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ORA Project Mgr.: Ana Maria Johnson
ORA Expert Witness: Adam Clark



Office of Ratepayer Advocates
California Public Utilities Commission

Office of Ratepayer Advocates Rebuttal Testimony

San Francisco, California
July 15, 2016

MEMORANDUM

This report was prepared by Adam Clark of the Communications & Water Policy Branch of the Office of Ratepayer Advocated (ORA) under the general supervision of Program & Project Supervisor, Ana Maria Johnson. A statement of qualifications from Adam Clark is presented in Attachment A to this testimony. ORA is represented in this proceeding by legal counsel, Travis Foss.

This supplemental testimony is comprised of the following chapters:

Chapter	Description
I	Introduction: A brief introduction to the issues at hand, including a summary of why mobile broadband service is not a close substitute for wireline broadband service.
II	Discussion: A response to several parties' inaccurate assessments of broadband consumer choice and competition in California's broadband market. Also, statements of concurrence with several parties' accurate assessments regarding the limitations of mobile broadband services.
III	Conclusion: A brief conclusion recapping main points presented in the Discussion.

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ATTACHMENTS

Attachment A: Statement of Qualifications and Experience1

1 **EXECUTIVE SUMMARY**

2 Several parties offer inaccurate assessments of broadband consumer choice and, as a
3 result, overstate the levels of competition in California’s broadband market. Claims of AT&T
4 and Frontier, in particular, are misguided due to the incorrect assumption that mobile and
5 wireline broadband services are close substitutes. Mobile broadband is not a substitute for
6 wireline broadband, as the services offer different functional capabilities. As a result, mobile
7 broadband providers do not compete with wireline broadband providers. An accurate assessment
8 of consumer choice and market competition must therefore analyze the wireline broadband
9 market apart from the mobile broadband market.

10 AT&T also errs in their assessments of consumer choice and market competition because
11 their analysis includes extremely slow broadband services that cannot support advanced
12 communication capabilities. Services that offer a maximum download speed of 1.5 Mbps cannot
13 support many important applications, like HD videos or remote education. Such slow services
14 are not close substitutes for broadband services that support advanced communications
15 capabilities. It is inaccurate to include services that provide download speeds of 1.5 Mbps in an
16 assessment of broadband consumer choice and competition. The California Public Utilities
17 Commission (CPUC or Commission) should continue to define the pertinent broadband market
18 as wireline services that can provide speeds of at least 25/3 Mbps.¹

19 Finally, ORA agrees with several parties’ statements that accurately highlight numerous
20 limitations of mobile broadband services and demonstrate that mobile service is not a substitute
21 for wireline broadband service. For example, Sprint notes that wireless broadband service is
22 often less reliable indoors, has data capacity limitations, and is less reliable in many rural areas.
23 Cox adds that many devices require high quality, reliable connections, which can preclude a
24 household from substituting wireless for wireline service.

¹ Refer to the June 1, 2016 testimony and July 15, 2016 rebuttal testimony of Dr. Lee Selwyn for additional evidence demonstrating the relevant broadband market for analysis in this OII is residential broadband Internet access at speeds of at least 25/3 Mbps.

1 **Key Findings**

- 2 • Several parties make inaccurate assessments of broadband
3 consumer choice and, as a result, overstate the levels of
4 competition in the broadband market.

- 5 • Mobile broadband providers do not compete with wireline
6 broadband providers.

- 7 • Frontier’s claims regarding the speeds attainable via 4G-LTE are
8 incorrect. According to the 2016 CalSPEED field tests, only 18%
9 of tests of mobile broadband service over 4G-LTE networks
10 resulted in download speeds of at least 25 Mbps.

- 11 • AT&T’s overestimates the extent of broadband consumer choice
12 and competition in the broadband market by including services
13 with maximum download speeds as low as 1.5 Mbps in their
14 analysis. Such slow services are not close substitutes for broadband
15 services that support advanced communications capabilities.

- 16 • Consumer demand is for fast broadband services capable of
17 supporting advanced communications capabilities. In aggregate,
18 over 84% of the residential broadband customers (in California)
19 served by AT&T, Charter, Comcast, Cox, Surewest, Frontier or
20 Time Warner Cable purchase service with download speeds equal
21 to or greater than 25 Mbps, and 81% purchase service with
22 download speeds equal to or greater than 50 Mbps.

