

**SUPREME COURT OF THE STATE OF NEW YORK
COUNTY OF NEW YORK**

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**THE PEOPLE OF THE STATE OF NEW YORK,
by ERIC T. SCHNEIDERMAN, Attorney General of the
State of New York,**

Plaintiff,

SUMMONS

-against-

Index No.: 450318/2017

**Plaintiff designates New
York County as the Place
of Trial**

**CHARTER COMMUNICATIONS, INC. and SPECTRUM
MANAGEMENT HOLDING COMPANY, LLC
(f/k/a TIME WARNER CABLE, INC.),**

Defendants.

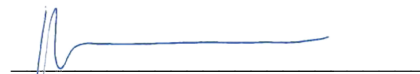
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TO THE ABOVE NAMED DEFENDANTS:

YOU ARE HEREBY SUMMONED to answer in this action and serve a copy of your answer on the Plaintiff's attorney within twenty (20) days after service of this summons, exclusive of the day of service. If this summons is not personally served upon you, or if the summons is served upon you outside of the State of New York then your notice of appearance must be served within thirty (30) days. In the case of your failure to appear or answer, judgment will be taken against you by default, for the relief demanded in the complaint.

Date Filed: January 31, 2017

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**Index No.
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NATURE OF THE ACTION

1. Plaintiff, the People of the State of New York, by Attorney General Eric T. Schneiderman (the “OAG”), brings this action pursuant to Executive Law § 63(12) and General Business Law (“GBL”) Article 22-A, §§ 349 and 350 to remedy past and ongoing fraudulent and deceptive practices by Charter Communications, Inc. (“Charter”) and Spectrum Management Holding Company LLC (together “Spectrum-TWC” or “Defendants”), formerly known as “Time Warner Cable” and rebranding as “Spectrum.”

2. Spectrum-TWC is the largest provider of residential Internet services in New York State. It provides Internet service to approximately 2.5 million New York households and earns well over a billion dollars in revenue annually from selling Internet services in New York.

3. From at least January 1, 2012 to the present (the “Relevant Period”), Spectrum-TWC conducted a systematic scheme to defraud and mislead subscribers to its Internet service by promising to deliver Internet service that it knew it could not and would not deliver. As described below, this scheme had two separate components: first, Spectrum-TWC promised Internet speeds that it knew it could not deliver to subscribers; second, Spectrum-TWC promised reliable access to online content¹ that it knew it could not deliver to subscribers.

4. The first component of Spectrum-TWC’s scheme consisted of promising consumers, including its subscribers, that they would obtain throughout their homes the Internet speeds advertised in various subscription plans. Spectrum-TWC failed to deliver on this promise by leasing to a large number of its subscribers older-generation modems

¹ Examples of online content include television and movies on Netflix; shopping websites such as Amazon; entertainment websites such as YouTube; social media platforms such as Facebook; and gaming platforms such as League of Legends.

and wireless (or “WiFi”) routers that it knew were incapable of achieving the promised Internet speeds. In addition, Spectrum-TWC failed to make adjustments to its network, such as reducing the size of service groups² and increasing the number of channels³ for each service group, that would enable a subscriber to achieve the promised speeds. Not only did Spectrum-TWC fail to deliver the promised Internet speeds, it repeatedly assured subscribers that they could achieve the same results with wireless as with a wired connection, even when it knew that the wireless connection suffered from unavoidable, real-world limitations.

5. Spectrum-TWC offered Internet service plans that were differentiated by the particular Internet speeds they offered. The plans offered speeds ranging from 2 Megabits per second (“Mbps”)⁴ to 300 Mbps. In Spectrum-TWC’s advertising, it touted the higher-speed plans as offering “fast, reliable Internet speeds.”

6. Because the plans with the faster speeds were more expensive for subscribers, Spectrum-TWC tried to convince as many subscribers as possible to sign up for these high-speed plans as part of its plan to grow revenue. Spectrum-TWC provided incentives to its customer service representatives to persuade subscribers to sign up for high-speed plans by tying the compensation of the customer service representatives to the monthly revenue generated from subscriptions to these high-speed plans.

7. But rather than provide subscribers with Internet service that achieved the promised Internet speeds, Spectrum-TWC provided subscribers with deficient equipment and a network that it knew were incapable of reliably delivering the promised speeds.

² A service group is a group of subscribers who share the total data transfer capacity (“bandwidth”) of a cable line that connects the homes in any given neighborhood to Spectrum-TWC’s central facilities.

³ Internet data in a cable system travels over the same channels and cable wires that provide cable television service to the home but uses specially-reserved channels.

⁴ Megabits per second or Mbps is a measure of how quickly data can travel.

8. During the Relevant Period, Spectrum-TWC leased older-generation modems to over 900,000 subscribers in New York State at a fixed fee that is currently \$10 per month. The company promised its subscribers that these modems would allow them to achieve the Internet speeds they had paid for, and that Spectrum-TWC would upgrade the modems at no additional charge as Internet speeds increased. However, Spectrum-TWC knew that, in practice, these older-generation modems were incapable of achieving the Internet speeds its subscribers were led to believe they were paying for.

9. In early 2013, in connection with the Internet speed tests administered by the Federal Communications Commission (“FCC”), Spectrum-TWC determined that its older-generation modems were incapable of reliably achieving speeds of even 20 Mbps. To avoid costs, Spectrum-TWC failed to replace these older-generation modems with the new-generation modems for subscribers who paid for plans that promised speeds of 20 Mbps and above. Instead, Spectrum-TWC continued to charge those subscribers for higher-speed plans that the company knew their modems could not deliver.

10. To conceal this failure, Spectrum-TWC assured the FCC in or about July 2013, that it would replace its older-generation modems for *all* of its subscribers, but in fact it did not. The FCC relied on that commitment to exclude the poor results of the speed tests on those modems in the FCC’s subsequent public reports. Had these modems’ results been included in the FCC’s testing program, they would have revealed Spectrum-TWC’s deceptive practices.

11. In addition, during the Relevant Period, Spectrum-TWC leased older-generation wireless routers to over 250,000 subscribers in New York State who had subscribed to plans promising speeds of 200 Mbps and 300 Mbps. As with the modems,

Spectrum-TWC promised its subscribers that such wireless routers would allow them to achieve the Internet speeds they had paid for, and that Spectrum-TWC would upgrade the routers at no additional charge as wireless technology improved. However, Spectrum-TWC knew that, in practice, these older-generation routers were incapable of delivering Internet speeds greater than 100 Mbps.

12. Despite fielding countless calls from subscribers about slow wireless speeds, Spectrum-TWC took no steps to replace these older-generation routers with the appropriate routers, and, instead, continued to charge subscribers to whom it provided older-generation routers for plans that promised Internet speeds of 100 Mbps and higher.

13. Moreover, Spectrum-TWC failed to provide the promised Internet speeds to even those subscribers who leased current-generation modems and wireless routers from Spectrum-TWC. This was because Spectrum-TWC managed its cable network in a way that did not deliver the promised Internet speeds over any type of connection. It cut corners by packing too many subscribers in the same service group, which resulted in slower speeds for subscribers, especially during peak hours. It also failed to add more channels for each service group, which similarly resulted in slower speeds for subscribers.

14. Spectrum-TWC fraudulently induced at least 640,000 subscribers in New York State to sign up for high-speed plans that it knew it could not provide. Spectrum-TWC knowingly failed to allocate sufficient bandwidth to subscribers, which it could have done either by reducing the size of its service groups or adding more channels to each service group. Based on several Internet speed tests, including those run by the FCC, subscribers on the 300 Mbps plan generally received only 10% to 70% of the

promised speed; subscribers on the 200 Mbps plan received only 14% to 60% of the promised speed; and subscribers on the 100 Mbps plan received only 24% to 87% of the promised speed.

15. Spectrum-TWC further deceived the FCC by manipulating the average Internet speed results in the FCC's speed tests. The company inflated the average speed results by providing increased Internet speeds when service groups were less utilized to offset (and conceal) test results showing slower speeds when the service groups had heavier usage. By gaming the FCC speed tests in this manner, Spectrum-TWC concealed the fact that it failed to consistently deliver the promised speeds to its subscribers under actual network conditions.

16. During the Relevant Period, most of Spectrum-TWC's subscribers accessed the Internet through a wireless connection. Spectrum-TWC assured its subscribers that they would achieve Internet speeds wirelessly that were as fast as their wired speeds. In reality, however, wireless speeds were consistently much slower than wired speeds due to multiple factors, including distance from the wireless router, interference from other electronics and appliances, and the number of devices accessing the wireless router at the same time.

