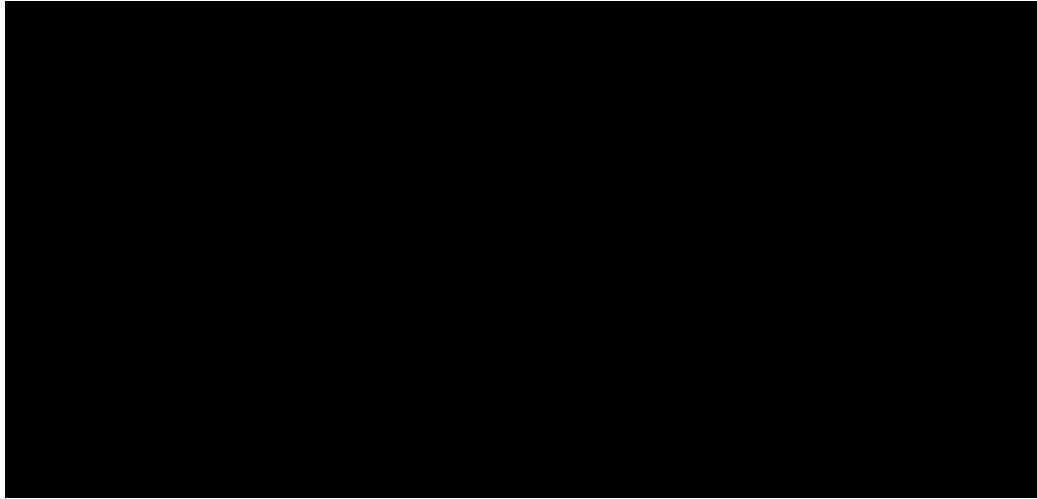
18 [REDACTED]  
19 [REDACTED]  
20 [REDACTED]  
21 [REDACTED]  
22 [REDACTED]  
23 [REDACTED]  
24 [REDACTED]<sup>34</sup>

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<sup>32</sup> *Id.* at 3.  
<sup>33</sup> Baldwin, Exh. SMB-3C at 8.  
<sup>34</sup> *Id.* at 4.

1 **Q. Were any other corrective actions identified?**

2 A. Yes. West identified the following corrective actions:



**B. Staff Recommendation**

15 **Q. What did Staff recommend in its Report?**

16 A. In its April 2019 Report, Staff recommended that the Commission issue a formal  
17 complaint against CenturyLink and, “because of the company’s continuing pattern  
18 of system failures, assess a penalty of up to the statutory maximum of \$1,000 for  
19 each of the 222 violations (222 failed 911 calls) of RCW 80.36.080, Rates  
20 services, and facilities, and WAC 480-120-450(1), Enhanced 911 obligations of  
21 local exchange companies.”<sup>36</sup> Staff’s Investigative Report is comprehensive, and I  
22 do not reproduce the detailed information therein.<sup>37</sup>

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<sup>35</sup> Baldwin, Exh. SMB-6C.

<sup>36</sup> Turcott, Exh. MLT-2 at 5.

<sup>37</sup> See Turcott, Exh. MLT-2.

1 **Q. Did you review Staff's testimony, filed on October 25, 2019?**

2 A. Yes. Staff continues to recommend that the Commission assess a penalty of up to  
3 \$222,000 for 222 violations of RCW 80.36.080, Rates, services, and facilities, and  
4 of WAC 480-120-9 450(1) Enhanced 911 obligations of local exchange  
5 companies, based on 222 failed calls to 911.<sup>38</sup>

6 **Q. Have there been settlement discussions in this proceeding?**

7 A. Yes. On August 22, 2019, Staff filed a letter informing the Commission that Staff  
8 and CenturyLink had reached a multiparty settlement in principle, and had  
9 intended to file a settlement agreement and testimony in support on September 25,  
10 2019. Instead, Staff filed a letter on September 25, 2019 in this docket stating that  
11 the Settling Parties had failed to memorialize a settlement agreement.<sup>39</sup>

### C. Prior 911 Outages

12 **Q. Has CenturyLink previously been involved with a 911 outage resulting in**  
13 **penalties?**

14 A. Yes. An outage of the state's 911 system, which was under CenturyLink's  
15 management, occurred previously and lasted approximately six hours on April 9  
16 and 10, 2014.<sup>40</sup> Based on its investigation of that outage, the Commission  
17 assessed a penalty of \$2,854,750 on CenturyLink. The Commission investigated

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<sup>38</sup> Turcott, Exh. MLT-1T at 7.

