STATE OF CALIFORNIA
PUBLIC UTILITIES COMMISSION

Joint Application of Comcast Corporation, Time Warner Cable Inc., Time Warner Cable Information Services (California), LLC, and Bright House Networks Information Services (California), LLC for Expedited Approval of the Transfer of Control of Time Warner Cable Information Services (California), LLC (U6874C); and the Pro Forma Transfer of Control of Bright House Networks Information Services (California), LLC (U6955C), to Comcast Corporation Pursuant to California Public Utilities Code Section 854(a)	)	A.14-04-013
Joint Application of Comcast Corporation, Time Warner Cable Information Services (California), LLC (U6874C) and Charter Fiberlink CA-CCO, LLC (U6878C) for Expedited Approval to Transfer Certain Assets and Customers of Charter Fiberlink CA-CCO, LLC to Time Warner Cable Information Services (California), LLC, Pursuant to Public Utilities Code Section 851	)	A.14-06-012

REPLY TESTIMONY AND EXHIBITS OF
SUSAN M. BALDWIN
ON BEHALF OF THE UTILITY REFORM NETWORK

December 10, 2014

ALLEGED CONFIDENTIAL INFORMATION HAS BEEN REDACTED

TABLE OF CONTENTS

List of Exhibits

ALLEGED CONFIDENTIAL INFORMATION HAS BEEN REDACTED

	broadband pricing information
Exhibit SMB-49	"Verizon's battle with N.J. town shows strong thirst for rural wireline broadband," Sean Buckley, Fierce Telecom, December 4, 2014

I. INTRODUCTION

Qualifications

Q: Are you the same Susan M. Baldwin who filed opening testimony in this proceeding?

A: Yes.

Assignment

Q: On whose behalf is this testimony being submitted?

A: This testimony is being submitted on behalf of TURN. TURN asked me to respond to the declarations submitted on December 3, 2014, on behalf of Comcast Corporation ("Comcast") and Time Warner Cable Inc. ("Time Warner Cable" or "TWC")). This reply testimony supplements my initial testimony. I respond to the declarations of Christopher McDonald, Vice President of Government Affairs for Comcast Cable's West Division ("McDonald (Comcast)"" or "Exhibit A"); Shane Portfolio, Vice President, Engineering, Comcast Cable (California Region) ("Portfolio (Comcast")" or "Exhibit B"); Kevin J. Leddy, Executive Vice President, Corporate Strategy at Time Warner Cable ("Leddy (Time Warner Cable)" or "Exhibit C"); and Mark A. Israel, Executive Vice President at Compass Lexecon, Bryan G. M. Keating, Senior Vice President at Compass Lexecon, and David A. Weiskopf, Executive Vice President at Compass Lexecon ("Israel/Keating/Weiskopf (Comcast)" or "Exhibit D")).[1]

---

[1] The Joint Applicants' December 3rd filing also includes Exhibits E through T. Exhibit E is entitled "Implications of the Comcast/Time Warner Cable Transaction for Broadband Competition from FCC MB Docket No. 14-57 (excerpts)," Mark A. Israel, April 8, 2014. Exhibit F is entitled "Economic Analysis of the Effect of the Comcast-TWC Transaction on Broadband: Reply to Commenters from FCC MB Docket No. 14-57 (excerpts)," Mark A. Israel, September 22, 2014. Exhibits G through L consist of selected responses by the Joint Applicants to intervenors' interrogatories in this proceeding. Exhibit M includes

Organization of Reply Testimony

Q: How is your reply testimony organized?

A: Section I introduces my testimony. Section II discusses merger-related harms and Section III discusses merger-related benefits. In Section IV, I summarize my recommendations and conclude my reply testimony. I cross-reference my opening testimony throughout this reply testimony rather than repeat analyses and discussions that I set forth in more detail in my opening testimony.

Summary of Reply Testimony

Q: Please summarize your findings and recommendations.

---

selected management biographies; Exhibit N includes letters of support for the proposed transaction submitted in FCC MB Docket No. 14-57 (among other letters of support, Exhibit N includes a letter dated September 18, 2014, from John B. Horrigan, PhD, with an attached paper he authored, entitled "Analysis of Uptake Rates of Comcast Internet Essentials" ("Horrigan IE Uptake Paper"), which is also included as Attachment A to the McDonald Declaration. Exhibit O consists of excerpts from the Joint Applicants' Public Interest Statements from FCC MB Docket No. 14-57, dated April 8, 2014 and June 4, 2014. Exhibit P includes excerpts from the Joint Applicants' Opposition to Petitions to Deny and Response to Comments from FCC MB Docket No. 14-57, September 23, 2014. Exhibit Q includes excerpts from "An Economic Analysis of the Proposed Comcast - Time Warner Cable Transaction from FCC MB Docket No. 14-57, by Gregory L. Rosston and Michael D. Topper, April 8, 2014. Exhibit R consists of excerpts from "An Economic Analysis of the Proposed Comcast Transactions with TWC and Charter In Response to Comments and Petitions from FCC MB Docket No. 14-57," by Gregory L. Rosston and Michael D. Topper, September 20, 2014. Exhibit S consists of excerpts from Declaration of Michael J. Angelakis, CFO Comcast Corporation from FCC MB Docket No. 14-57, April 7, 2014. Exhibit T includes excerpts from the Responses of Comcast Corporation to the Commission's Information and Data Request (excerpt), September 11, 2014.

A: My review of the declarations filed on behalf of the Joint Applicants does not alter my analysis and recommendations, which I summarize on pages 103 through 107 of my opening testimony.

I continue to oppose the proposed transaction because it is not in the public interest. Comcast's December 3rd filing fails to demonstrate that consumers would be protected from potential merger-related harms, and the purported benefits that the December 3rd filing discusses are vague, unenforceable, and not likely to flow through to residential consumers.

Regarding merger-related harms, in its pursuit of operational synergies (which Comcast has not committed to share in any fashion with consumers), Comcast likely will eliminate positions, thereby shrinking employment. Also as it seeks to achieve $1.5 billion in national operational expenses annually and as it seeks to compete more effectively in the mid-sized and large business markets, Comcast will confront strong economic incentives to neglect customer service and service quality for its existing and newly acquired residential consumers. The integration of two large companies will require significant effort, which may further distract Comcast from improving its service quality. Also, the transaction would harm the public interest because it would eliminate a potential competitor, eliminate a valuable benchmark for consumers and regulators, and increase Comcast's incentives to discriminate as it carries out its gatekeeper role.

Regarding purported merger-related benefits, Comcast has made soft promises to improve service quality, increase broadband Internet speeds, extend Internet Essentials ("IE") to the Time Warner Cable footprint, compete more effectively in the mid-sized and large business markets, offer purportedly affordable stand-alone broadband Internet access, and abide by Open Internet principles, among other things. However, Comcast has failed to make any measurable, enforceable commitments to follow through on any of these vague promises. Comcast also contends that the merger will spur new investment by the incumbent local exchange carriers ("ILEC"), but the ILECs' track record suggests that the merger will not alter the way in which ILECs decide when and where to deploy fiber and to maintain their existing networks. Comcast computes a purported consumer benefit associated with its plans to upgrade broadband Internet access speeds in the Time Warner Cable footprint, but, at best, the analysis is flawed and irrelevant to an assessment of the public interest of the proposed transaction, and at worst, contradicts the Joint Applicants' attempt to persuade the Commission that the broadband Internet access market is effectively competitive.

I continue to disagree with the Joint Applicants' assessment of the status of competition. Cable companies and ILECs dominate the residential Internet access market, and indeed even collaborate through cross-marketing agreements to serve the residential Internet access markets. In those communities where ILECS have chosen not to roll out fiber, and where consumers seek high speeds, Comcast is the sole provider of wireline broadband Internet access at the higher speeds some customers are seeking.

I recommend that the Commission reject the proposed transaction because the probable harms far outweigh the possible benefits. If, contrary to my recommendation, the Commission is contemplating approving Comcast's acquisition of Time Warner Cable, I recommend that the Commission seek commitments from Comcast to mitigate the harm and to translate vague promises into tangible benefits.

II. MERGER-RELATED HARMS

The merger poses significant harms for consumers, employees, and communities in California.

Q: The Joint Applicants, in their December 3rd filing to the Commission, contend that the proposed merger would not harm consumers. Do you agree?

A: No. Contrary to their assertion, the proposed transaction poses significant harms to California's consumers, employees, communities, and economy. Moreover the harms are merger-specific –the merger creates new harms that do not now exist and also heightens existing harms. As I demonstrate in this section of my reply testimony, the harms concern threats to competition, service quality, employment, and an open broadband Internet network.

If the merger occurs, we will never know whether the two companies would have entered each other's footprint; moreover, if these two large companies lack the wherewithal to do so, this suggests that entry barriers are high and the prospect for competition in the broadband Internet access market is negligible.

Q: The two companies do not now compete within the same geographic areas.[2] Are you aware of any evidence to suggest that, if the merger were not to occur, either one would enter the other's footprint?

[2] See, e.g., Leddy (Time Warner Cable), at para. 6; Israel/Keating/Weiskopf (Comcast), at paras. 6, 9. See also Israel/Keating/Weiskopf, at paras. 31-32, for example, their statement in para. 32: "Put simply, the transaction will not change the number of broadband choices available to consumers. Identical logic applies to voice services."

A: No. One of the declarants states, "[t]o my knowledge, Comcast has never had any plans to deploy facilities (or infrastructure) in TWC service areas."[3] Other Comcast declarants states: "Whether Comcast and TWC could compete with each other (which presumably means whether it is technologically possible) is not germane to evaluating the proposed transaction," and they further state, "[r]ather, the relevant questions are whether Comcast and TWC would be likely to compete with one another—which one properly evaluates by considering whether they have an incentive to expand their footprints in competition with one another absent the transaction—and what competition would look like in such a scenario."[4]

Q: Then, have the Joint Applicants persuaded you that the loss of potential competition is not a concern?

A: No. Despite the Joint Applicants' contention to the contrary, the irrevocable loss of potential competition that the proposed transaction necessarily would effect is a concern. It is impossible to know whether the companies, which possess vast and unique resources

[3] McDonald (Comcast), at para. 13. See also Leddy (Time Warner Cable), at para. 9.