17. Based on consumer speed test data, Spectrum-TWC subscribers experienced much slower speeds when connecting to the Internet using wireless routers. When connecting wirelessly, subscribers on the 300 Mbps plan typically received 15% of the promised speed; subscribers on the 200 Mbps plan received 20% of the promised speed; subscribers on the 100 Mbps plan received 39% of the promised speed; and subscribers on the 50 Mbps plan received 58% of the promised speed.

18. Despite knowing the limitations of wireless technology, Spectrum-TWC, in its advertising, continued to promise consumers that they could get the same “blazing fast speeds” through their wireless connection as with their wired connection. Spectrum-TWC also trained its customer service representatives to propagate these same falsehoods in their calls with subscribers.

19. The second component of Spectrum-TWC’s scheme consisted of promising its subscribers that they would obtain reliable access to online content. Spectrum-TWC refused to invest in additional ports⁵ where its network connected with online content providers when those ports became heavily congested. The company’s failure to add more port capacity to its network connections with online content providers meant that Spectrum-TWC would not make whole on its promises to its subscribers.

20. During the Relevant Period, Spectrum-TWC promised consumers, including its subscribers, that they would receive reliable access to content on the Internet with “no buffering,” “no slowdowns,” “no lag,” “without interruptions,” “without downtime,” and “without the wait.” As a direct result of Spectrum-TWC’s failure to add more ports, its subscribers encountered all of these things – buffering, slowdowns, lags, interruptions, and down times.

21. In fact, Spectrum-TWC deliberately took advantage of its control over port capacity where its network connected to online content providers to extract more revenue for the company. To do so, Spectrum-TWC used its leverage over access to subscribers to extract fees from online content providers in exchange for granting such access. Spectrum-TWC lined its pockets by intentionally creating bottlenecks in its

⁵ Ports are physical hardware sockets where one network can plug into another network through a fiber optic wire. These ports are located at points where Spectrum-TWC’s network connects with online content providers.

connections with online content providers, despite knowing that these negotiating tactics would create problems for its subscribers in accessing online content.

22. While Spectrum-TWC engaged in disputes with online content providers, its subscribers experienced a number of adverse effects, including interrupted Internet service, buffering, slowdowns, lags, and issues with streaming video content that Spectrum-TWC's advertisements specifically promised them they would avoid.

23. Throughout the Relevant Period, Spectrum-TWC consistently failed to make the investments necessary to provide its subscribers with the Internet speeds and reliable online content that it had promised. Capitalizing on the fact that its subscribers had few, if any, other choices for an ISP, Spectrum-TWC placed profits ahead of the interests of its subscribers, and collected billions of dollars in fees from New York subscribers for providing Internet service.

24. Since 2015, the OAG has fielded over 2,800 reports from Spectrum-TWC subscribers who complained that they did not receive the Internet service promised to them in Spectrum-TWC advertisements.

25. Complaints received by Spectrum-TWC tell the same story. A few examples, reproduced below, illustrate the enormous frustration and lost productivity New Yorkers have experienced as the result of Spectrum-TWC's false and misleading advertising practices:

- "I have been a customer of TWC for over 5 years . . . I have paid every month for a package that includes your turbo internet. I had constant problems with internet speed Bottom line is I am continuing to pay for a product that you are not delivering to me, I am pretty sure that is illegal, I expect the goods I pay for."

- “For the past two years I have become increasingly frustrated with the fact they advertise speeds that they don’t come close to providing, while still charging a premium.”
- “The company is advertising internet speeds of 100 - 300 Mbps. However, for the past 6 months, I have been receiving speeds of only 3 - 4 Mbps. The company is advertising internet speeds that are far higher than the actual speed being provided.”
- “This is ridiculous and am paying for a service I am not receiving. It’s actually stealing from the consumer.”
- “[Spectrum-TWC] won’t acknowledge a problem. I have trouble streaming movies and usually lose connection.”
- “We are being throttled on streaming services such as Youtube, Netflix, and Twitch while also having problems with Video games such as League of Legends.”
- “We’re supposed to get ‘up to 50 Mbps’ download bandwidth. But when I use more than 1.5 Mbps down, I can’t use the Internet for anything else. It comes to a sluggish crawl. Frequently in the evening and night I can’t consistently stream Netflix, Hulu, HBO Go, or Showtime go with any reliability. Pay \$82.99 a month for Internet that frequently is unusable in the evenings, and always unusable if I try to download a couple things at a decent speed.”

26. The OAG seeks restitution for New York subscribers as well as injunctive and equitable relief appropriate to redress Spectrum-TWC’s fraudulent conduct. In addition, the OAG seeks the imposition of civil penalties and reasonable costs of investigation and litigation.

PARTIES

27. Plaintiff is the People of the State of New York by their attorney, Eric T. Schneiderman.

28. Before May 18, 2016, Time Warner Cable, Inc. (“TWC”) provided and marketed Internet service under the Time Warner Cable brand to New York subscribers. On May 18, 2016, as a part of a series of transactions that resulted in Charter

Communications, Inc. (“Charter”) merging with TWC and continuing to operate its business, TWC merged with and into Charter’s subsidiary, Spectrum Management Holding Company, LLC (“Spectrum Holding”).

29. Defendant Spectrum Holding is a Delaware corporation with its principal place of business at 400 Atlantic Street, Stamford, Connecticut 06901.

30. Defendant Charter is a Delaware corporation with its principal place of business at 400 Atlantic Street, Stamford, Connecticut 06901.

31. Charter is the second-largest residential cable provider in the country. Since its merger with TWC on May 18, 2016, Charter, together with its subsidiary Spectrum Holding, has provided and marketed Internet service to New York subscribers under both the “Time Warner Cable” and “Spectrum” brand names. Charter is in the process of rebranding Time Warner Cable in New York as Spectrum and rolling out new Internet service plans across the State.

32. On January 18, 2017, Plaintiff sent Defendants a pre-litigation notice, pursuant to GBL Article 22-A, by certified mail, return receipt requested. Plaintiff also sent Defendants’ counsel a copy of the pre-litigation notice by email on January 18, 2017.

JURISDICTION

33. This Court has jurisdiction pursuant to: (i) Executive Law § 63(12), under which the OAG is empowered to seek injunctive relief, restitution, damages and other equitable relief, including disgorgement, when a person or business entity engages in repeated fraudulent or illegal acts or persistent fraud or illegality in the carrying on, conducting or transaction of business; (ii) General Business Law § 349(b), which authorizes the OAG to seek injunctive relief, restitution, disgorgement and civil penalties

when a person or business entity engages in deceptive acts and practices in the conduct of any business, trade, or commerce; and (iii) GBL § 350, which authorizes the OAG to seek injunctive relief, restitution, disgorgement and civil penalties when a person or business engages in false advertising in the conduct of any business, trade or commerce in the state of New York.

BACKGROUND

I. The Importance Of Internet Service

34. The Internet and its rapid expansion represent the greatest telecommunications revolution of the modern age—connecting people, powering technology, and fueling commerce in ways that were unimaginable even a decade ago.

35. Many Americans rely on the Internet in their daily lives for a broad range of social, recreational and business purposes. They interact with family and friends; stream and download music and movies; exchange news and multimedia content; play online games; work from home; engage in e-commerce; and participate in many other activities.

36. As the FCC explained in a 2015 report, “[a]ccess to robust broadband [Internet] service is a necessity in today’s world for jobs, education, civic engagement and economic competitiveness.”

37. Internet service ranks along with utilities and housing as one of the most significant recurring expenses for many households. In October 2016, for example, Spectrum-TWC charged New Yorkers a list price of \$70 per month or \$840 per year for plans that promised Internet download speeds of 20 Mbps. Spectrum-TWC also charged most subscribers an additional \$10 monthly equipment lease fee.

38. To connect to the Internet, a residential subscriber signs up with an Internet Service Provider (“ISP”) such as Spectrum-TWC. In New York, consumers have a limited choice of providers for residential Internet access. Two or three ISPs dominate the market in most areas of the State.

39. ISPs use one or more of several different technologies to transmit Internet data to and from a residential subscriber. These include (i) digital subscriber line (“DSL”), which runs over traditional phone lines; (ii) fiber-optics, which runs over optical fiber cables; and (iii) cable, which runs over dedicated frequencies on the same coaxial cable as cable television.

40. Spectrum-TWC uses a combination of fiber-optics and cable to transmit data to and from residential subscribers.

41. Spectrum-TWC’s subscribers need a device known as a cable modem to connect to Spectrum-TWC’s cable network. Today, most subscribers have a modem and a wireless router at home. Sometimes the modem and wireless router are combined in a single integrated “gateway” device.

42. The wireless router creates a wireless home network that allows Internet-ready devices such as smartphones, tablets, and laptop computers to transmit and receive Internet data without being physically tethered to a modem by a cord. As a result of its convenience, over 90% of Spectrum-TWC’s current subscribers have access to the Internet through a wireless connection.