<sup>39</sup> Notice Revising Procedural Schedule and Notice of Evidentiary Hearing (Sept. 25, 2019).

<sup>40</sup> *Wash. Utils. and Transp. Comm'n v. Qwest Corp.*, Docket UT-140597, Order 03: Final Order Approving Settlement Agreement, ¶ 15 (Feb. 22, 2016).

1 CenturyLink's other 911 outages as well. One of the incidents included not only a  
2 911 outage, but also a long distance outage.<sup>41</sup>

3 **Q. Has the Commission addressed CenturyLink's post-2014 management of the**  
4 **state's 911 system?**

5 A. Yes. In 2016, the Commission stated (emphasis added):

6 No system is foolproof, whether it depends on computers, people,  
7 or a combination of both. Errors will inevitably occur in software  
8 coding, for example, both in its development and in its deployment  
9 in actual 911 operating systems. *What is important for our review is*  
10 *to ensure that CenturyLink has adequate management and oversight*  
11 *systems in place to both reduce the risks of such errors occurring*  
12 *and also to have systems in place to provide awareness of outages*  
13 *and to restore 911 service as rapidly as possible.*<sup>42</sup>

14 **Q. Why is the Commission's prior investigation of CenturyLink's earlier 911**  
15 **system failure relevant to this proceeding?**

16 A. The prior 911 investigation is relevant to this proceeding because (1) CenturyLink  
17 was unambiguously put on notice regarding the importance of a reliable 911  
18 system and (2), as was the case with the prior outage, the July 2017 outage shows  
19 an unacceptable situation where problems with 911 surface and then are corrected  
20 rather than comprehensive steps being taken to prevent problems from occurring  
21 in the first place.

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<sup>41</sup> *Id.*, ¶ 42. See also Turcott, Exh. MLT-2 at 6 (discussing other Commission-imposed penalties on CenturyLink regarding 911 outage-related violations).

<sup>42</sup> *Id.*, ¶ 25.

**D. 911 Oversight – Larger Context**

1       **Q.     The July 2017 911 outage exemplifies the importance of a reliable, robust 911**  
2       **system. What agencies other than the Commission monitor or are involved**  
3       **with the oversight and coordination of 911 systems?**

4       A.     Various government and private agencies coordinate 911 systems. The  
5       Washington State Enhanced 911 (E911) Program, administered by the  
6       Washington Military Department, facilitates local planning and installation of  
7       E911 systems.<sup>43</sup> The E911 Unit of the Emergency Management Division works  
8       with counties and communications companies to ensure the E911 system is  
9       operational and available to all in the State of Washington.<sup>44</sup>

10               As I discuss earlier, the FCC tracks major network outages, through the  
11               NORS reports.<sup>45</sup> Also, by law, the FCC is required to prepare an annual report  
12               about the collection and use of 911 fees, which includes information about how  
13               states oversee and organize their 911 capabilities.<sup>46</sup> The FCC has also adopted  
14               rules that require “covered 911 service providers to take reasonable measures to  
15               provide reliable 911 service with respect to: (i) 911 circuit diversity; (ii) central  
16               office backup power; and (iii) diverse network monitoring.” Annually, “[c]overed

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<sup>43</sup> Washington State Military Department, *Enhanced 911 Program*, available at <https://mil.wa.gov/e911> (last visited Jan. 7, 2020).

<sup>44</sup> *Id.*

<sup>45</sup> Carriers who fail to report outages in a timely manner (pursuant to the FCC’s Part 4 rules) or notify customers (when the outage is planned) are subject to substantial fines. The FCC’s 911 web page gives an overview of 911 and the Commission’s role relative to 911 services. Fed. Comm. Comm’n, *911 and E911 Services*, available at <https://www.fcc.gov/general/9-1-1-and-e9-1-1-services> (Updated Dec. 31, 2019).

<sup>46</sup> See Ajit Pai, ELEVENTH ANNUAL REPORT TO CONGRESS ON STATE COLLECTION AND DISTRIBUTION OF 911 AND ENHANCED 911 FEES AND CHARGES FOR THE PERIOD JANUARY 1, 2018 TO DECEMBER 31, 2018, Fed. Comm. Comm’n (Dec. 19, 2019) (submitted pursuant to Public Law No. 110-283), available at <https://www.fcc.gov/files/11thannual911feereport2019docx-0>.