[4] Israel/Keating/Weiskopf (Comcast), at para. 44. See also id., at para. 46, which describes the high fixed costs of entering new markets as well as the expense of obtaining permits, rights-of-way, etc., which they state "can be very substantial." Of course these barriers to entry are precisely the aspects of the broadband Internet access market that render it non-competitive. If the Joint Applicants cannot profitably compete with each other, who can? The Joint Applicants' arguments (see id., at paras. 47-48) regarding *other* potential entrants (such as Google, RCN, WOW!, and telecommunications companies) are not persuasive because they rely on speculation and do not address the substantial barriers to enter that the Joint Applicants, themselves, identify. The Joint Applicants attempt to dismiss the potential competition argument with this statement: "In sum, the most likely conclusion is that Comcast and TWC are not potential competitors for one another, but if circumstances change to make such potential competition more likely, then the set of potential competitors would be so large as to nullify any concern." Id., at para. 48. The universe of potential competitors does not seem particularly "large." I discuss ILECs' investment patterns in Section III below.

and relevant expertise, one day, would enter each other's territory. As I explain in my opening testimony (pages 4 and 34) this prospective competition is lost. Also, although the Joint Applicants discuss maverick competitors,[5] they do not address the fact that the merger would result in the loss of a valuable benchmark for consumers and regulators.[6] Also, they do not address the fact that the merger of these two large companies would further tip the scale for Comcast in its lobbying position relative to local, state, and federal policymakers and its relationships with its consumers.[7]

Q: Have you read the Israel/Keating/Weiskopf Declaration submitted in this proceeding?

A: Yes. They "assess the extent to which the proposed transaction will generate consumer benefits in California, focusing particularly on the voice and broadband segments" and they also "evaluate the effects of the proposed transaction on competition in the provision of voice and broadband services to residential and business customers in California." They also "assess whether, on balance, the effect of the transaction in the voice and broadband segments in California is expected to be pro-competitive, pro-consumer, and in the public interest."[8] I address their arguments regarding consumer benefits in Section III, below.

The residential broadband market is highly concentrated.

---

[5] See, e.g., id., at paras. 49-50.

[6] See, Baldwin Opening (TURN), at 32-33.

[7] See, id., at 4, 35.

[8] Israel/Keating/Weiskopf (Comcast), at para. 3.

Q: Comcast asserts that "customers have a large and growing set of competitive broadband alternatives, including those offered by telco competitors, which offer DSL, wireless, and fiber-to-the-premises (FTTP) broadband options (which AT&T, CenturyLink, and others are committed to expanding, in part as a competitive response to this transaction); Google Fiber; municipal overbuilds; and fixed wireless providers."[9] Do you agree with this assessment of the broadband Internet access market?

A: No. The assessment is implausibly rosy for several reasons. First, as I discuss in my opening testimony (at page 61), industry (including cable companies) have successfully lobbied state legislatures to prohibit municipal broadband deployment. Although such a prohibition does not now exist in California, post-transaction,[10] Comcast would have yet larger resources for advocating for its legislative positions and, because of its expanded footprint, larger incentives to do so. Comcast has not committed to withholding its support for any proposed legislation that would prohibit municipal broadband deployment, or better yet, committed to opposing such legislation. Therefore, its reliance on municipal broadband overbuilds is meaningless. Moreover, even if Comcast did not support such legislation, other industry members could. Municipal broadband is a tenuous source of alternatives for consumers, and, moreover, tends to occur precisely

[9] Id., at para. 59, cite omitted.

[10] See discussion in Baldwin Opening (TURN), at 34-35 and 61.

where there is no other broadband Internet access source, undermining the notion that municipal broadband *competes* with other suppliers.

Second, ILECs' deployment of fiber is not ubiquitous, which leaves many communities with digital subscriber line ("DSL") service as the only ILEC option for broadband Internet access (see my more detailed discussion below). In my opening testimony, I show that as consumers' demand for higher speed increases, the role of DSL diminishes, and so in those communities in Comcast's existing or proposed footprint where ILECs have not rolled out fiber, there is only one fixed wireline broadband provider of high speeds – Comcast.[11] Moreover, as I demonstrate in detail in my opening testimony (at pages 47-57), even for those households that can choose between an ILEC's fiber-based service and a cable company's offering, ILECs and cable companies represent a duopoly in the broadband Internet access market, which does not yield effective competition. Also, Comcast and Verizon Wireless have cross-marketing agreements, which undermine their incentive to compete with each other.[12]

[11] This attribute of broadband Internet markets applies to other cable companies' markets as well, but I am focusing on the markets that Comcast, post-merger, would serve.

[12] See Baldwin Opening (TURN), at 61-63 (discussing cross-marketing agreements).

Third, fixed wireless broadband Internet access is not in the same product market as wireline broadband Internet access market as I discuss in my opening testimony[13] (and as I further discuss below.

Finally, as I explain in my opening testimony (at page 58), Google Fiber is an option for few communities. The Joint Applicants' discussion about Google Fiber's possible future entry into additional communities is entirely speculative.

The residential voice market is highly concentrated.

Q: How does Comcast describe the residential voice market?

A: Mr. Portfolio states that "Comcast is part of a very competitive voice marketplace, and that "[f]or residential services, our competitors are traditional ILEC and CLEC providers, nomadic VoIP services providers, and wireless providers."[14]

Q: Do you concur with Mr. Portfolio that the voice market in California is very competitive?

A: No. In my opening testimony (at pages 37-47), I demonstrate that California's voice market is not competitive. Moreover, residential consumer demand for cable companies' VoIP-based product continues to increase. Among other things, I state (at 41): "This characteristic of markets demonstrates that even the minimal competition that the cable-

[13] Baldwin Opening (TURN), at 81-82, including footnote 176.

[14] Portfolio (Comcast), at para. 6.

telecommunications duopoly provides is limited to those customers who seek a bundled offering, consisting of a combination of broadband access to the Internet, and voice service (and often with video service)."

Contrary to Comcast's assertions, the proposed merger would jeopardize the quality of service (which already ranks near the bottom of customer satisfaction surveys) that Comcast would offer in its expanded footprint.

Q: How do Comcast's Declarants address concerns that have been raised regarding service quality, specifically regarding "the transaction's incremental effects"?

A: Comcast's Declarants' discussion of post-merger service quality is not reassuring. Among other things, they state:

> We begin by noting that we have never claimed that Comcast has an advantage relative to other cable companies in customer satisfaction scores. The relevant question, of course, is the incremental effect of the transaction. ORA is apparently arguing that Charter and TWC's current customers in California are at risk of experiencing lower customer satisfaction after the transaction. However, the data that ORA references do not support this claim at even a very basic level: The 2013 JD Power survey data referenced by ORA shows that Comcast generally performs substantially better than Charter and TWC in ISP and telephone services in the West Region. In the 2014 version of the JD Power survey, Comcast performs approximately the same as TWC in both telephone and Internet service, with a slightly higher rating in telephone service and a slightly lower rating in Internet service, and below Charter for telephone and Internet service. Given that TWC has many more subscribers in California than Charter, as well as inconsistencies between the 2013 (and prior years') and 2014 survey results, the impact of the transaction on customer service suggested by these survey results is ambiguous at best. And regarding the objective network benefits that we have actually claimed will arise from the transaction—improvements in residential and business network speed and quality, improvements in Wi-Fi networks, improvements in home networking, and so on—such surveys are mostly silent, *confounding objective network quality with other*

> *subjective metrics* and offering no guidance *on the transaction's incremental effects*.[15]

Time Warner Cable's ranking below Comcast in some customer satisfaction surveys does not inspire confidence because Comcast's ranking is *also* low – the merging of two large companies, *each* with poor customer service, simply consolidates poor consumer service in a larger company without holding out much hope for the adoption of best practices in the area of customer service.[16]

The "improvements in residential and business network speed and quality, improvements in Wi-Fi networks, improvements in home networking" that Comcast touts do not excuse poor service quality. As to the purported lack of objective measures regarding customer satisfaction, Comcast could certainly commit to report objective measures of its service quality performance (such as the percentage of appointments that need to be re-

[15] Israel/Keating/Weiskopf (Comcast), at para. 28, cites omitted, emphasis added.

[16] "How to save money on triple-play cable services, Navigate the changing world of TV, Internet, and home phone service—and save money doing it," Consumer Reports, March 2014. http://www.consumerreports.org/cro/magazine/2014/05/how-to-save-money-on-triple-play-cable-services/index.htm.

In the spring of 2013, Consumer Reports subscribers:

- Ranked Comcast 10th and Time Warner Cable 12th among 14 providers of bundled offerings. http://www.consumerreports.org/cro/electronics-computers/computers-internet/telecom-services/bundled-services-ratings/ratings-overview.htm
- Ranked Time Warner Cable 20th, Comcast (cable) 22nd, and Comcast (mobile) 23rd out of 29 broadband Internet access providers. http://www.consumerreports.org/cro/electronics-computers/computers-internet/telecom-services/internet-service-ratings/ratings-overview.htm
- Ranked TimeWarner Cable 20th and Comcast 23rd out of 26 providers of wireline phone service http://www.consumerreports.org/cro/electronics-computers/computers-internet/telecom-services/phone-service-ratings/ratings-overview.htm

scheduled, etc.) on its web site. In a competitive market, one would expect companies to brag about their performance and customer satisfaction with reference to specific metrics.

Comcast's poor customer service is clearly of concern to consumers, and this concern is further corroborated by an article that appeared earlier this week in a California publication, and which states, among other things: "If you ask consumers about their interactions or experiences with Comcast, it's not hard to find a deep vein of frustration, even outrage."[17]

Q: What then do you conclude about the merger and service quality?

A: I am not persuaded that the merger is necessary to improve service quality, and indeed, the mega-transaction is likely to jeopardize service quality. Regarding my first point, regardless of whether the merger occurs, each company separately could decide to allocate sufficient resources to improve its service quality, especially if Joint Applicants perceive competitive pressure in the markets they serve. As my opening testimony's discussion of the Joint Applicants' national and California revenues, and their net income demonstrates,[18] they each, independently, possess the financial capability to devote the requisite resources to raise the quality of service that they offer their consumers and to garner public acclaim for the improved service quality.

[17] "Comcast customers' complaints hit home," Troy Wolverton, www.mercurynews.com/business , December 8, 2014. I have reproduced this article as Exhibit SMB-46.

[18] Baldwin Opening (TURN), at 13-17.