43. Spectrum-TWC controls various factors that affect the quality and performance of a subscriber’s Internet service at home. These factors include the capabilities of the modems and wireless routers it supplies to its subscribers, its

management of its network to provide each subscriber with sufficient capacity to experience the promised service, and the nature of its relationships with and connections to other networks, such as online content providers.

44. These factors affect the speed at which Internet data travels to and from the subscriber's home. As described on Spectrum-TWC's website, Internet speed measures "how quickly information travels from the Internet to your computer." This speed is typically measured in megabits per second ("Mbps").

45. The majority of residential subscribers use their Internet service at home between 7 p.m. and 11 p.m. These hours are referred to as "peak" hours.

46. Typical users value an Internet service that lets them employ a device of their choice to browse webpages that load swiftly, stream videos that play smoothly, and interact effortlessly with other users online through social media, multiplayer games or other forums.

47. Studies conducted by Spectrum-TWC show that users place a premium on Internet speed and service reliability, and are willing to pay for such attributes because they directly affect the Internet experience.

48. For most users, however, it is difficult to know whether their ISP is actually delivering the level of service promised.

49. As a result, consumers rely heavily on the representations made by an ISP regarding speed and reliability when selecting an ISP or service plan.

II. Spectrum-TWC's Network

50. Spectrum-TWC is the largest provider of Internet service in the State of New York. About 2.5 million households—or more than one out of every three New

Yorkers who pay for high-speed Internet service—depend on Spectrum-TWC for Internet access today. Spectrum-TWC’s coverage area encompasses large sections of Albany, Buffalo, New York City and Rochester and extends to municipalities, suburbs, and rural areas statewide, including communities in upstate New York near the Canadian border.

A. The “Last Mile” Of Spectrum-TWC’s Network

51. A cable wire typically connects a Spectrum-TWC subscriber’s modem to the nearest cable distribution facility in the neighborhood. This portion of the network is often referred to as the “last mile.”

52. Spectrum-TWC’s network transmits data over the last mile of its network using a portion of the channels and wires that carry cable television to a subscriber’s home.

53. On Spectrum-TWC’s network, multiple subscribers share the total data transfer capacity, also known as “bandwidth,” that can be carried on the last mile of cable. Subscribers who must share the last mile’s bandwidth are placed in the same “service group” by Spectrum-TWC.

54. Unlike cable television, where the fact that all the homes on a block are watching the Super Bowl on television at the same time will not reduce the quality of the service, with cable Internet access, if many users who share a service group try streaming the game at the same time, the service quality for all subscribers on that group may suffer.

55. The total bandwidth available to a service group is determined by the number of channels Spectrum-TWC made available to transmit data. Each channel’s bandwidth is about 38 Mbps.

56. From about 2012, Spectrum-TWC's network across the State typically provided eight channels or about 304 Mbps (8 x 38 Mbps) of bandwidth to be shared among all the subscribers in a service group. That meant, for example, that each subscriber in a service group of 300 subscribers had about 1 Mbps of bandwidth to use if all the subscribers used the service group's bandwidth at the same time.

57. In 2014, Spectrum-TWC upgraded its network in the New York City area (the "MAXX upgrade")⁶ by doubling the number of available channels, thereby increasing the service group's shared bandwidth to about 608 Mbps (16 x 38 Mbps).

58. In February 2016, the average Spectrum-TWC service group in New York had about 340 subscribers. Some service groups had as few as 32 subscribers and others had as many as 621 subscribers.

59. To deliver the Internet speeds that Spectrum-TWC promised to its subscribers, it could either add more channels to the system to increase the shared bandwidth, or split the size of service groups to reduce the number of subscribers sharing a connection.

60. To use a highway analogy, for traffic to flow at the promised speeds between two points, Spectrum-TWC could either add new lanes to the highway (adding channels) or divert some traffic to a less utilized highway to reduce the congestion (splitting service groups). But Spectrum-TWC failed to make the necessary investments to do either.

61. As set forth below in Section I.C.1, during the Relevant Period, Spectrum-TWC included too many subscribers in its service groups and failed to add more channels

⁶ Subsequently, Spectrum-TWC upgraded its network in certain parts of the Hudson Valley.

for such service groups, thereby ensuring the company would not deliver the Internet speeds it promised to its subscribers.

B. Modems Leased To Subscribers By Spectrum-TWC

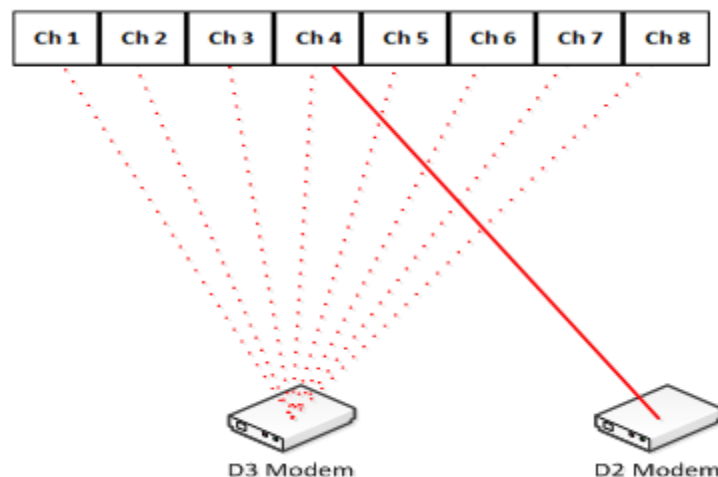
62. Newer generation modems, called DOCSIS⁷ 3 (“D3”), can use all of the service group’s available bandwidth by sending a subscriber’s data across multiple cable channels at once. This allows cable companies to offer significantly higher speeds to subscribers than was previously possible with the older generation DOCSIS 1 (“D1”) and DOCSIS 2 (“D2”) modems, which could only use one channel at a time.

63. While older-generation D1 and D2 modems still work on a D3 system, they cannot take advantage of the full capacity of the service group; instead, these modems are limited to a single-channel that has about 38 Mbps of bandwidth, which they must share with all the other users on that channel.

64. The ability of D3 modems to bond several channels together is akin to having a multi-lane highway. Data traveling to or from a D3 modem can use any available highway lane, allowing for more traffic to pass through. D2 modems are confined to a single lane of the multi-lane highway, even when that single lane is congested with traffic.

65. A graphic from a Spectrum-TWC presentation from 2013 illustrated the functional difference between a D2 and a D3 modem:

⁷ “DOCSIS” refers to the Data Over Cable Service Interface Specification standard used to transmit data over cable wires.



66. As set forth in greater detail below in Section I.B.1, during the Relevant Period, Spectrum-TWC routinely leased older-generation, single-channel modems to subscribers who paid for speeds that required a multichannel D3 modem.

C. Spectrum-TWC's Connection With Other Networks

67. The Internet is sometimes described as a network of networks, with each network serving as few as one to as many as millions of computers. Different networks communicate and exchange data encoded in “packets” with each other using a common language.

68. The FCC classifies three main types of players in the Internet ecosystem in addition to the end-user subscribers:

- Internet service providers: Companies such as Spectrum-TWC that connect subscribers' homes to the Internet;
- “Backbone” providers: Companies, such as Level3 Communications (“Level 3”) and Cogent Communications Holdings (“Cogent”), that connect ISPs to each other and to content providers; and
- Content providers: Companies, such as Netflix, Riot Games and Facebook, which provide online content to subscribers by connecting through backbone providers or establishing a direct connection to ISPs.

69. For a subscriber to access content online, data must travel from the content provider to the end user through the ISP's interconnection points. Interconnection points are places where two networks can exchange data directly or connect through intermediaries. If these points are congested, that congestion will hurt the end user's experience because data will travel more slowly and data may be lost.

70. In the highway analogy, the content is like a car traveling from Boston to an apartment building in Manhattan. Interstate 95 is the backbone provider's network and the Manhattan streets are the ISP's network. The bridges and tunnels are the interconnection points that require sufficient access lanes to process swiftly the volume of traffic.

71. As set forth in greater detail in Sections II.B and II.C, during the Relevant Period, Spectrum-TWC routinely let its connections with backbone providers and content providers become overly congested, which caused slowdowns and interruptions for subscribers who were promised reliable and uninterrupted access to the content of their choice.

FACTUAL ALLEGATIONS

72. Spectrum-TWC marketed a service that promised consumers a fast, reliable Internet connection that could stream content without interruption from virtually anywhere in the home.