1 911 service providers must certify as to their compliance with each of these three  
2 requirements or to their implementation of reasonable alternative measures.”<sup>47</sup>

3 The National Telecommunications and Information Administration and  
4 the National Highway Transportation Safety Administration are also involved in  
5 the ongoing process of developing Next Generation (NG) 911.<sup>48</sup> Annually, the  
6 National 911 Program and the National Association of State 911 Administrators  
7 (NASNA) collaborate to collect, analyze, and report on comprehensive data on  
8 funding and revenue, text-to-911, progress toward implementing NG911 and  
9 more.<sup>49</sup>

10 Private associations also contribute to the development of 911 standards  
11 and procedures. Among the major players are the National Emergency Number  
12 Association<sup>50</sup> and the Association of Public-Safety Communications Officials  
13 (APCO).<sup>51</sup>

14 State legislatures also continue to address 911, especially as transitions  
15 occur to the next generation 911 systems. According to the National Conference

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<sup>47</sup> See Fed. Comm. Comm’n Public Notice, Public Safety and Homeland Security Bureau Announces Availability of 911 Reliability Certification System for Annual Reliability Certifications (Aug. 2, 2018) (PS Docket Nos. 13-75, 11-60, DA 18-809).

<sup>48</sup> According to the NTIA’s site, “The National Telecommunications and Information Administration (NTIA) within the U.S. Department of Commerce and the National Highway Traffic Safety Administration (NHTSA) within the U.S. Department of Transportation are responsible for the joint 911 Implementation and Coordination Office (ICO).” Yuki Miyamoto, *Next Generation 911*, NAT’L TELECOMM. AND INFO. ADMIN., available at <https://www.ntia.doc.gov/category/next-generation-911> (last visited Jan. 7, 2020).

<sup>49</sup> Nat’l 911 Program, *National 911 Progress Report*, NAT’L HIGHWAY TRAFFIC SAFETY ADMIN., available at [https://www.911.gov/project\\_national911progressreport.html](https://www.911.gov/project_national911progressreport.html) (last visited Jan. 7, 2020); See e.g., Nat’l 911 Program, NATIONAL 911 PROGRESS REPORT (Nov. 2019), available at <https://www.911.gov/pdf/National-911-Program-Profile-Database-Progress-Report-2019.pdf>.

<sup>50</sup> Nat’l Emergency No. Ass’n, available at <https://www.nena.org> (last visited Jan. 7, 2020).

<sup>51</sup> Ass’n of Public-Safety Comm. Officials, *About APCO*, available at <https://www.apcointl.org/about-apco/> (last visited Jan. 7, 2020).

1 of State Legislatures, states continue to pass laws aimed at “supporting and  
2 improving the efficiency of the 911 component of public emergency  
3 communication services operations.”<sup>52</sup>

4 **Q. Do the entities providing 911 oversight operate in a vacuum?**

5 A. No, it is important that the entities exercising 911 oversight coordinate and be  
6 aware of the overall oversight framework. The state’s and the nation’s 911  
7 systems are evolving technologically, and state and federal oversight also may  
8 evolve. Given the importance of a reliable, robust 911 system to the public safety  
9 and welfare of Washington, it may be helpful to the Commission to be aware not  
10 only of its role in ensuring safe, reliable 911 service but also of the roles of the  
11 various other public and private entities that oversee and coordinate regarding 911  
12 service.

13 **Q. You mentioned that 911 is evolving technologically. Please elaborate.**

14 A. The original “plain old” 911 has been supplanted by E-911. The government,  
15 industry, and first responders have been working for a number of years to develop  
16 and implement a new, “next generation” 911 platform (NG911) that will utilize a  
17 much more powerful, but highly centralized, system architecture.

18 **Q. Please summarize why these various elements of public and private 911  
19 coordination and oversight are relevant to this proceeding.**

20 A. The specific focus of this proceeding concerns whether there should be regulatory

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<sup>52</sup> See Nat’l Conf. of St. Legs., *2018 Key Enacted 911 Legislation*, available at <https://www.ncsl.org/research/transportation/2018-key-enacted-911-legislation.aspx> (Updated Apr. 4, 2019).

1 consequences for CenturyLink relating to its role in the July 2017 911 outage.  
2 However, in determining the appropriate sanction for CenturyLink in this  
3 proceeding, the Commission should consider the larger context of 911 evolution.  
4 Going forward, the Commission should monitor state, federal, government, and  
5 private 911 developments. Because 911 is a critically important element of the  
6 state's telecommunications infrastructure, coordination with other oversight  
7 entities would be beneficial.