- 23 • The actions of providers, as well as consumer purchasing patterns,
24 clearly demonstrate that the relevant broadband market is for
25 wireline service with speeds of *at least 25/3* Mbps.

- 26 • Mobile wireless broadband service is often less reliable indoors,
27 has data capacity limitations, and is less reliable in many rural
28 areas, which can preclude a household from substituting wireless
29 for wireline service.

- 30 • Many devices require high quality, reliable connections, which can
31 preclude a household from substituting wireless for wireline
32 service.

- 1 • The Commission should continue to define the pertinent broadband
2 market as wireline services that can provide speeds of at least 25/3
3 Mbps.

4 **Organization of Report**

5 Chapter I of this report contains a brief introduction to the issues at hand, including a
6 summary of why mobile broadband service is not a close substitute for wireline broadband
7 service.

8 Chapter II presents a response to several parties inaccurate assessments of broadband
9 consumer choice and competition in California’s broadband market. Also, this chapter notes
10 statements of concurrence by several parties who accurately assess the limitations of mobile
11 broadband services.

12 Chapter III contains a brief conclusion recapping main points presented in the
13 Discussion.

1 **I. INTRODUCTION**

2 My June 1, 2016 testimony explains key differences between mobile and wireline
3 broadband services, and concludes that mobile broadband service is not a substitute for wireline
4 broadband service. The Federal Communication Commission (FCC) concluded that: (a) mobile
5 broadband service is not a substitute for wireline broadband service, (b) mobile and wireline
6 broadband are, in fact, complimentary services, and (c) the successful deployment of advanced
7 telecommunications capabilities requires the availability of mobile broadband service *in addition*
8 *to* the availability of wireline broadband (at minimum speeds of 25 Mbps download and 3 Mbps
9 upload).²

10 My June 1st testimony also summarizes the finding of the CPUC’s Communications
11 Division’s CalSPEED project, which acquires, tracks and analyzes the state of mobile broadband
12 services throughout California. That data, along with other publically available data,
13 demonstrates the shortcomings of mobile broadband services as compared to wireline broadband
14 services, including: availability, data transmission speeds, service quality, reliability,
15 consistency, and other technical specifications. These shortcomings limit the technical
16 capabilities and overall functionalities of mobile broadband services.

17 Finally, my June 1st testimony also explains important differences in how service
18 providers sell mobile and wireline broadband services, including the cost of service and
19 imposition of restrictive “data caps,” and how these differences (in combination with the
20 variations in technical capabilities) cause consumers to use mobile and wireline broadband
21 services differently. Consumers rely on mobile broadband services and wireline broadband
22 services to fulfill different needs and to access different applications. As a result, consumers
23 view mobile and wireline broadband as complimentary services, and consumers with the
24 financial means choose to purchase both mobile and wireline broadband services.

25 Several parties offer analyses or claims that fail to recognize these facts. The conclusions
26 of AT&T and Frontier, in particular, rely on incorrect assumptions or characterizations, as is

² *In the Matter of Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act*, 2016 Broadband Progress Report, GN Docket No. 15-191, FCC 16-6, (rel. Jan. 29, 2016) (hereinafter, “2016 Broadband Progress Report”) at 8, 10 and 12.

1 explained below. Consequently, AT&T and Frontier overstate the levels of consumer choice and
2 competition in California's broadband market.

3

1 **II. DISCUSSION**

2 **A. Several Parties Err in their Assessment of Broadband Consumer**
3 **Choice and Market Competition**

4 Several parties make inaccurate assessments of broadband consumer choice and, as a
5 result, overstate the levels of competition in the broadband marketplace. For example, the
6 testimony of AT&T witness Dr. Debra Aron states, "...[M]ost census blocks (91.9 percent of
7 them) had broadband service available with speeds above 1.5 Mbps from six or more
8 providers."³ Similarly, Frontier California claims, "In Frontier's service territory, there is
9 extensive broadband competition at a wide range of broadband speeds... 4G-LTE service is
10 offered in many parts of Frontier's territory, and wireless service offered pursuant to that
11 platform generally exceeds download speeds of 25 Mbps."⁴ These statements are flawed for
12 several reasons and lead to an over-estimation of consumer choice and competition in
13 California's broadband market.