73. Spectrum-TWC understood why these characteristics were important to subscribers. A 2015 Spectrum-TWC internal presentation titled "Key trends and imperatives for TWC Internet" explained that: (a) new technologies and people increasingly working from home "drive ever-expanding bandwidth needs"; (b) new

subscribers are “increasingly citing reliability, along with speed, as reasons to switch ISPs” and that existing subscribers rate “connectivity and reliability as most important aspects of their Internet service”; and (c) Spectrum-TWC “cannot compete on speed & reliability alone and must distinguish its Internet offering by promising connectivity everywhere with no dead spots.”

74. Throughout the Relevant Period, Spectrum-TWC repeatedly represented to consumers, including its subscribers, that they would receive consistently fast Internet speeds, and reliable and uninterrupted access to online content. Both of these representations were false.

I. Spectrum-TWC Misled Subscribers By Falsely Promising Speeds It Knew It Could Not Deliver

75. Spectrum-TWC misled subscribers by repeatedly promising Internet speeds in its advertisements during the Relevant Period that it knew it could not reliably deliver.

76. Spectrum-TWC’s representations were false for the following three reasons:

- Deficient Equipment: During the Relevant Period, Spectrum-TWC leased older-generation, single-channel modems despite knowing that such modems were, in its own words, not “capable of supporting the service levels paid for.” Over the same period, Spectrum-TWC also leased older-generation wireless routers to subscribers despite knowing that these routers would prevent them from ever experiencing close to the promised speeds over wireless connections.
- Congested Network: During the Relevant Period, Spectrum-TWC failed to allocate sufficient bandwidth to subscribers by reducing the size of its service groups or increasing the number of channels for its service groups. These network improvements would have enabled subscribers to achieve the fast Internet speeds that they paid for. Results from three independent Internet speed measurements confirmed that Spectrum-TWC consistently

failed to deliver the promised speeds to subscribers on its high-speed plans.

- Limitations of Wireless: During the Relevant Period, Spectrum-TWC misled subscribers by assuring them that they could achieve the same Internet speeds through wireless connections as with wired connections despite knowing that accessing the Internet using wireless routers would sharply reduce the Internet speeds a subscriber would experience.

A. Spectrum-TWC Promised Subscribers They Would Receive The Fast Internet Speeds Advertised In Their Service Plans

77. During the Relevant Period, Spectrum-TWC offered service plans at different price points to subscribers. It differentiated the service plans exclusively on the basis of the promised Internet speed a subscriber could achieve for downloading data.

78. In 2012 and 2013, Spectrum-TWC pegged its “standard” plan at 15 Mbps across New York State and offered high-speed plans of 20, 30 and 50 Mbps. In 2014, the company offered higher speed plans for subscribers in and around New York City as part of its MAXX upgrade program, creating new high speed plans that offered 100, 200 and 300 Mbps.

79. As of October 2016, Spectrum-TWC offered subscribers in the New York City area the following plans:

| Speed Plan | List Price | Modem Fee |
|-----------------|------------|-----------|
| 10 Mbps | \$49.99 | \$10 |
| 50 Mbps | \$59.99 | \$10 |
| 100 Mbps | \$69.99 | \$10 |
| 200 Mbps | \$79.99 | \$10 |
| 300 Mbps | \$109.99 | \$10 |

80. For the rest of New York State, Spectrum-TWC offered the following plans as of October 2016:

| Speed Plan | List Price | Modem Fee |
|----------------|------------|-----------|
| 3 Mbps | \$49.99 | \$10 |
| 15 Mbps | \$59.99 | \$10 |
| 20 Mbps | \$69.99 | \$10 |
| 30 Mbps | \$79.99 | \$10 |
| 50 Mbps | \$109.99 | \$10 |

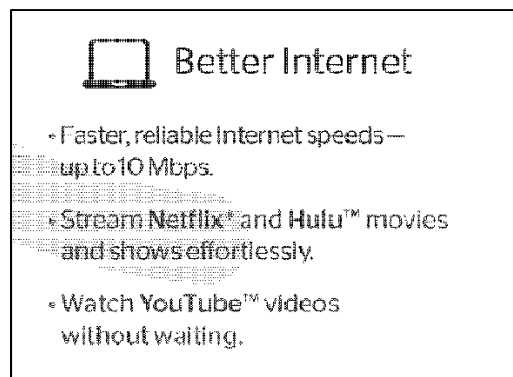
81. Throughout the Relevant Period, Spectrum-TWC's advertising led subscribers to believe that the Internet speed on the high-speed plans offered a qualitatively different user experience akin to driving a turbo-charged sports car rather than a family sedan.

82. For example, Spectrum-TWC tagged its high-speed plans across the State with adjectives like "Turbo," "Extreme," and "Ultimate," to convey the benefits of choosing them over cheaper plans which advertised slower speeds.

83. Spectrum-TWC reinforced the impression that subscribers would experience the promised speeds any time they used the Internet by pairing the numerical speed promises in its advertising with promises of "consistently" fast or "reliable" Internet service.

84. During the Relevant Period, Spectrum-TWC's television, Internet, print and direct mail advertisements focused on the consistent delivery of promised speeds throughout the home on multiple devices.

85. For example, as excerpted below, a 2012 Spectrum-TWC direct mailing promised that subscribers would get "Faster, reliable Internet speeds":



86. Similarly, in a 2013 mailing, Spectrum-TWC promised subscribers that “[o]ur network is built to handle all of your activities, **without any slowdowns**. Whether you’re just checking email or downloading a whole album of photos, our network won’t let you down.” (Emphasis added.)

87. Spectrum-TWC also represented to subscribers that they would experience the same promised Internet speeds with no “slowdowns” when connecting wirelessly.

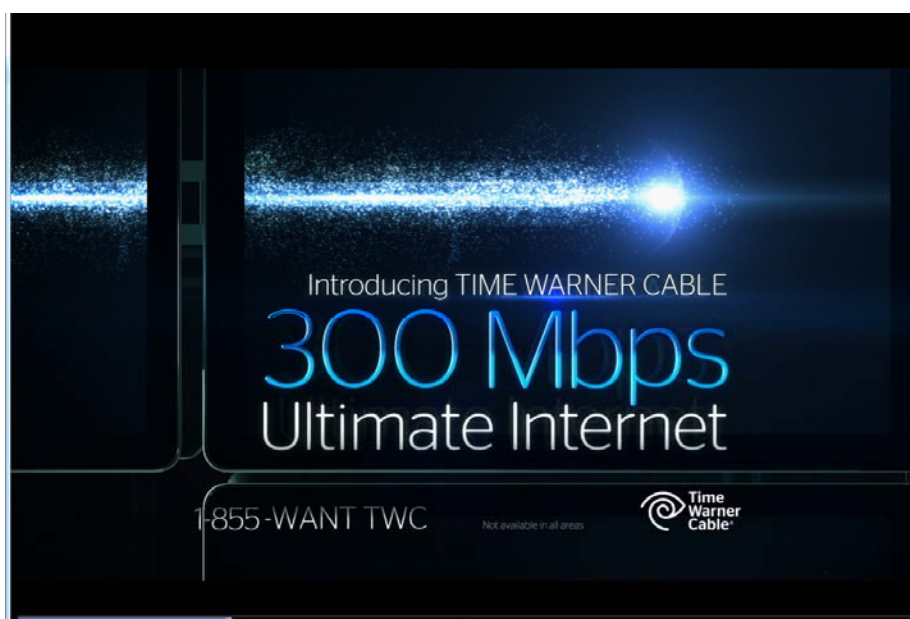
88. For example, Spectrum-TWC marketed this purported equivalence of wired and wireless connections as a feature of its 50 Mbps plans, telling consumers in a 2013 mailing that, with Spectrum-TWC’s wireless routers, “Everyone at home can use their laptops, tablets and smartphones at the same time — **without slowdowns**.” (Emphasis added.)

89. In 2013, Spectrum-TWC ran a television commercial called “The Test,” that showed its employees testing the wireless speeds achieved on a smartphone and a tablet across a large room buzzing with computers and interference. The employees gleefully exclaim, “tablet: running at 50 [Mbps],” “smartphone: lightning fast,” and “Our fiber-rich network is crushing it!” The terminal screen in front of one Spectrum-TWC employee showed the results of a “dual speed test” that indicated both wireless devices

had *simultaneously* achieved nearly identical speeds of about 50 Mbps, which was the top advertised speed in much of New York State at that time.