### III. CONSEQUENCES FOR 911 OUTAGE

#### A. Importance of 911 to Public Safety and Welfare

8 **Q. Please explain the importance of 911, and for accountability to regulators**  
9 **and policymakers for the reliability and adequacy of 911 systems.**

10 A. As the Commission has previously stated:

11 The citizens of this state reasonably rely on their ability to access  
12 emergency services by dialing 911. Their inability to do so for even  
13 a brief period of time poses a serious threat to public health, safety,  
14 and welfare, not just a violation of statute and Commission rules.<sup>53</sup>

15 911 is the epitome of what economists refer to as a “public good.”<sup>54</sup>

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<sup>53</sup> *Wash. Utils. and Transp. Comm'n v. Qwest Corp.*, Docket UT-140597, Order 03: Final Order Approving Settlement Agreement, ¶ 9 (Feb. 22, 2016).

<sup>54</sup> One economics textbook defines a public good as follows: “A pure public good is one where the marginal costs of providing it to an additional person are strictly zero and where it is impossible to exclude people from receiving the good. Many public goods that government provides are not pure public goods in this sense. The cost of an additional person using an uncrowded interstate highway is very, very small, but it is not zero, and it is possible, though relatively expensive, to exclude people from (or charge for) using the highway.”

Joseph E. Stiglitz and Carl E. Walsh, *PRINCIPLES OF MICROECONOMICS* 236-237 (3rd ed., W.W. Norton & Company, Inc., 2002).

The textbook explains public goods further as follows: “Many goods are not purely public goods but have one or the other property to some degree.” *Id.*

1       **Q.     What is a “public good”?**

2       A.     Public goods are goods that the private market typically undersupplies. Public  
3             goods typically have two attributes: (1) non-excludability – no person can be  
4             excluded from using the good, and (2) non-rivalry – the fact that one person uses  
5             the good does not prevent another from using the good. No single person will pay  
6             for these goods because individuals can use the good without paying for its  
7             production. For this reason private markets will not pay for them, and so  
8             government’s role is clearly essential.

9                     Unlike some other public goods (such as parks and open space), the stakes  
10                    of 911 are high – its reliability has life-or-death consequences. For this reason,  
11                    accountability by those entities responsible for providing the service needs to be  
12                    high. In this proceeding, maximum penalties are appropriate because of the  
13                    gravity of a 911 outage. Companies responsible for the state’s 911 infrastructure  
14                    should not manage 911 service reactively. They should not, as CenturyLink seems  
15                    to have done, wait for a problem to surface, causing irrevocable and potentially  
16                    life-threatening harm, and then implement a remedy. Instead, there should be  
17                    ongoing comprehensive assessments of the 911 system that seek to prevent  
18                    problems from occurring in the first place.

**B. Criteria for Assessing Appropriate Penalty**

19       **Q.     Has the Commission previously established criteria for determining**  
20             **penalties?**

21       A.     Yes. The Commission set forth eleven factors for determining whether to take

1 enforcement action.<sup>55</sup> The factors applied to the facts of this case support  
2 imposition of maximum penalties. Holding CenturyLink accountable for  
3 violations is important to achieve compliance and to signal to present and future  
4 911 providers the importance of providing safe and sufficient 911 service.

5 **Q Have you examined the Commission’s enforcement factors in the context of**  
6 **any other proceedings?**

7 A. Yes. I submitted response testimony and cross-answering testimony in Docket  
8 UT-171082 (CenturyLink’s Obligations Under the Commission’s Line Extension  
9 Rules) on behalf of Public Counsel, on June 1, 2018, and July 3, 2018,  
10 respectively, and examined the Commission’s enforcement factors in my  
11 testimony.<sup>56</sup>

12 **Q. What provisions did CenturyLink violate?**

13 A. In 222 known instances (and potentially other instances as well), CenturyLink  
14 violated Revised Code of Washington (RCW) RCW 80.36.080, requiring  
15 provision of modern, adequate, sufficient, and efficient service and facilities, and of  
16 Washington Administrative Code (WAC) 480-120-450(1), requiring the provision  
17 of enhanced 911 (“E911”) service.

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<sup>55</sup> *In re the Enforcement Policy of the Wash. Utils. and Transp. Comm’n*, Docket A-120061, Enforcement Policy for the Washington Utilities and Transportation Commission, ¶ 15 (Jan. 7, 2013).

<sup>56</sup> Response Testimony of Susan M. Baldwin, Exh. SMB-1T at 29-31, *Wash. Utils. and Transp. Comm’n v. Qwest Corp.* (June 1, 2018) (Docket UT-171082).