Regarding my second point, based on the Joint Applicants' substantial financial resources and on my assessment of the lack of competition in the markets they serve, I conclude that a lack of incentives thwarts good service quality. The merger would not increase Comcast's incentive to improve service quality. The Joint Applicants have failed to demonstrate that the merger will increase the quality of their service quality. They have made no commitments to milestones, independent assessments of their service quality and measures for improving their service quality. They also have failed to explain why Time Warner Cable cannot adopt Comcast's best practices, to the extent that such practices assist Comcast in serving its customers adequately. Instead, as I discuss below, the merger will create new challenges that jeopardize the already seemingly poor service quality that the companies now provide in their respective footprints. The incremental impact of the proposed merger on service quality could harm residential consumers.

The likely elimination of positions in the merged company and Comcast's integration of two different systems, combined with the lack of competition in broadband Internet access and voice markets will jeopardize the quality of service provided to residential customers.

Q: Have the Joint Applicants provided any additional information about how they intend to implement a trouble-free transition for customers and integration of the two companies' various systems and operations?

A: Not sufficiently. Comcast states that it "has made only preliminary plans for post-transaction integration."[19]

In its pursuit of operational efficiencies, Comcast likely will eliminate positions.

Q: Do the Joint Applicants discuss the likelihood that in Comcast's pursuit of operational efficiencies, Comcast likely will eliminate positions?

A: No. Based on my experience analyzing many mergers, I anticipate that the achievement of operational efficiencies will occur through the elimination of positions, which does not further the Public Utility Code Section 854(c)(4) criterion goal that the transaction "[b]e fair and reasonable to affected public utility employees, including both union and nonunion employees."

Comcast's emphasis on serving the mid-sized and large business markets could distract it from focusing on the quality of the service it offers residential customers.

Q: How might Comcast's post-merger focus on business customers affect residential customers?

A: Comcast describes at some length the purported benefits flowing from its transaction-related enhancements, which it contends will enable it to compete more successfully in serving mid-sized and large businesses. This very focus, however, would relegate residential customers to the bottom of Comcast's customer responsiveness pecking list,

---

[19] McDonald (Comcast), at para. 9.

likely overshadowing any purported spillover benefits to the residential market. Comcast's post-transaction increased emphasis on attracting and retaining business customers could lead to the company's neglect of its residential customers.

Because Comcast supports net neutrality, it should be willing to commit to extend its existing commitment to net neutrality to seven years beyond any order issued in this proceeding.

Q: In your opening testimony (at pages 84-87), you discuss the merger's adverse impact on net neutrality, especially after Comcast's commitment to the FCC (made in the context of its pursuit of regulatory approval of its acquisition to NBCU) expires in 2018. Does Comcast reiterate its support for net neutrality in its December 3rd filing with the PUC?

A: Yes. Among other things, Comcast declarants state: "The lack of any overlap between Comcast's and TWC's last-mile networks, and Comcast's stated willingness to adhere to Open Internet principles—which prevent selective degradation of particular traffic in the last mile—effectively eliminates any concern about harm in the last mile."[20]

Q: How does Comcast's repeated commitment to Open Internet principles affect the recommendation you described in your opening testimony (at pages 87 and 106)?

A: Comcast's assertion that it will adhere to Open Internet principles supports my recommendation that this support be translated into an enforceable commitment

[20] Israel/Keating/Weiskopf (Comcast), at para. 54.

through at least 2022 (i.e., seven years after the Commission issues an Order in this proceeding).

III. MERGER-RELATED BENEFITS

Q: How does Comcast describe the benefits that purportedly would result from the proposed transaction?

A: One of Comcast's declarants, Mr. Portolio, asserts that "[p]ost-transaction, we expect to improve our voice services for residential customers, among other things, by combining the best aspects of the Comcast and TWC offerings," and that Comcast expects "that greater scale and synergies will also enable accelerated deployment of advanced voice services."[21] Mr. Portolio also lists various features (e.g., Voice2go, the ability to send and receive unlimited text message from and to Xfinity voice telephone numbers, and expanded international reach for customers) that he suggests will be made available to customers residing in the Time Warner Cable footprint.[22]

The possibly faster roll-out of these advanced bells and whistles to Time Warner Cable companies is a negligible benefit. Moreover Comcast has not submitted any studies that show whether consumers want these features and how much more they are willing to pay for the features (either through price increases, or through the absence of rate reductions that might otherwise occur).

[21] Portfolio (Comcast), at para. 8.

[22] Id., at para. 9.

Q: What are some of the other merger-related benefits that the Joint Applicants describe?

A: Comcast's declarants state:

> As explained in Dr. Israel's FCC declarations, three main mechanisms drive substantial benefits from the transaction: economies of scale, expanded geographic reach, and sharing of technologies and services. Protestors provide no detailed economic refutation of these benefits. As one notable example, there is no refutation of the significant benefits to business customers.[23]

Q: How do you respond generally to these claims?

A: First, as I state in my opening testimony (at footnote 68), I have not examined the impact of the proposed transaction on business customers, and as I also stated, the impact on small business customers is likely to be similar to that on residential customers. Moreover, my silence on the impact of the merger on large business customers should not be construed as tacit agreement with the Joint Applicants, who state, among other things, that "the benefits of combining the parties' footprints to serve super-regional businesses are particularly relevant in California."[24] I would note, however, that the argument that they offer that under today's pre-merger business environment "[s]uch a partnering approach raises several challenging economic issues, including coordination problems and double marginalization"[25] would justify continuing acquisitions in the cable industry, leading to the logical end consisting of a highly concentrated national market served by a

[23] Israel/Keating/Weiskopf (Comcast), at para. 10, cite omitted.

[24] Id.

[25] Id., at para. 11. See also, id., at paras. 12-15.

single supplier. If the market has the characteristics of a natural monopoly, then it should be regulated as such.

Q: Does Comcast assert that residential customers will benefit from the transaction as well?

A: Yes.[26] Comcast states:

> Products developed for the medium-sized or enterprise segments can often be repackaged and offered to small businesses and residential customers. Small businesses and residential customers will also enjoy the "spillover effects" from investments and plant upgrades made to serve larger businesses. As one example, the opportunities for business customers described above will also be a catalyst for network expansion and hardening, which will also benefit residential customers, including those residing in California. More generally, Comcast or TWC investments that *could* benefit residential customers are currently *"landlocked"* by footprint limitations, meaning that the geographic expansion from the transaction therefore unlocks value for incremental investments and makes more such investments profitable. As described in detail in Dr. Israel's FCC declarations, these expanded investments will benefit residential consumers via faster access networks (due to quicker rollout of digital service and DOCSIS 3.0/3.1), expanded broadband and Wi-Fi networks, and improved home network technology. These broadband improvements will also foster a virtuous circle, as edge providers react to improved broadband speeds with improved applications and services, thus motivating further broadband improvements, all to the benefit of both residential consumers and edge providers.[27]

The key word in this excerpt is "could." I am not aware of any specific, measurable, enforceable commitments by Comcast to invest in "landlocked" unserved or underserved communities. Vague theoretical claims of potential spillover effects for residential

[26] Id., at para. 20, citing Israel FCC Declaration, at paras. 161-201.

[27] Id., cites omitted, emphasis added.

customers located in unspecified areas of California do not justify approving a major transaction that poses substantial harms to consumers.

Q: Comcast states that currently [BEGIN COMCAST CONFIDENTIAL] [redacted] [END COMCAST CONFIDENTIAL] "as many Comcast customers are in downstream speed tiers of 25 Mbps or greater as TWC customers."[28] Please comment on the implied benefit of Comcast serving TWC customers.

A: First, I am not aware of any specific, measurable, enforceable commitments (geographic or time commitments) by Comcast to roll out higher speeds to households in the TWC footprint. I understand that Comcast is hinting that it might do so, but as I read the Israel/Keating/Weiskopf Declaration, it seems to me that residential households would be an afterthought to Comcast's pursuit of mid-sized and large businesses. The *potential* for Comcast to offer speeds to an unspecified quantity of residential customers by an unspecified date at unspecified prices is not a compelling consumer benefit.

Q: Comcast also quantifies its estimate of the consumer benefit of the proposed transaction that it contends would result from Comcast's roll-out of higher speed broadband Internet access in Time Warner Cable's footprint.[29] Please comment.

[28] Id., at para. 21. See also the similar Comcast statement (id., at para. 22) that, by year-end 2013, Comcast had more than 725,000 hotspots operating, twenty times as many as TWC. Comcast does not translate the implied promise of hotspot roll-outs in the TWC footprint into anything remotely resembling an enforceable measurable commitment. See also id., at para. 23, which discusses other general benefits. Simply being "better suited to offer an array of advanced IP voice services in competition with ILECs and other providers, and to continue to drive innovation and competition in this market," does not mean that Comcast will actually do so. Id., at para. 23.

[29] Id., at paras. 25-26, citing to, among other things, Israel FCC Reply Declaration (Exhibit F), at paras. 220-221.

A: First, I will discuss briefly the "Form 477" data upon which Comcast's declarants rely to quantify the purported benefit. I will also describe Comcast's assumption about broadband speeds given that the FCC's form provides ranges of download speeds to be used by companies in the reports they file (for example, a customer who subscribes to 5 Mbps would not be recorded in the Form 477 at that specific speed, but rather in the range " >= 3 Mbps and < 6 Mbps"). Comcast explains:

> The data report the following ranges: > 200 kbps and < 768 kbps, >= 768 kbps and < 1.5 Mbps, >= 1.5 Mbps and < 3 Mbps, >= 3 Mbps and < 6 Mbps, >= 6 Mbps and < 10Mbps, >= 10 Mbps and < 25 Mbps, >= 25 Mbps and < 100 Mbps, >= 100 Mbps. For the purposes of this calculation, it is assumed that each household is at the lower bound of the relevant range. The difference between Comcast and TWC is larger under the assumption that customers are at the mid-point of the range. [30]

Q: Please continue with your understanding of Comcast's calculation of consumer benefits.

A: As I understand Dr. Israel's analysis, he is relying on consumer demand (he states that "the average broadband speed *enjoyed* by Comcast customers was…").[31] In other words, he examines the speed that consumers *adopt* rather than the speed that the Joint Applicants make *available* as a result of their broadband deployment.[32] As Confidential Tables 5 and 6 in my opening testimony show, and as public Exhibits SMB-47 and SMB-

[30] Id., at footnote 43.

[31] Id., at para. 25, emphasis added.