14 First, these claims are inaccurate because they mistakenly assume that mobile and
15 wireline broadband services are functional equivalents. AT&T's and Frontier's analyses
16 mistakenly count the presence of a mobile broadband provider as the equivalent of a wireline
17 broadband provider, which overstates consumer choice and competition. Mobile broadband is a
18 different and distinct service from wireline broadband, and the services are not close substitutes.⁵
19 In fact, the vast majority of mobile broadband customers also purchase wireline broadband
20 service, which demonstrates the lack of substitutability.⁶ As a result, mobile broadband providers
21 do not compete with wireline broadband providers. My June 1, 2016 testimony explains in detail
22 why mobile broadband service is not a substitute for wireline broadband service.⁷

³ Testimony of Dr. Debra Aron (June 1, 2016) at 35.

⁴ Supplemental Responses of Citizens Telecommunications, Frontier California and Frontier Communications of the Southwest (June 1, 2016) at 11.

⁵ Testimony of Adam Clark (June 1, 2016).

⁶ John Horrigan, PhD, Broadband Adoption and Usage: What Has Four Years Taught Us? (2013) at 3-4. Available at http://moody.utexas.edu/sites/communication.utexas.edu/files/images/content/tipi/Horrigan.FCC_.Summit.02.06.pdf.

⁷ Testimony of Adam Clark (June 1, 2016) at II-4 to II-6.

1 Furthermore, Frontier’s claim that “4G-LTE service... generally exceeds download
2 speeds of 25 Mbps”⁸ is plainly incorrect. On average, mobile broadband service in California
3 provides download speeds between 5 and 12 Mbps.⁹ According to the CPUC’s Communications
4 Division’s 2015 CalSPEED Report, mobile broadband service provides download speeds greater
5 than or equal to 25/3 Mbps at less than 4% of tested locations.¹⁰ The Spring 2016 CalSPEED
6 data show that only 18% of the 11,194 tests (performed at 1,862 locations throughout California)
7 of 4G-LTE networks delivered download speeds of at least 25 Mbps.¹¹ My June 1, 2016
8 testimony explains in detail the speeds available via mobile broadband services.¹²

9 AT&T’s overestimates the extent of broadband consumer choice and competition in the
10 broadband market by including services with maximum download speeds as low as 1.5 Mbps in
11 their analysis.¹³ Such slow services cannot support advanced communications capabilities, and
12 therefore are not close substitutes for broadband services that do support advanced
13 communications capabilities. The pertinent market for the Commission to study does *not* include
14 broadband providers that offer maximum speeds of 1.5 Mbps download. In fact, the market for
15 wireline broadband service at such slow speeds *is virtually non-existent*. In aggregate, a mere
16 0.6% of residential broadband customers (in California) served by AT&T, Charter, Comcast,
17 Cox, Surewest, Frontier or Time Warner Cable purchase broadband with maximum download
18 speeds of less than 3 Mbps.¹⁴

19 In 2012, AT&T plainly stated to the Commission, “Adopting a 4/1 Mbps threshold [to
20 delineate underserved areas] is imminently sensible,” and noted the importance of aligning the

⁸ Supplemental Responses of Citizens Telecommunications, Frontier California and Frontier Communications of the Southwest (June 1, 2016) at 11.

⁹ Biba, Ken, CalSPEED: California Mobile Broadband – An Assessment – Spring 2015 (December 2015) (hereinafter, “2015 CalSPEED Report”) at 7. *See also*, testimony of Adam Clark (June 1, 2016) at II-5.

¹⁰ 2015 CalSPEED Report at 1 and 7.

¹¹ *See*, Spring 2016 CalSPEED Field Testing Summarized Data available at <http://www.cpuc.ca.gov/General.aspx?id=1778>

¹² Testimony of Adam Clark (June 1, 2016) at II-4 to II-6.

¹³ Testimony of Dr. Debra Aron (June 1, 2016) at 35.

¹⁴ *See*, response of AT&T, Charter, Comcast, Cox, Surewest, Frontier and Time Warner Cable to Information Request 6 of I.15-11-007.