1       **Q.     Please share your evaluation of the Commission’s enforcement factors as**  
2       **they apply to these violations.**

3       A.     Below is my evaluation of the Commission’s enforcement factors.<sup>57</sup>

- 4           1. *How serious or harmful the violation is to the public.* The violations in this  
5           case are both serious and harmful to the public. Reliable 911 service is of  
6           paramount importance to the public safety and welfare of Washington’s  
7           residents. The fact that a third of the failed 911 calls were repeat calls is  
8           evidence of callers’ desire to reach public safety officials. The specific harms  
9           resulting from the July 2017 outage are unknown, meaning that customers  
10          experienced unquantifiable harm as a result of CenturyLink’s rejection of their  
11          911 calls. This factor is clearly an aggravating factor of the utmost  
12          significance and weighs towards imposing the maximum penalty.
- 13          2. *Whether the violation is intentional.* The 911 outage was not intentional, but  
14          the software update was planned and, therefore, intentional. Software updates  
15          to 911 system merit particular scrutiny and testing by management. As aptly  
16          stated by Staff: “By failing to ensure that its vendors properly test software  
17          configuration changes before implementation and have redundancy in place to  
18          prevent future failures, CenturyLink allowed this outage to occur.”<sup>58</sup> The lack  
19          of adequate testing is an aggravating factor, especially given the critical public  
20          safety implications of the planned software update. This factor weighs

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<sup>57</sup> Staff enumerates ten factors rather than eleven factors because Staff combines its discussion of the number of violations and the number of customers affected. Turcott, Exh. MLT-2 at 11-12.

<sup>58</sup> *Id.* at 11.

1 towards imposing the maximum penalty.

2 3. *Whether the Company self-reported the violation.* Staff indicates that  
3 CenturyLink did not self-report its violations and that Staff learned of the  
4 outage in an email from the Washington Military Department.<sup>59</sup> The  
5 Company's failure to notify Staff of the outage is an aggravating factor.  
6 Furthermore, and as previously indicated in my testimony, the Company did  
7 not promptly notify PSAPs about the outage. Notifications to most PSAPs  
8 were provided five hours after the outage began, and one PSAP was not  
9 notified until 25 days after the outage. In this regard, CenturyLink's failure to  
10 provide timely notice to affected PSAPs is an additional aggravating factor.  
11 This factor weighs in favor of imposing the maximum penalty.

12 4. *Whether the company was cooperative and responsive.* Staff found  
13 CenturyLink to be cooperative and responsive throughout the investigation,<sup>60</sup>  
14 which, though a mitigating factor, does not offset the many aggravating  
15 factors.

16 5. *Whether the company promptly corrected the violations and remedied the*  
17 *impacts.* The outage was remedied within three hours. As discussed in Section  
18 II.A, above,<sup>61</sup> CenturyLink implemented several corrective measures, which is  
19 a mitigating factor, but not one that offsets CenturyLink's failure to ensure  
20 adequate redundancy and database testing prior to the incident. Once

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<sup>59</sup> *Id.* at 12, citing Appendix B (page 25), which reproduces an email sent at 4:31 on July 12, 2017 (page 12 of the Staff report seemingly has a typo because it refers to a date of August 12, 2017.).

<sup>60</sup> *Id.*

<sup>61</sup> *See* Baldwin, Exh. SMB-6C.

1 CenturyLink became aware of the problem, it was obligated to correct it.

2 6. *Number of violations.* There were 222 failed 911 calls made by 148 individual  
3 customers. The maximum level of penalties for this case is \$222,000.

4 7. *The number of customers affected.* At a minimum 148 customers were  
5 affected (eight unique landline numbers and 140 unique wireless numbers).<sup>62</sup>

6 More generally, as Staff concluded, every Washington resident west of the  
7 Cascades who needed emergency service was potentially affected, and all  
8 calls were critical because they were to 911 service.<sup>63</sup> Moreover, calls to 911  
9 suggest a tangible need for assistance that could have involved grave and  
10 potentially life-threatening situations affecting not only the person who is the  
11 subject of the emergency (possibly the caller, possibly someone nearby the  
12 caller), but also the family and friends of the person(s) in the emergency  
13 situation. The total number of residents of Washington who were affected by  
14 the fact that 222 calls to 911 failed is unknown. This is an aggravating factor  
15 that weighs in favor of maximum penalties.