[32] I understand that adoption is *partly* linked to availability: if higher speeds are not available to them, consumers of course cannot adopt those higher speeds. But the converse cannot be assumed, i.e., it does not logically follow that because consumers have not adopted the higher speeds that the Joint Applicants offer, those speeds are not available to consumers.

48 to this reply testimony also show (the reproductions from the Joint Applicants' web pages), higher speeds come with higher prices. In maximizing their utility (economists' jargon), consumers make a trade-off between speed and price that best suits their preferences, within the constraints of their household budgets. It is therefore misleading to imply, as it seems Comcast's Declarants do, that all consumers, or that consumers on average, *want* to purchase broadband Internet access at higher speeds (and correspondingly higher prices). I do not believe that the Comcast's declarants compare the Joint Applicants' respective *available* broadband Internet speeds, but rather, the speeds that the Joint Applicants' customers have chosen to *adopt*.

Also diminishing the significance of Comcast's analysis of purported consumer benefits is the fact that post-merger, Comcast could *increase* its prices, therefore transferring the theoretical speculative consumer benefit to shareholder benefit. Comcast fails to address this possibility (or to commit to any particular post-merger prices for broadband Internet access).

Moreover, the declarants' analysis undermines their assumption that the broadband Internet access market is competitive. In a competitive market, if consumers *wanted* higher speeds than those that Time Warner offered (or for that matter than those that Comcast offered), they could simply defect from one supplier and migrate to a different supplier. Therefore, the declarants' analysis leads to only one of the following two conclusions: (1) the Time Warner Cable consumer, on average, *wants* (i.e., affirmatively selects), on average, lower speeds than does the average Comcast consumer (and therefore the benefits that Comcast posits are zero) or (2) the average Time Warner Cable consumer truly wants higher speeds than Time Warner Cable offers, but she has no competitive alternative (which suggests that the broadband Internet access market is not competitive). Based on my reading of the Israel/Keating/Weiskopf declaration, they implicitly assume the latter, i.e., that consumers in search of higher speeds lack competitive alternatives to Time Warner Cable's offering.

Q: **What value does Comcast assign for each 1 Mbps increase in broadband speed, and what is the source of that value?**

A: The Israel/Keating/Weiskopf declaration submitted to the PUC relies on the Israel reply declaration (from September 2014) submitted to the FCC. Exhibit F in the Joint Applicants' December 3rd filing to the PUC includes relevant excerpts. In his reply declaration submitted to the FCC, Dr. Israel relies on a paper he did not author to assign a value for increased speeds. I do not believe that Comcast has submitted that paper as part of its filings to the PUC, and there certainly wasn't time to request the document and associated work papers in the time frame allotted to reply to the Joint Applicants' December 3rd filing. Dr. Israel explains his calculation of purported national consumer benefits as follows:

> Even small increases in broadband speeds resulting from these transaction-specific investments will be very valuable to customers. For example, a recent paper by Aviv Nevo and coauthors found that a one Mbps increase in broadband speed is worth as much as $5.86 per sub per

> month (to customers who place the most value on network speed), with an average of $1.76 and a median of $0.87. Using the median valuation (which is conservative relative to the average), each one Mbps increase in average speed spread across all TWC customers would be worth approximately $95 million per year to consumers. Given the gap between the Comcast and TWC networks and Comcast's commitment to bring TWC up to Comcast levels, speed increases of several Mbps for TWC customers seem likely, meaning that this source of consumer benefits alone is worth hundreds of millions of dollars.[33]

Dr. Israel further explains in footnote 270 in his reply declaration submitted to the FCC:

> After divestitures, the former TWC systems remaining with Comcast will constitute 9.1million broadband customers. Thus, a one Mbps average increase in broadband speed for all customers would be worth $0.87 per sub per month x 12 months x 9.1 million TWC customers ~= $95 million per year. Because Nevo et al. (2013) estimate a complicated non-linear model, the precise calculations would be more complicated—for example depending on the baseline broadband speed for each customer. Nevertheless, I include this estimate as an illustration of the immense benefits that the transaction will yield.

Q: Do you and Comcast use the same set of data for summarizing consumer demand for the Joint Applicants' broadband Internet access, disaggregated by speed?

A: I do not believe so. Dr. Israel relies on the confidential Form 477 data that the Joint Applicants submit to the FCC to support his calculation, and specifically relies on data as of December 2013.[34] In my opening testimony, based on the Joint Applicants' responses to interrogatories, I prepared Confidential Tables 5 and 6, which summarize consumer

[33] Exhibit F, at para. 221.

[34] Israel/Keating/Weiskopf (Comcast), at para. 25, including Confidential Table 1.

demand, by broadband speed, for Time Warner Cable and Comcast, respectively, as of June 2014.

The Joint Applicants are anticipated to provide another set of data regarding consumer demand disaggregated by broadband speed, as a supplement to ORA 3-64. As I indicated in my opening testimony (at page 64 and footnote 140), as a result of an FCC-granted extension, the Joint Applicants will be submitting their most recent Form FCC data on or before December 11, 2014. It is my understanding that the Joint Applicants will provide this information to TURN and other intervenors.[35]

Comcast makes absolutely no enforceable commitments to increasing broadband speeds, nor do any of its declarants provide any geographically disaggregated analyses (e.g., by census block, census tract, community, etc.) of Comcast's and Time Warner Cable's broadband speed deployment, with an overlay for the median income of the community. Such a commitment and such an analysis would be far more relevant to an assessment of the public interest of the transaction than the theoretical calculation of consumer benefit that Comcast submitted. The former would demonstrate a tangible commitment by Comcast to improve Time Warner Cable's infrastructure. The latter would enable the

[35] These data (because they likely correspond with June 2014) may correspond with the data that I summarize in Confidential Tables 5 and 6 in my opening testimony, and may provide additional information regarding geographically disaggregated demand data by speed.

Commission and intervenors to assess if and the degree to which broadband deployment redlining is occurring in the two Applicants' California footprints.

Q: What then do you conclude about the declarants' calculation of purported consumer benefits resulting from the potentially higher broadband speeds that Comcast might roll out in the Time Warner Cable footprint at some unspecified time and at unspecified prices that customers may or may not want?

A: The analysis seems irrelevant to me at best, and at worst, it undermines the Joint Applicants' assertion that broadband Internet access markets are competitive. In any event, the underlying source for the calculation has not yet been provided.

Comcast's claim that the merger will spur ILEC investment that would not occur otherwise is not persuasive.

Q: Comcast contends that the merger would spur ILEC investment.[36] Do you agree?

A: No. Presently, ILECs, for the most part, unilaterally decide when and where to invest in new technology, and as a result, the ILECs are further entrenching digital divides. As I discuss in my opening testimony, AT&T and Verizon are not rolling out fiber ubiquitously, but rather in those places where they find it profitable to do so. Occasionally, the ILECs encounter resistance to this approach, perhaps most notably on Fire Island, where a well-coordinated opposition by first responders, municipal leaders, residents and businesses led to Verizon's decision to roll out fiber rather than to force

[36]Exhibit Q (excerpts from "An Economic Analysis of the Proposed Comcast - Time Warner Cable Transaction from FCC MB Docket No. 14-57, by Gregory L. Rosston and Michael D. Topper, April 8, 2014), at para. 15.

customers to rely on its inferior Voice Link product, in the aftermath of Hurricane Sandy's destruction of some of Verizon's outside plant. Based on my participation in the consumer opposition to Verizon's proposed Voice Link roll-out, I believe that the successful effort is an exception to the norm. More typically, ILECs control the pace and make-up of their roll out of technology, which sometimes can be considered advanced, such as FiOS and U-verse, and other times represents a step backward for consumers, such as in the instance of Verizon's and AT&T's fixed wireless services.[37]

Q: But won't the proposed transaction create competitive pressure for ILECs to accelerate their deployment of fiber in California?

A: I doubt it. ILECs will continue to deploy fiber when and where they find such deployment satisfies business case criteria. From the perspective of their shareholders, of course this is entirely reasonable. From a public policy perspective, however, this is troubling because some parts of the state will be relegated to inferior and more expensive technology, in direct contradiction to the public policy goal of comparable service throughout the country. Contrary to the Joint Applicants' representations, the merger would not cause ILECs to suddenly deploy fiber where they do not now find it profitable to do so to serve residential customers.

Q: Why do you refer to "more expensive" technology?

---

[37] Verizon indicates that it offers Voice Link to voice-only customers located in areas where FiOS is not available and "who have experienced repeated service trouble." Joint Petition of Verizon Pennsylvania LLC and Verizon North LLC for Competitive Classification of all Retail Services in Certain Geographic Areas, and for a Waiver of Regulation for Competitive Services, Pennsylvania PUC Docket Nos. P-2014-2446303 and P-2014-2446304, Verizon redacted response to Labor-11.

A: Where ILECs have not and do not intend to deploy fiber-based broadband Internet access, they seek to encourage migration to their wireless service.[38] For example, I participated in a regulatory proceeding in which a consumer petitioned the Pennsylvania Public Utility Commission to require Verizon to deploy digital subscriber line ("DSL") service in fulfillment of its "Chapter 30" network modernization plan.

However, in 2012, rather than deploy DSL to a community, which had satisfied the bona fide request requirements pursuant to the Chapter 30 requirements, Verizon Pennsylvania, at the eleventh hour, offered the community a more expensive 4G LTE wireless broadband option to fulfill Verizon's broadband deployment requirements. Despite opposition by a consumer and by the Office of Consumer Advocate to this alternative, the Pennsylvania Public Utility Commission ultimately permitted Verizon to engage in this "bait and switch,"[39] which resulted in consumers having access to the more expensive wireless broadband option rather than the wireline DSL they sought. If competition were effective, Verizon would have deployed what consumers wanted, or another supplier would have stepped up to offer the wireline broadband Internet access

[38] In the instance of Verizon, and as a result of its cross-marketing agreements, the customer may be encouraged to purchase Comcast's service. See Baldwin Opening (TURN), at 61-63.