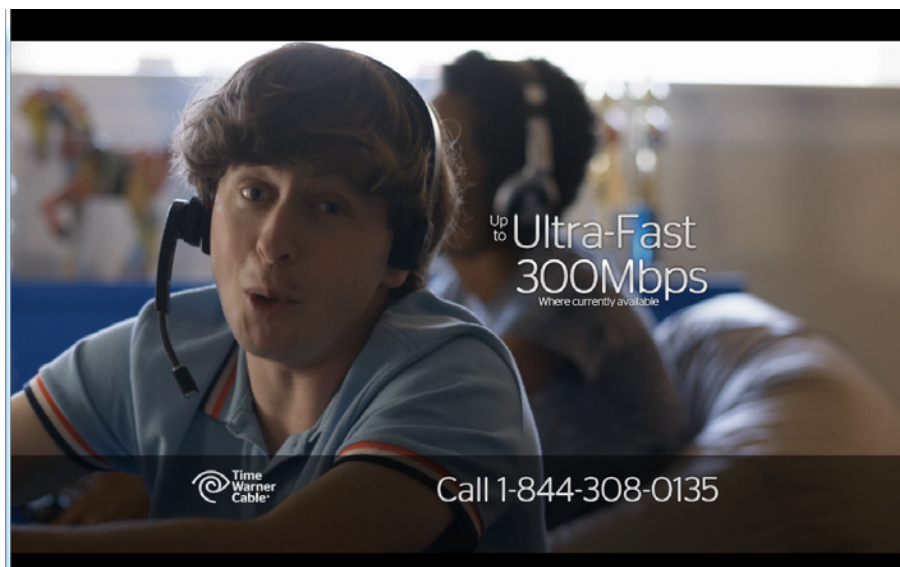
90. Through this advertisement and others like it, Spectrum-TWC created the impression that it would simultaneously deliver the promised Internet speeds wirelessly, with no drop-offs, to multiple users in a household.

91. In a 2014 television commercial, shown in the screenshot below, Spectrum-TWC introduced a 300 Mbps “Ultimate Internet” plan while the voice-over heralded “a new dimension of *reliability* and a revolution in *velocity* essential for today’s online life”:



92. Spectrum-TWC espoused the benefits of faster speeds by linking its advertising of high-speed plans to the activities it knew subscribers used the Internet to access.

93. For example, a 2015 television commercial (screenshot below) promoted the 300 Mbps plan by explaining “We do more games – and more streaming. So we need more speed”:



94. In another television ad touting its 300 Mbps plan that aired in 2016, an actor exclaimed “I didn’t know your home WiFi could stream so many devices at the same time!” while the neighbor’s son explains, “Dad, it’s Time Warner Cable 300 [Mbps]. Crazy fast!”

95. In these ways, Spectrum-TWC advertisements during the Relevant Period gave subscribers the impression that they needed more speed to enjoy Internet content and that Spectrum-TWC would deliver those promised speeds to them on any device in their home regardless of whether they used a wired or wireless connection.

96. Spectrum-TWC emphasized speed because it wanted consumers to sign up for the more expensive plans that promised higher speeds.

97. A 2013 internal Spectrum-TWC presentation explained that a key “strategic pillar” for Spectrum-TWC was to “capture premium pricing” and “drive migration to higher tiers.”

98. One strategy used by Spectrum-TWC to promote migration of subscribers to high-speed plans was to tie its customer service representatives’ compensation to the

monthly recurring revenue earned from subscribers. This incentivized representatives to push subscribers to pay for higher speed plans, regardless of their need for fast Internet speeds.

99. Some representatives pushed back against the mandate to upsell in an employee survey. They noted, for example, that “[w]e are constantly pushed to ‘create need’ . . . [but this] ignore[s] the impact of pushing pricier products on people who don’t need or really want them.”

100. Another representative reported: “Our customers NEED to be put into the proper packages so that we are conducting business with integrity. It seems as if this is a hustlers job trying to out hustle everyone else trying to make the most money WE can and not doing the right thing . . . By operating like this, customers laugh at our integrity as a company.”

B. Spectrum-TWC Leased To Subscribers Deficient Equipment That Was Not Capable Of Delivering The Promised Speeds

101. During the Relevant Period, Spectrum-TWC typically leased to its subscribers either a gateway device that had a combined modem and wireless router or a standalone modem. It promised subscribers that these devices would be appropriate for the subscriber’s speed plan and that it would upgrade the devices at no charge as necessary. As described below, Spectrum-TWC did not honor the commitments it made to over a million New York subscribers.

1. Spectrum-TWC Leased Older-Generation, Single-Channel Modems To Subscribers

102. Over the Relevant Period, Spectrum-TWC leased to over 900,000 subscribers, older-generation, single-channel D1 and D2 modems that it knew were incapable of delivering the promised Internet speeds.

103. In October 2012, Spectrum-TWC started to charge subscribers a monthly lease fee for modems it had previously provided at no charge.

104. Although Spectrum-TWC allowed subscribers to use their own modems, the vast majority of subscribers opted to pay a monthly lease fee for the use of a Spectrum-TWC-supplied modem, usually as part of a gateway device that also included a wireless router.

105. In connection with its modem lease program, Spectrum-TWC promised subscribers that it would provide them with “the appropriate modem for your Internet service plan and speed tier.” Spectrum-TWC also promised that it would upgrade leased equipment “at no additional cost if we update Internet plan speeds and when technology improves.”

106. In making such claims, Spectrum-TWC represented that it would provide subscribers with a modem that could support the Internet speeds of their plans and that it would upgrade the modem at no additional charge as Internet speeds increased.

107. Spectrum-TWC’s training materials instructed employees to tell subscribers that Spectrum-TWC’s modem lease program “ensures that you always have the right modem in your home to meet the ever-changing needs of technology.”

108. Even absent such explicit assurances, a subscriber leasing a modem directly from Spectrum-TWC would expect that the modem would be able to support the Internet speeds promised in Spectrum-TWC's ads and the speed plan for which she paid.

109. Conversely, a subscriber leasing a modem from Spectrum-TWC would expect that Spectrum-TWC would not charge for a speed plan that the modem provided by the company could not support. Yet that is precisely what Spectrum-TWC did.

110. In 2013, Spectrum-TWC determined that D2 modems were "non-compliant" for speeds of 20 Mbps or higher for the simple reason that they were incapable of delivering speeds of 20 Mbps or higher. Instead of replacing modems as promised, Spectrum-TWC continued to charge subscribers for plans that promised Internet speeds of 20 Mbps and higher.

111. Spectrum-TWC's former head of corporate strategy admitted in a February 2015 email that, "the effective speeds we are delivering customers in a 20 Mbps tier when they have a D2.0 modem is meaningfully below 20 Mbps."

112. As a Spectrum-TWC engineer explained in a March 2015 email, the company's network utilization targets would result in subscribers using the single-channel modems to routinely experience speeds below 10 Mbps during peak hours:

[A] single channel modem **MUST be able to achieve its provisioned speed during peak usage** (when customers are using the service) which would be in the neighborhood of 80% utilization. It doesn't matter if a modem "could" achieve the speed, it really only matters when they are most commonly using it. Therefore, **given the data, we need to severely limit single channel modems to <10 mbps or so.**

(Emphases added.)

113. This conclusion was repeated in Spectrum-TWC's February 3, 2016 letter to the OAG that admitted: "[a]chieving broadband download speeds of 20 Mbps and above requires a [D3] modem."

114. Yet during that same month, February 2016, Spectrum-TWC leased D2 modems to over 185,000 Spectrum-TWC subscribers on plans of 20 Mbps or higher, as reflected in Table 1:

Table 1: Distribution Of Deficient D2 Modems (February 2016)

| Speed Plan | Number Of Subscribers With D2 Modems |
|-------------------|---|
| 20 Mbps | 89,250 |
| 50 Mbps | 80,769 |
| 100 Mbps | 9,564 |
| 200 Mbps | 5,235 |
| 300 Mbps | 361 |
| Total | 185,179 |

115. The subscriber numbers from the February 2016 billing period present only a snapshot in time and therefore exclude subscribers who had the older-generation, single-channel modems during the Relevant Period, but who may have cancelled their Spectrum-TWC account, obtained a new modem, or changed to a lower speed plan.

116. In fact, Spectrum-TWC's leasing practices short-changed a much larger group of subscribers. During the Relevant Period, the company's records show that almost 800,000 New York subscribers on speed plans of 20 Mbps and higher leased deficient D2 modems from Spectrum-TWC for periods of three consecutive months or longer.

117. Similarly, Spectrum-TWC had determined in June 2012 that D1 modems should no longer be deployed on *any* speed plan it offered.

118. Yet the company's records show that during the Relevant Period, over 100,000 New York subscribers leased obsolete, single-channel D1 modems from Spectrum-TWC for periods of three consecutive months or longer.

119. Even though Spectrum-TWC knew that each of the subscribers who leased older-generation, single-channel D1 and D2 modems would not achieve the promised Internet speeds, Spectrum-TWC nonetheless continued to charge these subscribers for more expensive high-speed plans than their modems could support.

a. In Its Effort To Cut Costs And Boost Profits, Spectrum-TWC Did Not Replace Deficient Modems

120. The widespread distribution of deficient modems among Spectrum-TWC subscribers was the result of Spectrum-TWC's deliberate strategy of placing its own business interests ahead of its obligation to fulfill the express promises it made to its subscribers.