16 8. *Likelihood of recurrence.* Because CenturyLink no longer manages the 911  
17 system, there is now no likelihood of recurrence of the 911 failure under  
18 CenturyLink's watch. However, subsequent to the July 2017 outage,  
19 Washington experienced an outage affecting 911 service in December 2018.<sup>64</sup>

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<sup>62</sup> Theoretically more than 148 people could have been affected by incidents jeopardizing public safety if, for example, one or more calls related to an emergency that affected more than one person (a fire is such an example). There is no evidence of such an event.

<sup>63</sup> Turcott, Exh. MLT-2 at 12.

<sup>64</sup> *Id.*



1 The Commission is currently investigating that outage and may issue a  
2 complaint if it finds violations.<sup>65</sup> This is an aggravating factor, which  
3 underscores the inadequacy of CenturyLink's 911 management and weighs in  
4 favor of imposing maximum penalties.

5 9. *The company's past performance regarding compliance, violations, and*  
6 *penalties.* CenturyLink has had prior issues with respect to providing 911  
7 services that have led to Commission enforcement actions. The Commission  
8 assessed penalties against CenturyLink for violations related to 911 outages  
9 that occurred in 2013, 2014, and 2016.<sup>66</sup> CenturyLink's prior performance is  
10 another aggravating factor and weighs in favor of imposing maximum  
11 penalties.

12 10. *The company's existing compliance program.* Staff refers to the Washington  
13 State and San Juan County Communications Plans, and indicates that it is not  
14 aware of any other compliance programs.<sup>67</sup> I am likewise not aware of any  
15 additional compliance programs. This is a neutral factor.

16 11. *The size of the company.* CenturyLink is the major incumbent local exchange  
17 carrier offering telephony, data, and other services in the state of Washington,  
18 with gross intra-state combined annual revenue of \$399,409,239 in 2017.<sup>68</sup>

19 This is an aggravating factor – a company with access to resources as  
20 substantial as those available to CenturyLink possessed the resources to

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<sup>65</sup> Docket UT-181051 (regarding CenturyLink December 2018 Outage Investigation).

<sup>66</sup> Turcott, Exh. MLT-2 at 12.

<sup>67</sup> *Id.*

<sup>68</sup> *Id.* at 6.

1 ensure that its vendor undertook adequate testing of its switch upgrades.

2 **Q. What do you recommend, based on your assessment of the 911 outage and**  
3 **the eleven applicable factors?**

4 A. Because the balance of the factors weigh as aggravating factors, the Commission  
5 should impose the full penalty, which is \$222,000 (based on \$1,000 for each of  
6 the 222 failed calls).

7 **Q. CenturyLink is no longer responsible for Washington's 911 system. Why**  
8 **should the Commission nonetheless impose this sanction?**

9 A. Penalties are important so that public utilities face consequences for inadequate  
10 service and, in particular, major disruptions to 911 service. Penalties also serve as  
11 deterrents to future 911 outages. Although the latter rationale is irrelevant to  
12 CenturyLink, the first rationale applies. And, even though the latter rationale does  
13 not apply to CenturyLink, it does apply to the current and future providers  
14 responsible for Washington's 911 system.

#### IV. CONCLUSION

15 **Q. Please summarize your analyses and recommendations.**

16 A. Regardless of the entity responsible for the operation of the state's 911 system, it  
17 is critically important that the system be safe and sufficient, and that problems are  
18 prevented before they occur rather than remedied after the fact. This is  
19 particularly important in Washington, as the state has transitioned to a new 911  
20 service provider.

1                   Regarding the specific 911 outage subject to this investigation, I  
2 recommend that the Commission impose the maximum penalty of \$222,000 on  
3 CenturyLink relating to its responsibility as the 911 provider during the July 2017  
4 911 outage, both to hold CenturyLink accountable for its part in the 911 failure as  
5 well as to signal the seriousness of 911 oversight going forward.

6                   Also, it is critically important that the Commission receive NORS reports  
7 so that it can monitor the reliability of the state's 911 system. As  
8 telecommunications traffic migrates to new platforms, such as internet protocol  
9 and wireless networks, and as industry migrates to next generation 911 systems,  
10 challenges may increase. The importance of a reliable 911 system will not  
11 diminish. Although various specifics about outages are afforded confidential  
12 treatment, the need for more general public discussion about the future of the  
13 state's 911 system, accountability of the 911 system operator to regulators and the  
14 public, and sanctions for failures are essential.

15       **Q. Does this conclude your testimony?**

16       A. Yes.