[39] Petition of David K. Ebersole, Jr. and the Office of Consumer Advocate for a Declaratory Order that Verizon Pennsylvania Inc. Has Not Met Its Legal Obligation to the Greensburg Bona Fide Retail Request Group Pursuant to Its Chapter 30 Plan, Pennsylvania Public Utility Commission Docket No. P-2012-2323362, Final Order, February 28, 2013. See also Dissenting Statement of Commissioner James H. Cawley, February 28, 2013, in which Commissioner Cawley questions, among other things, Verizon Pennsylvania's use of its affiliate, Verizon Wireless to fulfill Verizon's network modernization plan ("NMP") requirements, without having first sought regulatory approval to do so through a review of the NMP. Id., at 2-3.

that the community requested from Verizon. Instead, the proceeding illustrates the ability of ILECs to choose where to deploy fiber, an ability that the proposed merger would not diminish. In his dissent, Commissioner Cawley stated, among other things:

> Carrying the oversight method that is currently adopted to its logical extreme in view of the Verizon PA – Verizon Wireless "joint venture," the Commission will be hard pressed to timely react if this arrangement is unilaterally modified resulting in the supply of a technically inferior satellite retail broadband access technology platform to end-users in selected rural and high-cost geographic locales, with the Commission notified "after the fact" through the Company's biennial NMP [Network Modernization Plan] update report.[40]

Q: Why is the "Chapter 30" Pennsylvania proceeding relevant to this proceeding?

A: Comcast's arguments about the purportedly beneficial impact of the merger on ILECs' investment are not persuasive. Regardless of whether this merger occurs, ILECs and cable companies will continue to dictate which communities have what types of broadband Internet access markets and those decisions, logically, will be based on their business case analyses of potential investments.

A recent article reports, for example,

> In May, Verizon also put the kibosh on any potential of bringing its fiber-based service to any new towns during the Jefferies 2014 Global Technology, Media and Telecom Conference. Fran Shammo, CFO of Verizon, said that while they would honor existing agreements and enhance existing areas like New York City and Texas, other cities and towns like Hopewell Township will have to be content with a slow copper-based DSL line.

[40] Dissenting Statement of Commissioner James H. Cawley, February 28, 2013, at 3.

> "We'll continue to fulfill our FiOS LFAs (license franchise agreements)," he said. "We will complete (the FiOS buildout) with about 19 million homes passed. That will cover about 70 percent of our legacy footprint; 30 percent we're not going to cover."
>
> What this means is the remaining 30 percent of Verizon's customers will continue to be served by its aging copper network that will likely never be upgraded with fiber. They'll have the alternative of either paying for a less reliable wireless connection, DSL or switching to a cable competitor.[41]

Comcast has not made enforceable California-specific investment commitments.

Q: Does Comcast make specific commitments either by project description or by estimated amount for its post-merger investment in California?

A: Not that I am aware of. Comcast states: "We expect nationwide capital expenditure savings to represent approximately 10 percent of TWC's total anticipated expenditures in 2014," and that "[t]hese savings will free up vital capital for other investment purposes."[42] The Joint Applicants do not explain which investments Comcast would make in California post-merger that would be above and beyond what Comcast would do in the absence of the proposed transaction, nor does Comcast make specific measurable, enforceable commitments to California regarding its investment plans.

Comcast also states that it "continually invests in its network," and that it plans "to continue the practice in the areas acquired through the transaction."[43] However, Comcast

[41] "Verizon's battle with N.J. town shows strong thirst for rural wireline broadband," Sean Buckley, Fierce Telecom, December 4, 2014. I reproduce this article as Exhibit SMB-49.

[42] McDonald (Comcast), at para. 10.

[43] Id., at para. 22.

does not identify the specific additional expenditures in California that it will make post-merger that it would not otherwise make.

Comcast's "voluntary" roll-out of the IE program is linked directly to the FCC's approval of its acquisition of NBCU.

Q: Please comment on Comcast's reference to its "voluntary" broadband adoption program, that is, its Internet Essentials program.[44]

A: IE began specifically as the fulfillment of a commitment relating to Comcast's pursuit of regulatory approval of its acquisition of NBCU.[45] There is no evidence, and indeed it is improbable, that if Comcast had not been seeking the FCC's approval of a complicated merger with well-recognized risks, Comcast would have independently implemented IE. Comcast, of course, is accountable to its shareholders and so cannot reasonably be expected to embark on providing discounted services "voluntarily." I simply wish to point out that one might misconstrue Comcast's use of the adjective "voluntary": perhaps, technically Comcast "volunteered" to offer the service, but it is important to recognize that the gesture was part of a larger corporate effort to obtain regulatory approval of its proposed acquisition of NBCU – that is IE came to be not as a result of

[44] Id., at para. 39.

[45] See Baldwin Opening (TURN), at fn 147 citing In the Matter of Applications of Comcast Corporation, General Electric Company and NBC Universal, Inc. For Consent to Assign Licenses and Transfer Control of Licensees, FCC MB Docket No. 10-56, *Memorandum Opinion and Order*, rel. January 20, 2011. See, specifically, Appendix A, at XVI.2.

some "corporate good citizenship" but rather as part of a multifaceted quid pro quo for obtaining regulatory approval of a large controversial transaction.

Comcast could enhance the proposed transaction's public interest by committing to increasing IE "uptake."

Q: In your initial testimony, you discuss the low participation rate in Comcast's IE program. In its December 3rd filing with the Commission, Comcast discusses the reasons for the low participation rate. Please respond.

A: Mr. McDonald includes the Horrigan IE Uptake Paper as Attachment A to his declaration.[46] Among other things, the Horrigan paper states:

> Since IE began in 2011, the program has signed up 350,000 homes signed up out of 2.6 million eligible homes. This is a 13% uptake rate. Is that too high or too low? To address this, it is important to place the discussion in the context of trends and challenges broadband adoption. Getting more people to adopt broadband at home is difficult, as the data below will show.[47]

Q: Please summarize some of the key points in the Horrigan IE Uptake Paper.

---

[46] See footnote 1 for full cite. Dr. Horrigan states at the outset of his paper: "I have no position on the merits of the proposed Comcast-TWC merger and the following discussion should not be construed as taking a position." Id., at 2.

[47] Horrigan IE Uptake Paper, at 2 (page 0045) of Exhibit N. In my opening testimony, I discuss and reference two other papers by Dr. Horrigan. See Baldwin Opening (TURN) at 75-76, citing to Comcast response to TURN Q-1:3 (reproduced as Exhibit SMB-35), citing John B. Horrigan, Ph.D., The Essentials of Connectivity: Comcast's Internet Essentials Program and a Playbook for Expanding Broadband Adoption and Use in America (Mar. 2014) ("Horrigan Report"). Mr. McDonald includes the Horrigan Report, which was funded by The Comcast Technology Research & Development Fund (see Horrigan Report, page preceding the table of contents) as part of Attachment A to his declaration. See also footnote 101 in my opening testimony, which cites to a different report by Dr. Horrigan, "Consumers and the IP Transition: Communications patterns in the midst of technological change," November 2014.

A: Among the valuable findings are the following:

- Because some IE-eligible households may already subscribe to broadband Internet access independently from the IE program, the 13% uptake rate could be considered to be a low estimate of broadband adoption by the target population.[48]
- IE has contributed to low-income adoption of broadband Internet access: Dr. Horrigan approximates that 25% of adoption by low-income households since 2009 can be attributed to the IE program.[49]
- Cost is one of several barriers to adoption.[50] Dr. Horrigan observes that: "Even though cost plays a prominent role in keeping non-adopters from having service at home, research clearly shows that digital skills and insufficient understanding of the Internet's relevance are important as well. That is why programs such as IE – and many funded by the Commerce Department's Broadband Technology Opportunities Program – offer comprehensive help to non-adopters tailored to their needs, which include discounts on access equipment and digital skills training. Comprehensive approaches to addressing multiple barriers to adoption are seen as best practice in the field."[51]

Q: What do you conclude based on your review of Dr. Horrigan's IE Uptake Report?

[48] Id., at footnote 1.

[49] Id., at 2.

[50] See also Baldwin Opening (TURN), at 75.

[51] Horrigan IE Uptake Report, at 4.

A: Based on its relative success with IE, Comcast is well-positioned to commit to (1) milestones for increasing IE throughout its existing footprint as well as its expanded footprint if the merger occurs; and (2) broaden the scope of the program to include other populations. Moreover, in assessing the potential financial impact of IE in the future, it is important to recognize that some percentage of the eligible population may already subscribe to broadband Internet access, and, therefore not participate in IE.

Q: Did you review Mr. McDonald's comparison of Comcast's IE "success" rate with the penetration of its broadband for all households?

A: Yes. Mr. McDonald states:

> To put the program's achievement in proper perspective, after almost twenty years of offering and intensely marketing all tiers of its Internet access service, Comcast has achieved less than 40 percent penetration of the service across its footprint. *Internet Essentials* has an average success rate of 13 percent of the eligible low-income population in just three years – with rates of over 20 percent in at least one city.[52]

His comparison is inapt for two reasons. Comparing the 20-year history of broadband adoption to the most recent three-years of broadband adoption is nonsensical. Societal adoption of new technology starts slowly and then the pace picks up. Broadband has become a far more established societal norm than it was 20 years ago. It would be more meaningful to compare the increase in broadband adoption by the general population between 2010 and 2013 with the broadband adoption by IE-eligible households during the same time period. Second, the comparison mismatches populations: ILECs and

[52] McDonald (Comcast), at para. 55.

cable companies offer broadband Internet access, but only Comcast offers discounted broadband service. Because a household in the general population is not one of the 40% that adopted *Comcast's* broadband offering does not mean that the household has not adopted broadband Internet access at all – they could be subscribing to an ILEC's service.

Broader eligibility for discounted broadband service would enhance the public interest of the proposed transaction

Q: Comcast's declarant, Mr. McDonald, states that "[c]ertain systemic changes to the program suggested by some intervenors, including in particular extending the program to other populations, or creating an entirely new program independent from *Internet Essentials*, are more likely to distract and divert resources from the program than to advance it."[53] Please comment.

A: Comcast's reason for not expanding the scope of the eligibility for its Internet Essentials program implies that, despite the substantial merger-related synergies it anticipates, Comcast is willing to devote only a limited amount of resources to closing the digital divide in California. I understand that extending Internet Essentials' geographic scope to include Time Warner Cable customers could increase the resources necessary for the program. Nonetheless it is not clear why Comcast cannot further increases the resources it allocates post-merger to the program so that it can expand the program's narrow eligibility requirements to encompass other vulnerable populations.

[53] Id., at para. 31.

Q: But expanding IE to Time Warner Cable's customers already represents a financial commitment by Comcast, doesn't it?