121. In February 2013, after determining that the older-generation, single-channel D2 modems were incapable of delivering the promised speeds, Spectrum-TWC deemed such modems to be "non-compliant," and its engineers recommended replacing such modems, stating that "[w]e need the right modems in place and the network needs to be provisioned correctly. There's no silver bullet."

122. An internal Spectrum-TWC presentation from June 2013 observed that 75% of the modems associated with the 20 Mbps plan across the country were non-compliant, but "D2 modems are still being deployed due to budget restraints."

123. This presentation went on to note that because D2 modem replacement was beyond the company's "capital ability," "[n]o communications have been sent to the existing customer base with D2 modems to swap out their devices."

124. The presentation also warned, presciently as it turned out, that “recycling D2 modems to support lower tiers would make them vulnerable to underperform with the next speed increase (specifically in the Standard Tier).”

125. The presentation issued a specific recommendation: “Swap non-compliant modems to improve the performance of this tier [i.e., the 20 Mbps tier].”

126. For self-serving financial reasons, Spectrum-TWC rejected its own engineers’ recommendations to swap modems. As one senior executive stated clearly in a February 2015 email: “The solution is to get the D2s out, but we don’t have that kind of capital.”

127. In the summer of 2013, Spectrum-TWC assured the FCC that it would replace the deficient D2 modems for all its subscribers, but it wanted to start by replacing the D2 modems of subscribers who had volunteered to assist the FCC in testing Internet speeds (the “FCC Panelists”).⁸

128. In September 2013, the FCC agreed to exclude the slower speed results associated with any D2 modems on the 20 Mbps or higher tiers from its forthcoming report and allowed Spectrum-TWC to replace the FCC Panelists’ modems.

129. Although Spectrum-TWC replaced the FCC Panelists’ modems and instructed customer service representatives to make sure FCC Panelists received “VIP treatment” and the “best in class devices” when swapping their modems, Spectrum-TWC, contrary to its representation to the FCC, did not proactively replace deficient D2 modems for all subscribers across New York.

⁸ The FCC Panel consisted of a subset of Spectrum-TWC subscribers across different service groups nationwide that assisted the FCC in testing Internet speeds.

130. For the September 2013 billing period, the company's records confirmed that about 280,000 subscribers in New York on speed plans of 20 Mbps or higher still had deficient D2 modems.

131. Spectrum-TWC's actions also contradicted its representations to the FCC in the Code of Conduct it signed in connection with the FCC's testing program. The FCC's Code of Conduct required Spectrum-TWC to "at all times act in good faith" and not do anything "if the intended consequence of such act or omission is to enhance, degrade or tamper with the results of any test." Specifically, the Code of Conduct prohibited the company from "modifying or improving services delivered to any class of subscribers" that was not "consistent with normal business practices."

132. In fact, at the same time that Spectrum-TWC determined the D2 modems were non-compliant and replaced them for the FCC Panelists, it aggressively pushed subscribers in New York to pay to upgrade their Internet service plans—without ever checking whether the modems it leased to subscribers were capable of actually supporting their new speed plans.

133. As a result, in 2012 and 2013, in all parts of the State, Spectrum-TWC routinely upgraded subscribers with deficient D2 modems to the 30 and 50 Mbps speed plans—plans it knew required D3 modems to achieve the promised speeds.

134. Around the time it approached the FCC to persuade it to ignore the Internet speed test results from the deficient D2 modems, Spectrum-TWC explored how to retain subscribers and attract new ones in New York City where it faced increased competition from other ISPs.

135. Spectrum-TWC commissioned a June 2013 consulting study that recommended it offer higher speeds to retain subscribers, but acknowledged that implementing that recommendation would require replacing all the deficient single-channel modems.

136. The June 2013 study explained that “increasing speed can offset sub[scriber] losses from price increases and increase overall revenue” and that “[i]ncreasing speed with no price increase produces sub[scriber] gains.”

137. In 2014, Spectrum-TWC partially implemented the study’s recommendation to upgrade subscribers’ speed plans across the board through New York City’s MAXX upgrade.

138. As part of the MAXX upgrade, Spectrum-TWC marketed some of the highest Internet speeds advertised in the state—100, 200, and 300 Mbps.

139. Based on Spectrum-TWC’s advertising promises, hundreds of thousands of New York residents signed up for these high-speed plans.

140. As shown in Table 2 below, Spectrum-TWC had over 550,000 subscribers in these high-speed plans in New York as of February 2016:⁹

⁹ The numbers from the February 2016 billing period are a snapshot in time and therefore exclude subscribers who, during the Relevant Period, cancelled their Spectrum-TWC account or later changed to a lower tier of service. The company’s records show that over 640,000 subscribers paid for speeds plans of 100 Mbps, or higher, for at least three consecutive months during the Relevant Period.

Table 2: Distribution Of Subscribers In MAXX High-Speed Plans

| Speed Plan | Distinct Subscribers | Monthly List Price |
|-------------------|-----------------------------|---------------------------|
| 100 Mbps | 214,606 | \$69.99 |
| 200 Mbps | 271,962 | \$89.99 |
| 300 Mbps | 73,179 | \$109.99 |
| Total | 559,747 | |

141. Through the MAXX upgrade, Spectrum-TWC led subscribers with D2 modems to believe that it was offering faster Internet speeds for the same price in an effort to convince such subscribers to stay with Spectrum-TWC and not switch to another ISP.

142. However, because Spectrum-TWC did not undertake to proactively replace subscribers' deficient, single-channel modems, it knew it was not actually delivering these faster Internet speeds.

143. For example, under the MAXX upgrade plan, Spectrum-TWC promised speeds of 100 Mbps to subscribers who were on the old "Turbo" 20 Mbps tier with D2 modems that its own analysis showed delivered less than 10 Mbps during peak hours.

144. Similarly, Spectrum-TWC promised subscribers with D2 modems on the old "Standard" 15 Mbps tier that they would get 50 Mbps, even though Spectrum-TWC knew that those subscribers could never achieve that speed with their deficient D2 modems.

145. During the early MAXX rollout in 2014, Spectrum-TWC experimented with a plan it called “Ship to All” that sent new D3 modems to all subscribers with deficient modems at no charge, or offered to have a professional install such a modem.

146. In April 2014, however, Spectrum-TWC rejected the “Ship to All” plan as too expensive. Instead, Spectrum-TWC devised a strategy with the opposite objective: to minimize the number of deficient modems Spectrum-TWC would replace.

147. Known internally as the “Raise Your Hand” plan, this strategy required subscribers to go through several bureaucratic steps to receive and install the modem appropriate for their speed plans.

148. Spectrum-TWC required subscribers to request a new replacement modem by contacting customer service, which would have subjected the subscriber to notoriously long hold times, or lost time spent visiting a service center in-person.

149. Spectrum-TWC’s notice to subscribers telling them about the opportunity to get a new D3 modem failed to explain that retaining an existing D2 modem could result in getting only one-tenth or less of the promised speeds.

150. Even in instances where the deficient D2 modem had been professionally installed, Spectrum-TWC required subscribers to personally install the replacement D3 modem or pay a fee to have it installed by a technician.

151. Finally, Spectrum-TWC required subscribers to return the old D2 modems or face a large “unreturned equipment fee” as a penalty. This requirement was particularly egregious since at this point, D2 modems were considered to be “end of life” by the cable industry and were no longer being deployed by many other ISPs.

152. Spectrum-TWC premised the “Raise Your Hand” plan explicitly on the company’s expectation that large numbers of subscribers would not follow through on the process required to receive a replacement D3 modem.

153. The math was simple: every deficient modem that remained under lease was one less replacement modem that Spectrum-TWC had to buy and help install.

154. An internal Spectrum-TWC presentation, dated January 2015, reviewed cost projections and boasted that “[c]hanging the MAXX approach to a raise-your-hand approach (65% of subscribers take an active swap, with passive swaps for the balance) helped us reduce our capital budget by \$45[Million].”

155. Later in 2015, Spectrum-TWC reported internally that the actual “Raise Your Hand response rate in 2014 MAXX markets was 25%.” As a result, Spectrum-TWC spent even less money than it had originally budgeted.

156. Spectrum-TWC also did not follow the recommendation of one of its engineers to “change [the subscriber’s] tier to speed their modem can handle” if the subscriber did not respond to the Raise Your Hand communication.

157. Instead, Spectrum-TWC rolled out a new policy for all subscribers with D2 modems in New York State that programmed their D2 modems to cap their speeds at 20 Mbps, but continued to charge them for higher speed plans.