1 threshold with that of the FCC’s National Broadband Plan.¹⁵ Some four and a half years later, it
2 does not make sense to define the relevant broadband market to include significantly slower
3 download speeds of 1.5 Mbps. The FCC has since updated the National Broadband Plan to
4 include the current speed benchmark for wireline broadband services of 25/3 Mbps.¹⁶ Indeed, the
5 pertinent broadband market includes services that can deliver speeds of *at least* 25/3 Mbps.¹⁷

6 In addition to the FCC’s speed benchmarks, recent market trends also support the need to
7 define the market at the 25/3 Mbps level. Consumer demand is for fast broadband services
8 capable of supporting advanced communications capabilities. In aggregate, over 84% of the
9 residential broadband customers (in California) served by AT&T, Charter, Comcast, Cox,
10 Surewest, Frontier or Time Warner Cable purchase service with download speeds equal to or
11 greater than 25 Mbps, and 81% purchase service with download speeds equal to or greater than
12 50 Mbps.¹⁸

13 Recent market trends also demonstrate the overwhelming demand for cable or fiber-
14 based broadband connections capable of supporting advanced communications capabilities, as
15 opposed to slower services like DSL. Nationwide, in 2015, the top cable companies added 3.3
16 million broadband subscribers, while the top telephone companies *lost* over 1.7 million DSL
17 subscribers.¹⁹

18 Many, if not all, of the dominant broadband service providers know that consumer
19 demand for broadband services is for fast, high-quality connections with speeds *greater than*
20 *25/3 Mbps*. The conduct and business practices of broadband service providers lend ample
21 evidence of this understanding. For example, Cox Communications’ online tool “Speed Advisor”

¹⁵ Comments of Pacific Bell Telephone Company DBA AT&T California (U 1001 C); AT&T Communications of California (U 5002 C); TCG San Francisco (U 5454 C); TCG Los Angeles, Inc. (U 5462 C); TCG San Diego (U5389 C); AT&T Mobility LLC (U 3060 C); AT&T Mobility Wireless Operations Holdings Inc (U 3021 C); Santa Barbara Cellular Systems Ltd (U 3015 C); and New Cingular Wireless PCS LLC (U 3014 C), *Order Instituting Rulemaking to Consider Modifications to the California Advanced Services Fund Including Those Necessary to Implement Loan Program and Other Provisions of Recent Legislation*, Rulemaking 10-12-008, January 6, 2012, at 2 and 3.

¹⁶ 2016 Broadband Progress Report at 3.

¹⁷ Testimony of Dr. Lee Selwyn (June 1, 2016) at viii.

¹⁸ See, responses of AT&T, Charter, Comcast, Cox, Surewest, Frontier and Time Warner Cable to Information Request 6 of I.15-11-007.

¹⁹ Leichtman Research Group, Inc. *Press Release: 3.1 Million Added Broadband from Top Providers in 2015* (March 11, 2016). Available at <http://www.leichtmanresearch.com/press/031116release.html>.

1 suggests that a typical household²⁰ should purchase speeds of *at least* 25/3 Mbps, and
2 recommends its “Internet Preferred” service which can provide speeds of up to 50 Mbps
3 download.²¹

4 AT&T has started to move beyond its slow DSL service, by deploying fiber-based
5 broadband. AT&T recently issued a press release to introduce the company’s launch of “ultra-
6 fast” broadband speeds of up to 1,000 Mbps (or 1 Gbps) in certain Bay Area communities. In
7 that press release, Jeni Bell (vice president and general manager, Northern California and
8 Northern Nevada at AT&T) stated:

9 "By expanding AT&T GigaPower to additional cities in the Bay
10 Area beyond Cupertino, we are demonstrating our continued
11 commitment to our customers whose appetite for high-speed data
12 continues to grow. As the ways in which we communicate and
13 seek entertainment become more data-intensive, our customers will
14 benefit from our expansion of our AT&T GigaPower service."²²

15 AT&T, Cox and other broadband providers know that consumers want fast broadband
16 speeds. The actions of providers, as well as consumer purchasing patterns, clearly demonstrate
17 that the relevant broadband market is for wireline service with speeds of at least 25/3 Mbps. The
18 aforementioned analyses of AT&T and Frontier are flawed because they fail to heed these points.
19 As a result, those flawed analyses overestimate levels of consumer choice and competition in
20 California’s broadband market. As the Commission investigates California’s communications
21 marketplace, it should continue to define the pertinent broadband market as wireline services that
22 can provide speeds of at least 25/3 Mbps.²³

²⁰ The recommendation is for a household of 3 persons intending to use a broadband connection for shopping, socializing and streaming music, with a television, two laptops and two smartphones, and accommodate two simultaneous streaming videos.

²¹ Cox Communications, “Speed Advisor”. Accessed July 11, 2016 at <https://www.cox.com/residential/internet/speed-advisor.html>.

²² AT&T Newsroom, *AT&T Launches Ultra-Fast Internet Speeds in the Bay Area* (May 17, 2016). Accessed July 8, 2016 at http://about.att.com/story/att_launches_ultra_fast_internet_speeds_in_the_bay_area.html.