A: Yes, but the financial commitment is not that great when considered in the context of the substantial merger synergies Comcast anticipates. Moreover, pre-transaction, the Commission cannot know how much effort Comcast will actually expend, post-transaction, to reaching out to eligible families who reside in the Time Warner Cable footprint. Furthermore, even assuming that Comcast achieves a participation rate in the newly acquired territory that is comparable to the IE participation rate in Comcast's existing territory, the total financial implications are insignificant for a company with more than $7 billion in net income.[54] Indeed, one can examine the monetary implications of Comcast's existing IE program in its existing footprint to create a rough metric for estimating the monetary consequences of Comcast's merger-related promise to extend the IE program to its newly acquired Time Warner Cable footprint.

Q: How might one estimate that monetary consequence?

A: Presently, Comcast offers broadband Internet access for just under $10 per month to approximately 46,000 low-income households, in Comcast's existing California footprint.[55] Comcast does not indicate whether these households also subscribe to (and pay for) voice or video. Without having access to data about the total average revenue

---

[54] See Baldwin Opening (TURN), at 14.

[55] McDonald (Comcast), at para. 25. In my opening testimony, I flagged this number as confidential (see pages 73-74) because they are based on responses to interrogatories that Comcast designated as confidential. Relying on the redacted, McDonald Declaration, however, I am not redacting Comcast's estimate of 46,000 participating Comcast-served households in my reply testimony.

derived from these 46,000 households and the costs of serving them, I cannot comment on the average per-household *net income* associated with IE, that is, it is impossible to conclude that the $9.95 monthly price does not cover Comcast's incremental cost of providing the discounted service. Simply because Comcast discounts the price does not mean that the service is unprofitable. Assuming that *none of these households subscribe to any other Comcast service*, and assuming that approximately 46,000 customers in the Time Warner Cable footprint subscribe to IE after three years of outreach,[56] and comparing the IE price of $9.95 per month[57] with Comcast's stand-alone broadband price of $39.95,[58] then, by 2018, Comcast would be foregoing[59] $30 per month from 46,000 customers, or approximately $16.6 million annually as a result of expanding its IE program to the TWC footprint.[60]

Q: Might some of these new IE households end up subscribing to other Comcast services?

[56] See Baldwin Opening (TURN), at Confidential Table 2 for comparisons of the quantities of households passed in each of the Joint Applicants' California footprints, which I use to estimate the potential scale of an IE program being extended to TWC customers. I assume the same participation rate.

[57] McDonald (Comcast), at para. 26.

[58] http://www.comcast.com/internet-service.html , site visited December 7, 2014. I reproduce the web site information in Exhibit SMB-47. The location that the web site specifies is Newburyport, Massachusetts, the location of my business. I have no reason to think that the price would differ in California. See, also, Baldwin Opening (TURN), at Confidential Table 6.

[59] Of course, if, without the IE program, these households would not have subscribed to Comcast's broadband Internet access, the revenue is not precisely "foregone."

[60] The program has provided more than 30,000 computers for under $150. McDonald (Comcast), at para. 26.

A: Yes. Some IE customers might subscribe to other Comcast services (voice and video), which would offset these foregone revenues. Also, without access to more information, one cannot compare Comcast's monthly cost of providing broadband Internet access to the discounted rate of $9.95 and so one cannot determine whether Comcast is "losing money" by serving these customers. The fact that Comcast is able to set rates substantially above $9.95 per month for the general population simply reflects the lack of competition in the broadband Internet access market: the "going rate" for broadband Internet access likely includes supracompetitive profits, and is unlikely to be the rate that would prevail in an effectively competitive market.[61]

Moreover, for those households that already subscribe to Comcast's video or voice service, the incremental cost of allowing the customer to obtain broadband Internet access at approximately $10.00 is likely less than for those households who do not subscribe to any Comcast service. Finally, the magnitude of the foregone revenues should be compared with my estimate of California's share of the merger-related synergies, which I estimate to reach as high as **[BEGIN COMCAST CONFIDENTIAL]** [redacted] **[END COMCAST CONFIDENTIAL]** (see discussion below).

[61] Nationally, Comcast derives net income of more than $7 billion per year. See Baldwin Opening (TURN), at 14. See, also, Id., at fn 171, citing http://www.nytimes.com/2014/10/31/upshot/why-the-us-has-fallen-behind-in-internet-speed-andaffordability.html?smid=fb-share&_r=0 .

Q: Comcast states that "[f]or those who do not quality for *Internet Essentials*, Comcast has also committed to continue to offer consumers the option to purchase broadband service on a standalone basis."[62] Is this a sufficient approach for closing the digital divide?

A: No. First, according to Comcast's web site, Comcast's least expensive stand-alone options are $39.95 for 3 Mbps (called Economy Plus) and $49.95 for 6 Mbps for Performance Starter.[63] The IE speed that the Joint Applicants describe in their December 3rd filing is 5 Mbps,[64] which is closer to the Performance Starter speed than it is to the Economy Plus speed, but the price for Performance Starter is *five times* that of the IE option. (Time Warner Cable's least expensive stand-alone options are $14.99 for 3 Mbps (called Everyday Low Price) and $29.99 for 10 Mbps (called "Basic").[65] However, as I explain in my opening testimony (at pages 89-91), Comcast has not yet decided how it will integrate its products and I do not believe that Comcast has committed to offer the

[62] McDonald (Comcast), at para. 57.

[63] http://www.comcast.com/internet-service.html, site visited December 7, 2014. I reproduce the web site information in Exhibit SMB-47. The location that the web site specifies is Newburyport, Massachusetts, the location of my business. I have no reason to think that the price would differ in California.

[64] McDonald (Comcast), at para. 50. However, for information about the speed of Internet Essentials, see also Baldwin Opening (TURN), at Confidential Table 6, which is based on Comcast's response to Comcast confidential response to ORA Q-1:9, Confidential Exhibit, ORA/Comcast Supplemental Response R-1:9, Comcast_ORA_0001093.

[65] https://www.timewarnercable.com/en/plans-packages/internet/internet-service-plans.html, site visited December 7, 2014. I reproduce the web site information in Exhibit SMB-48. The location that the web site specifies is Newburyport, Massachusetts. I have no reason to think that the price would differ in California.

lower-priced stand-alone broadband Internet access options that Time Warner Cable offers.

Q: What then do you conclude based on your analysis of Comcast's reasons for its unwillingness to expand IE to a broader low-income population?

A: Comcast's stand-alone broadband Internet options do not represent a reasonable substitute for IE for low-income households, households with elderly members (particularly those with fixed, low, and moderate incomes), and households with disabled members. Moreover, Comcast possesses the resources to expand its discounted broadband Internet access and training programs to a broader population.

The Joint Applicants estimate substantial merger-related synergies, but fail to commit to measurable, enforceable ways to share those synergies with residential consumers.

Q: In their December 3rd filing, do the Joint Applicants discuss the synergies that they anticipate will result from the proposed transaction?

A: Yes. Mr. McDonald states:

> Comcast anticipates that the transaction will generate substantial efficiencies and cost savings. We estimate approximately $1.5 billion in operating efficiencies and approximately $400 million in capital expenditure efficiencies by the third year resulting from the nationwide transaction, with operating expense efficiencies recurring at or above the $1.5 billion level each year thereafter (capital expenditure efficiencies are not expected to continue beyond year three).[66]

[66] McDonald Declaration (Comcast), at para. 8.

Q: How do these projections compare with the ones that you analyzed in your opening testimony?

A: The estimated $1.5 billion in synergies that relate to operational efficiencies is the estimate that I used in my analysis and discussion of merger-related synergies.[67] In my opening testimony, I do not discuss the *additional* annual savings during the first three post-merger years that result from capital expenditure efficiencies, and which Comcast projects will be $400 million per year by year three. Using the same approach that I used in my opening testimony, California's share of that additional synergy-related benefit would be **[BEGIN COMCAST CONFIDENTIAL]** [redacted] **[END COMCAST CONFIDENTIAL]** by the third year that should accrue during each of the first three post-merger years to California in some form to benefit consumers and communities. In sum, then during each of the first three years post-merger the California-share of the operational and capital expenditure efficiencies reaches **[BEGIN COMCAST CONFIDENTIAL]** [redacted] **[END COMCAST CONFIDENTIAL]**[68]

[67] Baldwin Opening (TURN), at 98-103.

[68] Under Public Utility Code Section 854(b), if the Commission had ratemaking authority over Comcast's services, the Commission could direct Comcast to flow through half the California share of synergies to customers. In this proceeding, the substantial merger-related synergies provide support for the importance of Comcast making enforceable, tangible commitments to share benefits with residential consumers.

Q: Will competitive forces cause Comcast to flow through these substantial synergies to residential consumers?

A: No. As I discuss in my opening testimony[69] and further discuss in this reply testimony, there is insufficient competition to cause Comcast to pass on these substantial savings to residential customers, or indeed perhaps to any customers. Instead, as I discuss above, Comcast's achievement of those synergies will likely depend on cost-cutting, the elimination of positions, and possibly price increases, all of which would harm consumers and not be in the public interest.

[69] Baldwin Opening (TURN), at 98-102.

IV. RECOMMENDATIONS

Q: Please summarize your recommendations.

A: I recommend that the Commission reject the proposed transaction because it is not in the public interest. Comcast's December 3rd filing fails to demonstrate that consumers would be protected from potential merger-related harms and the purported benefits that the Joint Applicants' December 3rd filing discusses are vague, unenforceable, and not likely to flow through to residential consumers. If, contrary to my recommendation, the Commission is contemplating approving Comcast's acquisition of Time Warner Cable, I recommend that the Commission seek commitments from Comcast to mitigate the harm and to translate vague promises into tangible benefits. I summarize my recommended commitments on pages 103-107 of my opening testimony.

Conclusion

Q: Does this conclude your reply testimony?

A: Yes. However, within the limited time frame of this proceeding, I have not yet had the opportunity to review and to analyze any of the highly confidential documents that the Applicants submitted to the FCC in my preparation of initial testimony. Also, the Applicants will not be submitting their "Form 477" information (which concerns the speeds of their broadband Internet access, provided on a geographically disaggregated basis) until on or after December 11, 2014.

I declare under penalty of perjury under the laws of the State of California that the facts set forth above are true and correct to the best of my knowledge and information. This declaration was executed this 10th day of December 2014 in Newburyport, Massachusetts.