158. As an example, Spectrum-TWC still charged a subscriber with a D2 modem on the 100 Mbps plan as much as \$70 per month, but it actually programmed the D2 modem so that its top speed would never exceed 20 Mbps even during non-peak hours.

159. Spectrum-TWC's "Raise Your Hand" plan also did nothing to address the thousands of subscribers who had leased deficient D2 modems in upstate New York because Spectrum-TWC did not even contact such subscribers to replace their modems.

2. Spectrum-TWC Leased Deficient Wireless Routers To Subscribers

160. As with modems, most subscribers leased a wireless router directly from Spectrum-TWC as a component of a gateway device that included both a modem and a router.

161. Spectrum-TWC expressly promised that leasing such wireless routers from the company would guarantee subscribers had the appropriate equipment as speeds increased and technology improved.

162. Spectrum-TWC also made specific representations in its commercials about the quality and performance of the wireless routers it leased to its customers.

163. For example, one television commercial from 2015 promised that Spectrum-TWC's home wireless connection would be "powered by the latest equipment available, to cover all your devices."

164. As with modems, wireless routers are rated for the speeds they can deliver.

165. While several variables can affect the maximum speed for a wireless router, an important initial determinant of the speed was the protocol used by the router.

166. The protocols reference a standard known as 802.11 first released in 1997 and amended several times since. The two most recent amendments to the standards are "802.11n" and "802.11ac."

167. In 2014, Spectrum-TWC leased to most of its subscribers on high-speed plans wireless routers that employed the 802.11n standard (the “802.11n wireless routers”).

168. But Spectrum-TWC knew that the 802.11n wireless router could not deliver anywhere close to the promised speeds of the high-speed plans.

169. Spectrum-TWC’s former Vice President of Customer Equipment observed in an October 16, 2014 internal email to senior colleagues that “we do not offer a [device] today that is capable of the peak Maxx speed of 300 Mbps via wireless.”

170. This executive went on to admit: “Generally a customer connecting via wireless will receive **less than 100 Mbps**” using the 802.11n wireless routers that Spectrum-TWC leased to subscribers. (Emphasis added.) As a result, he told his colleagues that “**we are going to experience a mismatch between what we sell the customer and what they actually measure on their laptop/tablet/etc.**” (Emphasis added.)

171. A separate Spectrum-TWC technical document discussing wireless connectivity, dated January 2015, concluded that “[i]n a real world scenario, most [802.11n] adapters will produce speeds of 50-100 Mbps.”

172. In fact, a Spectrum-TWC internal presentation, dated June 12, 2014, recommended that the company deploy devices with newer generation 802.11ac wireless routers to all subscribers on speed tiers of 200 Mbps or higher because such routers came closer to delivering the promised speed.

173. Spectrum-TWC rejected that recommendation, again for financial reasons.

174. As with modems, Spectrum-TWC continued to lease deficient wireless routers to subscribers to cut costs and boost profits.

175. As of February 2016, over 250,000 subscribers, or four out of five Spectrum-TWC subscribers on the 200 and 300 Mbps plans who leased devices from Spectrum-TWC, had 802.11n wireless routers that the company knew could not deliver close to the promised speeds even under ideal circumstances.

176. Despite this knowledge, Spectrum-TWC did not take any steps to inform subscribers on its high-speed plans that the promised speeds were generally not attainable over wireless routers it supplied subscribers.

177. Nor did Spectrum-TWC offer to replace the older-generation wireless routers for existing subscribers with the new-generation wireless routers.

C. Spectrum-TWC's Network Could Not Consistently Deliver Promised Speeds

178. Even for subscribers who had the appropriate modems and wireless routers, Spectrum-TWC failed to deliver the fast Internet service it had promised.

1. Spectrum-TWC Did Not Allocate Sufficient Resources For Its Network To Reliably Deliver The Promised Speeds

179. Spectrum-TWC engineers, consistent with the company's advertising, saw their job as delivering a network that should allow "customers to achieve 100% speed attainment regardless of time of day or day of week."

180. If it designed its network correctly, Spectrum-TWC expected subscribers to get "good speed test results . . . at or above our speed tiers" any time they conducted a speed test.

181. But to deliver those speeds, Spectrum-TWC had to allocate sufficient bandwidth to each subscriber in a service group—the group of subscribers who share the “last mile” of bandwidth—so that they could achieve the promised speeds.

182. In February 2016, an average Spectrum-TWC service group in New York City had 340 subscribers sharing 608 Mbps of bandwidth. Spectrum-TWC understood how much bandwidth these subscribers were likely to use during peak hours and how much bandwidth was needed to deliver the promised speeds.

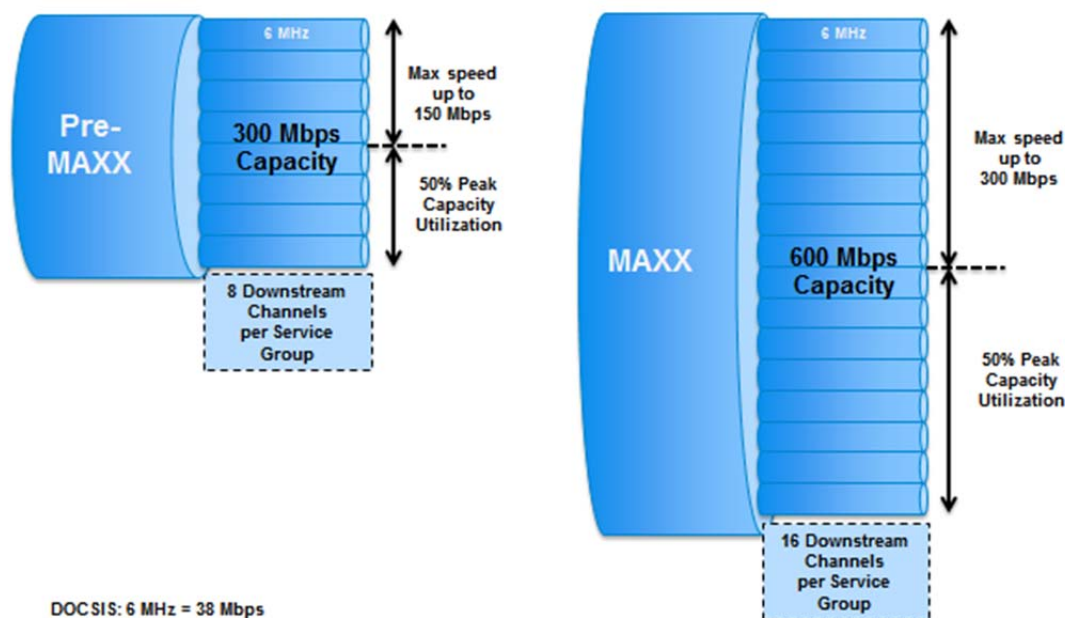
183. In helping to determine which speeds to offer subscribers, Spectrum-TWC’s engineers developed a rule of thumb: a service group should have enough bandwidth available that any given subscriber could achieve the promised speed offered during peak hours.

184. A graphic in a Spectrum-TWC presentation from August 2015, depicted below, showed that the maximum speed the company offered should be no more than 50% of the service group’s total bandwidth because the other 50% is utilized during peak hours:

Spectrum: 16 Downstream Channels (6 MHz) enable 300 Mbps downstream speeds in MAXX markets



HSD Spectrum Allocation



185. This graphic illustrated the engineers' mathematical calculation that with eight channels with a total capacity of 300 Mbps, the maximum speed Spectrum-TWC could provide if a service group utilized 50% of bandwidth was 150 Mbps. With 16 channels with a total capacity of 600 Mbps,¹⁰ the maximum speed Spectrum-TWC could provide was 300 Mbps.

186. This graphic showed that Spectrum-TWC knew that if it allowed a service group to utilize more than 50% of its bandwidth during peak hours, then Spectrum-TWC could not reliably deliver 300 Mbps to a subscriber who had paid for that high-speed plan.

¹⁰ 16 channels x 38Mbps = 608 Mbps, but the Spectrum-TWC presentation used a rounded down 600 Mbps.

187. In practice, Spectrum-TWC failed to maintain the bandwidth required for subscribers to consistently experience their promised speeds.

188. Instead of using the 50% threshold recommended by its engineers, Spectrum-TWC allocated resources to increase the bandwidth available to a subscriber—either through splitting service groups or adding more channels—only after a service group used about 80% of its shared bandwidth during peak hours.

189. Spectrum-TWC's policy to use 80% of the service group's bandwidth meant that only 20% of 608 Mbps, or roughly 120 Mbps, of bandwidth could be available to most subscribers during peak hours.

190. Thus, subscribers on the 200 Mbps or 300 Mbps tiers who attempted to use their full bandwidth would achieve speeds that were only a half to a third of their promised speeds.