²³ Refer to the June 1, 2016 testimony and July 15, 2016 rebuttal testimony of Dr. Lee Selwyn for additional evidence demonstrating the relevant broadband market for analysis in this OII is residential broadband Internet access at speeds of at least 25/3 Mbps.

1 **B. ORA Agrees that Mobile Broadband has Several Limitations that**
2 **Preclude Substitutability for Wireline Broadband**

3 The June 1st testimony of Sprint Telephony’s witness James Burt discusses several
4 limitations to mobile broadband service. Burt recognizes that, for many people, mobile
5 broadband service is not a substitute for wireline broadband service:

6 “...[W]ireless service has indoor limitations and data capacity
7 limitations compared to certain landline technologies, for example
8 fiber-based broadband. In some instances, such as in highly rural
9 areas, the lack of a strong wireless signal may preclude customers
10 from substituting wireless service for wireline service.”²⁴

11 My June 1, 2016 testimony describes the technical limitations of mobile broadband
12 services, including availability and reliability. Burt adds an important point to that discussion:
13 mobile service is often less reliable indoors.²⁵ Clearly, a mobile broadband service that does not
14 function reliably indoors is not a substitute for wireline broadband service. Consumers require
15 reliable broadband connections indoors, especially when those connections are the primary
16 means of supporting important services, such as remote education or medical monitoring.

17 The June 1st testimony of Cox California witness Joseph Gillan also discusses several
18 limitations to mobile broadband service. Gillan recognizes that, for many people, mobile
19 broadband service is not a substitute for wireline broadband service:

20 “There are some devices in the home that may require a wireline
21 connection – medical monitoring equipment and fax machines are
22 two such examples – and this means that not every household is a
23 candidate for wireless-only service.”²⁶

24 Gillan points out the importance of wireline connections, and the inability of some
25 consumers to substitute mobile service for wireline service. Medical monitoring devices, Gillan
26 explains, are increasingly connected via broadband connections.²⁷ This exemplifies the migration
27 from traditional telephone lines to broadband connectivity, but also speaks to the importance of a
28 steady, reliable connection. Consumers that use broadband to connect their medical monitoring

²⁴ Testimony of James Burt (June 1, 2016) at 7.

²⁵ Testimony of Adam Clark (June 1, 2016) at II-10 and II-11.

²⁶ Testimony of Joseph Gillan (June 1, 2016) at 11.

²⁷ *Id.* at 12.

1 device cannot depend on mobile broadband services that might not work indoors or provide a
2 high-quality, reliable connection. My June 1, 2016 testimony describes why mobile broadband
3 services are not as reliable as wireline broadband services, which precludes substitutability.²⁸

²⁸ Testimony of Adam Clark (June 1, 2016) at II-10 and II-11.

1 **III. CONCLUSION**

2 AT&T and Frontier offer inaccurate assessments of broadband consumer choice and, as a
3 result, overstate the levels of competition in California’s broadband market. Their analyses
4 incorrectly assume that mobile and wireline broadband services are close substitutes. Mobile
5 broadband is, in fact, not a close substitute for wireline broadband. Therefore, mobile broadband
6 providers do not compete with wireline broadband providers.

7 AT&T’s analysis of consumer choice and competition is also flawed due to the incorrect
8 assumption that services that offer maximum download speeds of 1.5 Mbps are close substitutes
9 for broadband services that support advanced communications capabilities. The Commission
10 should continue to define the pertinent broadband market as wireline services that can provide
11 speeds of at least 25/3 Mbps.

12 ORA agrees with several parties statements that accurately highlight various limitations
13 of mobile broadband services. For the vast majority of consumers, these limitations preclude
14 mobile service from replacing wireline broadband service.

15 .

ATTACHMENT A

Statement of Qualifications and Experience

My name is Adam Clark. I am currently employed by the CPUC as a Public Utility Regulatory Analyst V assigned to the Communications and Water Policy Branch of the ORA. I received a Bachelor of Arts Degree in Business Economics and Sociology from the University of California at Santa Barbara in 2006.

I joined the CPUC in June of 2007 as a Regulatory Analyst in the Communications Division, where I worked on various issues, including inter-carrier compensation, public purpose programs, and broadband deployment. I have performed extensive research on California's telecommunications and broadband markets. I have also aided the CPUC in review of previously proposed mergers and acquisitions. I joined ORA in October of 2014.