Susan M. Baldwin

Susan M. Baldwin

Exhibit SMB-46

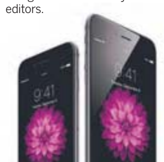
TECHNOLOGY

Tech Test Drive

Your weekly guide to gadgets, gear and technology. Reviews and ratings from CNet.com. Post your comments, events at mercurynews.com/business

Some of CNet editors' top holiday gift picks

These three products represent the best gifting choices available in their respective categories as chosen by CNet's editors.



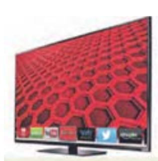
4.5 OUT OF 5

Smartphones: Apple iPhone 6

The good: The iPhone 6 delivers a spacious, crisp 4.7-inch screen, improved wireless speeds, better camera autofocus, and bumped-up storage capacities to 128GB at the top end. iOS remains a top-notch mobile operating system with an excellent app selection.

The bad: Battery life isn't much better than last year's iPhone 5S. An even larger screen could have been squeezed into the same housing.

The cost: $199 (with two-year contract) to $709.95



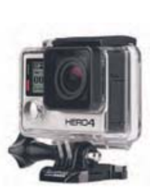
4.0 OUT OF 5

Televisions: Vizio E series

The good: The models of the Vizio E series equipped with local dimming deliver superb picture quality for a very affordable price. The image evinces deep black levels with little to no blooming. The Smart TV component combines ample content with a simple design.

The bad: Color accuracy and video processing not quite as good as some competitors, plus poor sound quality.

The cost: $471.99 to $580.99



4.0 OUT OF 5

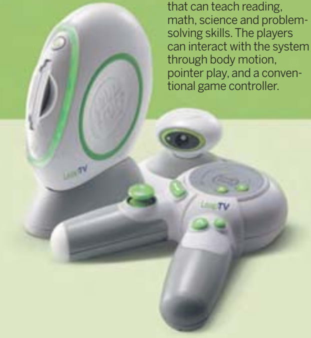
Cameras: GoPro Hero4 Silver

The good: The GoPro Hero4 Silver produces some great video for an action cam. Its abundant resolution and frame-rate options will satisfy beginners and experienced shooters.

The bad: It still needs a housing to be waterproof. Battery redesign means you can't use your old batteries and battery life will still be too short for some..

The cost: $399.95 to $399.99

PLAY & LEARN



LeapTV
A $149 video game console that can teach reading, math, science and problem-solving skills. The players can interact with the system through body motion, pointer play, and a conventional game controller.

LeapPad3
LeapFrog's latest tablet costs $100 and in addition to games, it can connect to the Internet through Wi-Fi and browse through LeapSearch, powered by the Zui search engine of Web content that has been 100 percent prescreened by a LeapFrog educator team.

Bay Area's LeapFrog seeks to be the Apple of kids tech products

By George Avalos
gavalos@bayareanewsgroup.com

EMERYVILLE — LeapFrog is offering an array of games and gadgets for holiday shoppers, including a new kids-oriented video game console, to battle competition from Apple, Samsung and others.

Apple grew from the iPod to a suite of digital offerings, and LeapFrog is poised to do the same, although in a specialized kids sector. LeapFrog's success with an iPad-like tablet built for toddlers and young schoolchildren has led it to push forward with a focus on successful elements of the LeapPad, specifically an emphasis on education and physical activity.

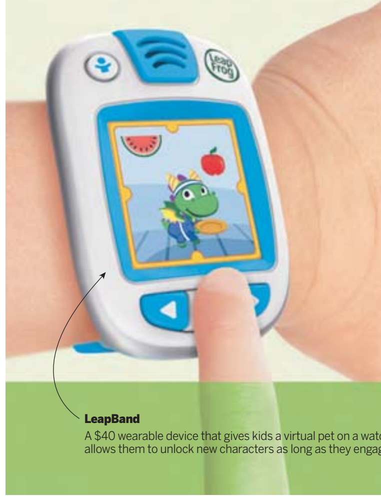
"LeapFrog is going after an area that nobody targets right now," said Michael Tchong, founder of San Francisco-based Social Revolution, which tracks the tech sector. "They are going after what they have turned into their specialty, which is the kids' market."

LeapBand is a $40 wearable gizmo that Chief Marketing Officer Greg Ahearn calls "a great way for kids to get up and be active and have fun doing it." The device gives toddlers a virtual pet on a large watch that monitors her physical activity and dangles the prospect of unlocking

See **LEAPFROG**, *Page 7*

"My (4-year-old) son learned all the letters in the alphabet and their sounds, because of the 'Spider-Man' game on LeapTV. He didn't even know he was learning. He was reading and wasn't even aware of it. That sold me."

— Renee Bergeron, mother



LeapBand
A $40 wearable device that gives kids a virtual pet on a watch face. The device monitors the pet's physical activity and allows them to unlock new characters as long as they engage in new activities.

Comcast customers' complaints hit home

If you ask consumers about their interactions or experiences with Comcast, it's not hard to find a deep vein of frustration, even outrage.

Take Hillary Murphy. In October — in the middle of the World Series and days before she was due to give birth — a Comcast technician came out to her Orinda house to move a telephone line to another room and to replace her set-top box with the latest version.

TROY WOLVERTON
TECH FILES

The technician had rescheduled the appointment twice. Then, hours after he finally arrived, Murphy's Comcast services — phone, Internet, television — went down. They stayed down for some four days, meaning that her husband, a big Giants fan, couldn't watch the team play in the World Series and stressing out the 34-year-old Murphy, who spent hours over the course of those days trying to

See **WOLVERTON**, *Page 7*

COMCAST BY THE (NOT SO GOOD) NUMBERS

31,980: The number of complaints filed against Comcast with the Better Business Bureau in the last three years.

22,332: Complaints filed with the BBB against AT&T — a company with three times as many customers — in the same time period.

More than 16,000: The number of formal complaints filed with the Federal Communications Commission against Comcast and prospective merger partner Time Warner Cable in the last five years.

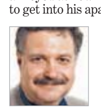
70: The approximate number of FCC complaints filed against Comcast in just the first five days of September.

300: The approximate number of FCC complaints filed against Charter Communications, the third-largest cable company after Comcast and Time Warner, in all of 2013

Better Business Bureau, MuckRock.com, Mercury News research

Google ditching 'bots' blocker for simple checkbox

A couple of decades ago — before former Mayor Rudolph Giuliani's anti-crime initiative helped reduce lawlessness — I stayed with a friend in New York, but was annoyed at how much work I had to do to get into his apartment. I had to unlock a bolt lock, a regular door lock and a "police lock," and disable an alarm. He installed all this security, of course, to keep intruders out, but it also made it really hard for his invited guest to enter.



LARRY MAGID
DIGITAL CROSSROADS

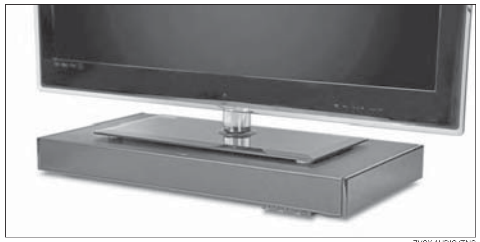
I sometimes feel the same way when I try to get into a website where I'm an invited guest. In an effort to keep "bots" (automated computer systems) from sending spam or other abusive practices, many sites require the user to complete a test of some sort to prove that they are really a human being. Often this is a "Completely Automated Public Turing test," or CAPTCHA, that

See **MAGID**, *Page 7*

Tech

Improving your TV sound on a budget

A soundbar or ZVOX's SoundBase offer great sound, reasonably priced



ZVOX AUDIO/TNS

The ZVOX SoundBase, which can sit under the TV, has an integrated subwoofer.

Q My son would like a soundbar for Christmas this year. He has a 47-inch flat-screen TV. Which one would be a good fit at a good price? I'd like to spend less than $300 if I can. I found that you had recommended the ZVOX SoundBase. Is this the same thing, or a different product?

— Maria L., Minneapolis

DON LINDICH

SOUND ADVICE

A A soundbar is a long, tubelike speaker that goes in front of, or on top of your TV. The very best ones are a single speaker that is used with a separate audio receiver and subwoofer, making up a component system. Most of the soundbars you see at retail have built-in electronics and are connected directly to your television. Prices and quality vary widely, and spending more doesn't always get you better sound.

The ZVOX SoundBase is a speaker with built-in electronics and integrated subwoofer. It has a short, but deep profile and the television is placed on it, hence the name, "SoundBase." Myself and others have raved about it because it is inexpensive, easy to set up and use, and most importantly, sounds really, really good.

ZVOX does make a soundbar called the SoundBar 430. I have not heard it so I cannot comment on the sound. However, The SoundBase has pretty much become my default recommendation for anyone looking to improve their television sound on a budget. The company is owned and run by audiophiles, and their product design, quality and life cycles reflect this.

Most mass-market audio companies come out with new speakers and receivers every single year, sometimes radically different than the comparable models that came the year before. With receivers it is understandable, given the changes in technology. But if you are throwing out last year's speaker design and coming out with a new one, in a way you are saying that you did not have it right a year ago and have to start over.

The companies that make the very best speakers don't replace their speaker line every year, or even every two years. They devote a lot of resources to make the products the best they can be, then keep them in production for several years at a minimum, or perhaps make extremely modest changes on an ongoing basis. All of my favorite speaker manufacturers follow this philosophy, for example Axiom Audio, Definitive Technology, GoldenEar Technology, Magnepan, Ohm Acoustics and Paradigm.

It seems that soundbars from the mass-market companies get replaced every year with a new model, which is why it can be hard to land a good one. Not so with ZVOX, as they follow a product life cycle close to that of an audiophile speaker company. They did just introduce new models, but only after a successful run of the previous series, which was excellent.

Your timing is excellent as ZVOX has a holiday special on their SoundBar 420, which is suitable for televisions from 32 to 50 inches in size. Normally $299, it is on sale on their website for $199, which gives you lots of money left over. It includes all the cables you need, as well as easy setup instructions, so all you have to do is wrap it! Bigger and smaller SoundBases are available for televisions up to 70 inches. For more details, visit www.zvoxaudio.com

Contact Don Lindich at www.soundadviceblog.com and use the "submit question" link on that site.

TiVo raises bar with Roamio Plus

DVR covers the basics, and then some

By Anick Jesdanun
Associated Press

EDISON, N.J. — For avid television viewers out there, the standard digital-video recorder that comes with your cable TV box just isn't enough. TiVo can add to the TV watching experience.

TiVo Roamio Plus ($400): TiVo gave us DVRs long before cable companies did. But as cable DVR offerings got better, TiVo started to feel redundant.

What TiVo does better is search. TiVo can automatically record all movies and TV shows based on wish lists of favorite actors or keywords, for instance. With standard DVRs, you're typically limited to choosing a specific TV series or episode. But if that series is featured on a talk show, not only do you have to know about it, you also have to find and record that separately. Not so with TiVo.

TiVo also lets you watch online video services such as Netflix and Major League Baseball on your big-screen TV, as long as you have a subscription with the service. Stand-alone streaming devices such as Apple TV and Roku can do more, but TiVo offers the basics if you don't want another separate device.

TiVo also has free phone and tablet apps for viewing live or recorded shows while traveling. The app sometimes gets cranky and won't let me sign in, but playback is smooth when it does work. Video quality is better when you download shows ahead of time, but that takes up space on your phone or tablet.

The downside with TiVo is that you must pay twice. On top of the device (TiVo's mid-range Roamio Plus model costs $400), you will pay a monthly service fee of $15. Although the monthly fee is comparable to what you'd pay for cable DVR, you generally aren't charged for that device. TiVo offers cheaper models, but if you want to watch on your phone or tablet you'll need a separate $130 TiVo Stream box.

Wolverton

Continued from Page 4

get Comcast to fix the problem.

"It was panic-inducing," said Murphy, who works in Yahoo's corporate communications department. "I didn't want to come home from the hospital to no Internet."

Murphy's sentiments are widespread among Comcast subscribers. Fremont resident Sangat Singh, 30, is frustrated that his Comcast Internet service goes down several times a week and he isn't getting anything close to the 105 megabit per second speeds he was promised. Jim Busche, 48, of Campbell, remembers asking to have HBO removed from his service after a free promotional period ended only to be billed for it again three months later.

While I knew such feelings about Comcast were widespread, I didn't share them, at least not until recently. I had Comcast service — first Internet, then a Triple Play package — for about four years and generally was pleased with it. I switched to AT&T's U-Verse two years ago mainly because AT&T offered a better deal.

As I explained in a recent column, I recently decided to switch back to Comcast for Internet service, because after my AT&T deal expired I found I could get faster speeds at a lower price with Comcast. But I quickly started regretting that decision.

For one thing, it's going to cost me more than I had been led to believe. Comcast refused to honor the second-year monthly rate a representative initially quoted me, even going so far as to deny — despite my notes and insistence — that the company ever discounts second-year rates on Internet access. What's more, I found out in my second call that Comcast's price to rent a modem was due to rise early next year, something the first company representative failed to disclose to me.

It was also a much bigger headache to install than it should have been. Comcast's technicians postponed scheduled appointments twice because they were running late, leaving my wife and I to work around their schedule three different days. When a technician finally did come, it took him an extra 30 minutes to configure Comcast's equipment so I could use my own router for Wi-Fi access, a change that shouldn't have taken more than a few minutes.

Comcast representatives noted that the company frequently offers promotional rates for limited periods, and the initial price I was quoted may have been one of those. But they had no explanation for why the second representative denied that such discounts exist. And Byran Byrd, a company spokesman, acknowledged that twice rescheduling the service call was not an ideal way to treat customers.

"It sounds like we missed it on that one," he said.

Comcast officials say the company is working hard to turn around its reputation, investing heavily in recent years to improve customer service. Instead of requiring users to stand by for hours on end waiting for a technician, Comcast now schedules appointments in two-hour windows. The company is testing technology that will allow subscribers to track the location of their service technician to get a better idea of when they'll arrive. And Comcast has doubled the amount of training time for its customer service employees, said Tom Karinshak, the company's senior vice president of customer service.

But Comcast obviously still has a long way to go. Of the 200 or so companies rated in this year's American Customer Satisfaction Index, only two — United Airlines and Time Warner Cable — drew lower ratings for their services than Comcast. In Consumer Reports ratings earlier this year, Comcast ranked 15th out of 17 companies for pay-TV service and 10th out of 14 for bundled services.

Even J.D. Power, which Karinshak proudly notes has upped its rating for Comcast's services in recent years, generally gives the company below average marks, despite that improvement.

From where I'm sitting, the key problem is competition — or a lack thereof. Customers like Murphy feel like they don't have any real choice other than Comcast and are angered by what they have to endure because of that. And Comcast, because of that lack of perceived or real choice, doesn't seem to feel much pressure to seriously address its problems.

I hope regulators keep that in mind as they evaluate moves that could further affect the competitive landscape, such as Comcast's proposed merger with Time Warner and new net neutrality rules. The last thing the company needs is less pressure to change.

Contact Troy Wolverton at 408-840-4285 or twolverton@mercurynews.com. Follow him at www.mercurynews.com/troy-wolverton or Twitter.com/troywolv.

LeapFrog

Continued from Page 4

new characters so long as they engage in new activities.

A potential game-changer for the Emeryville company might be the new LeapTV, a $149 video game console that the company rolled out this year. CEO John Barbour recently described LeapTV as "a revolution." The game console is designed to "Get minds and bodies moving" with educational, active games that were already a trademark for the LeapPad.

Kim Espino of Campbell said her 6-year-old daughter has been playing LeapFrog games for a couple of years, and now has moved up to the LeapTV.

"She loves it," Espino said. "She also plays the games for a long time. They don't end quickly like you see with standard video games. And adults and older kids can play the games with her as well."

"I was a little skeptical at first because initially I thought that the last thing preschoolers need is a video game system," said Renee Bergeron, a mother of teenagers and younger kids including a 4-year-old son for whom she got the new LeapTV.

Bergeron changed her mind as soon as she got the console out of the box and undertook what was literally a five-minute setup to her flat-screen TV set.

"My (4-year-old) son learned all the letters in the alphabet and their sounds, because of the 'Spider-Man' game on LeapTV," said Bergeron, who blogs about the LeapTV and other LeapFrog products at her bakersdozenandapolloxiv.com website. "He didn't even know he was learning. He was reading and wasn't even aware of it. That sold me."

The games that run on the console can teach reading, math, science and problem-solving skills. The players can interact with the system through body motion, pointer play, and a conventional game controller.

At the same time that LeapFrog seeks to capture new territory with its video game console, the company faces additional foes in its original arena of the kid-oriented tablet.

"In 2011, we were the only game in town, but now you have more people getting interested in the kids' market," Ahearn said. "Sure, Apple is a competitor, but probably not as big a competitor as Samsung, which has created a Samsung tablet for kids, or VTech, which creates kids' toys and offers a tablet," the executive added, noting that LeapFrog still has the top market share for kids tablets.

The company's latest tablet, LeapPad3, costs $100 and is built tough for kids to ensure the tablet continues to function even if its dropped or suffers a significant impact. In addition to games, the tablet can connect to the Internet through Wi-Fi and browse through LeapSearch, powered by the Zui search engine of Web content that has been 100 percent prescreened by a LeapFrog educator team.

"You are seeing LeapFrog and other companies creating the equivalent of tablets dedicated just for the young audience," said Tim Bajarin, principal analyst with Campbell-based Creative Strategies, a market researcher. "This is an important year for LeapFrog to be able to put a stake in the ground for their products that are aimed at kids."

Contact George Avalos at 408-859-5167. Follow him at Twitter.com/georgeavalos.

Magid

Continued from Page 4

presents you with weirdly displayed and distorted letters and numbers that are not only difficult for computers to automatically recognize, but hard on humans too.

I often have trouble deciphering the exact characters to type in a CAPTCHA, and it's not uncommon for me to give up after several tries. Sometimes they'll have an alternative method such as listening to an audio recording of the characters, but that requires you to turn up the speakers or use headphones, which isn't always practical. And even the audio is sometimes hard to decipher, in an effort to thwart voice-recognition software.

And, ironically, even though these CAPTCHAs sometimes thwart humans like me, they can't always fool computer systems. Google discovered that there are algorithms that can "decipher the hardest distorted text puzzles" with better than 99 percent accuracy.

In addition to software designed to tell humans from machines, there are plenty of systems designed to make sure an authorized human is entering the site. In most cases, these consist of a simple user name and password, but to thwart intruders, some sites are resorting to more complex entry systems, including asking you to recognize a picture or requiring you to answer a question like your mother's maiden name or make and model of your first car.

Increasingly we're seeing optional "two-factor authentication," in which the site sends a unique code to your smartphone or other device that you're required to type in before you can enter. Two-factor authentication is more secure, but it won't work if your cellphone has a dead battery or you don't have it with you.

We need better security. Usernames and passwords are no longer sufficient, and I certainly understand why sites would use CAPTCHAs to cut down on machine-generated spam, but we need to find systems that are hard for bad guys to break, but easy for good folks to use.

Google is one of the companies that has used those frustrating CAPTCHAs, but it's now switching to a more sophisticated yet easier to use solution called the "No CAPTCHA reCAPTCHA"

From a user perspective, the process couldn't be easier. You just check a box that says "I'm not a robot."

It doesn't just take your word for it. Using what Google calls "an Advanced Risk Analysis back end," the new system "actively considers a user's entire engagement with the CAPTCHA" by evaluating a broad range of cues that distinguish humans from bots, according to the Mountain View Internet company.

It's not perfect, so Google sometimes requires a user to solve a puzzle before allowing entrance. Google said that it worked 60 percent of the time on tests conducted by WordPress and more than 80 percent on Humble Bundle; the system is also being tested on Snapchat.

As with a lot of clever things that Google does, there is a bit of a creepy factor: These algorithms work by examining and recording our hand or mouse movements as we try to enter sites. I'm not sure how Google could exploit that information, but I can understand how — along with everything else Google knows about us — it could worry privacy advocates. However, any systems that make it easier for sites to protect themselves from spam should also be good news to the privacy community, so this is probably a trade-off in which privacy benefits outweigh creepiness.

Google admits that it has more work to do to improve its CAPTCHA technology, and indeed, so do other companies that are trying to find ways to improve security without making life harder for legitimate users. There are trade-offs not completely unlike those that Mayor Giuliani's supporters and critics pointed out as he was cleaning up Times Square — one person's secure environment is another person's police state. As long as we have to keep bad guys out, the rest of us will have to put up with some inconvenience and worry about being scrutinized.

Disclosure: Larry Magid is co-director of ConnectSafely.org, a nonprofit Internet Safety website that receives financial support from Google. Contact Larry Magid at larry@larrymagid.com. Listen for his technology chats on KCBS-AM (740) weekdays at 3:50 p.m.

Exhibit SMB-47