191. At one point, a Spectrum-TWC executive suggested in a February 2015 email that the company needed to lower its 80% peak utilization target to allow subscribers to attain the speeds promised to them.

192. A co-worker swiftly rejected the suggestion, explaining “I don't necessarily disagree with that logic” but, he continued, “[i]f we make that statement, then we are all saying that . . . we must go to all maxx markets and anything above 50% utilization (16 channels*38mbps=608mbps) **must be mitigated to support 300 Mbps tier and that would drive 100's of millions in investment . . .**” (Emphasis added.)

193. In fact, many Spectrum-TWC service groups across the State routinely exceeded the 80% utilization threshold and some service groups even exceeded 90%

utilization during peak hours. This high utilization rate further reduced the ability of all subscribers in that service group to achieve their promised speeds.

194. Spectrum-TWC could have delivered the promised speeds either by reducing the size of service groups sharing bandwidth, or by adding more channels to increase the available bandwidth. Alternatively, it could have simply corrected its advertising and sold slower speeds.

195. Instead, Spectrum-TWC chose to mislead subscribers by promoting expensive high-speed plans that provided only a fraction of the promised speed to most subscribers on those plans.

2. Speed Tests Confirmed That Spectrum-TWC's Network Did Not Reliably Deliver Promised Speeds

196. Spectrum-TWC's failure to deliver the promised speeds was confirmed by actual speed test data collected from thousands of New York subscribers.

197. There are several different Internet speed measurement tools that test whether subscribers are getting the Internet speed they paid for. The speed test results discussed below come from three sources.

198. **Speedtest.net**: This was one of the most popular tests for subscribers to measure their Internet speeds. This test reported on the quality of the last mile of service by measuring how quickly a subscriber can download data from a test server that was typically hosted on the ISP's network.

199. Spectrum-TWC acknowledged that the Speedtest.net test was "recognized across the Internet as a good speed test." The company hosted the testing platform on its network, recommended the test to its subscribers, and used the test internally for network diagnostics.

200. **Sam Knows**: This test was administered by an FCC contractor, Sam Knows, and systematically tested the Internet speeds ISPs delivered to modems in homes of volunteers across the United States. Periodically, the FCC released a report analyzing the results of systematic tests across ISPs for a single month of a year.

201. The FCC and ISPs recruited volunteers to assist the FCC and provided them with a device, called a “whitebox,” which they attached to their modem. This whitebox automatically ran speed tests when the modem was not otherwise in use, including during peak hours (which the FCC defined as weeknights from 7 to 11 p.m. local time). This methodology deliberately excluded any performance degradation that may have occurred within the home as the result of a subscriber’s device or accessing the Internet over a wireless connection. In 2016, approximately 800 subscribers spread throughout different service groups across the country comprised Spectrum-TWC’s FCC panel (the “FCC Panel”).

202. Spectrum-TWC independently contracted with Sam Knows to install a parallel, internal panel of whiteboxes in Spectrum-TWC network centers and the homes of Spectrum-TWC employees across the country (the “Spectrum-TWC Panel”) to conduct network diagnostics and anticipate any concerns raised by results from the FCC Panel. In 2016, Spectrum-TWC had about 1,200 such whiteboxes distributed across different service groups in its network nationwide.

203. One key performance indicator the Sam Knows whiteboxes helped track was the FCC’s “80/80” consistent speed result. This refers to the “speed that at least 80% of the subscribers experience at least 80% of the time over peak periods.”

204. **Internet Health Test:** This test measured how quickly a subscriber can download data from test computer servers hosted on different backbone providers.

205. Using the period from August 2015 to January 2016 as a baseline to compare different speed test results, data compiled from each of the three speed test methods confirmed that Spectrum-TWC repeatedly and consistently failed to provide subscribers with the Internet speeds that they were promised.

206. *First*, the Speedtest.net results from tests taken by tens of thousands New York subscribers who paid for the 100, 200 and 300 Mbps plans confirmed that they did not get the promised speeds. The results (excluding results from tests on handheld devices) for August 2015 to January 2016 are summarized in Table 3 below.

Table 3: Speedtest.net Results (Aug. 2015 – Jan. 2016)

| Speed Plan | Subscribers Who Took Tests | Median Speed |
|------------|----------------------------|--------------|
| 100 Mbps | 28,089 | 55 Mbps |
| 200 Mbps | 36,337 | 62 Mbps |
| 300 Mbps | 15,706 | 85 Mbps |

207. The Speedtest.net results confirmed that Spectrum-TWC did not deliver the promised speeds to subscribers on each of the high-speed plans. Subscribers on the 100 Mbps plan achieved a median speed of 55 Mbps (55% of the promised speed); those on the 200 Mbps plan achieved a median speed of 62 Mbps (31% of the promised speed); and those on the 300 Mbps plan achieved a median speed of 85 Mbps (28% of the promised speed).¹¹

¹¹ Table 3 was constructed using data from Speedtest.net. The speed test results were matched to account data provided by Spectrum-TWC. Then the results were averaged by subscriber, month and speed plan

208. *Second*, as represented in Chart 1 in the Appendix, the Sam Knows test for FCC Panelists confirmed that subscribers on the 100, 200 and 300 Mbps plans received speeds that were consistently well below the speeds that they paid for.¹² FCC panelists on the 100 Mbps plan generally received 73% to 87% of the advertised speed, panelists on the 200 Mbps plan generally received 49% to 58% of the promised speed, and panelists on the 300 Mbps plan generally received 33% to 52% of the promised speed.

209. The Spectrum-TWC Panel results further confirmed the FCC Panel's findings as demonstrated in Chart 2 in the Appendix.¹³ Spectrum-TWC Panel results confirmed that over this six month period, subscribers on the 100 Mbps plan received less than 80% of the advertised speed; subscribers on the 200 Mbps plan received less than 60% of the advertised speed, and subscribers on the 300 Mbps plan generally received 38% to 74% of the promised speeds.

210. *Third*, the results of tests conducted using the Internet Health Test also confirmed that Spectrum-TWC failed to deliver the promised speeds to its New York subscribers, especially for the fastest speed plans as shown in Table 4.

("monthly readings"). These monthly readings were then averaged and the median results across all subscribers on a plan were calculated and reported in the table.

¹² Chart 1 was constructed using Sam Knows data and shows the peak hours "80/80" speed results for each speed plan.

¹³ Chart 2 was constructed using Sam Knows data and shows the peak hours "80/80" speed results for each speed plan.

Table 4: Internet Health Test Results (Aug. 2015 – Jan. 2016)

| Speed Plan | Subscribers Who Took Tests | Median Speed |
|-------------------|-----------------------------------|---------------------|
| 100 Mbps | 910 | 24 Mbps |
| 200 Mbps | 1,305 | 29 Mbps |
| 300 Mbps | 573 | 32 Mbps |

211. The average subscriber on the 100 Mbps plan received 24% of the promised speed, the average subscriber on the 200 Mbps plan received 15% of the promised speed and the average subscriber on the 300 Mbps plan received 11% of the promised speed.¹⁴

212. The results across the different test sources taken over the same period of time were remarkably consistent. They confirmed that Spectrum-TWC consistently failed to deliver the speeds it promised to its subscribers.

213. Spectrum-TWC's poor performance in earlier periods is reflected in the data from FCC Panel and Spectrum-TWC Panel results for 2013 to 2014. Chart 3 and Chart 4 in the Appendix depict the consistent speeds for the 20, 30 and 50 Mbps plans using the FCC Panel and Spectrum-TWC Panel data from March 1, 2013 to March 31, 2014.¹⁵ Both charts highlight that during this period Spectrum-TWC routinely delivered speeds that were at least 10% to 30% below what it had promised.

3. Spectrum-TWC Manipulated The FCC's Speed Tests

214. Spectrum-TWC skewed the average speed results in the FCC reports by giving panelists the ability, at times, to report higher-than-advertised speeds

¹⁴ Table 4 is constructed using a similar methodology to Table 3 above to represent the results of tests from the Internet Health Test.

¹⁵ Chart 3 is constructed using Sam Knows data and shows the peak hours "80/80" speed results for each speed plan.

(“overprovisioning”) to conceal the fact that most subscribers, particularly those on congested service groups, received far less than their promised speed.

215. Using the highway analogy, Spectrum-TWC’s overprovisioning strategy amounts to allowing cars to go faster than the posted speed limit at certain times to compensate for the fact that often the highway slowed to a crawl. Boosting the average results with outlier results masked the enormous frustration for most subscribers stuck in traffic.

216. Spectrum-TWC’s former head of corporate strategy candidly acknowledged the strategic goal in a July 7, 2014 internal email to senior colleagues: “We recommend increasing over-provisioning our modem speeds to around 20% to drive our Sam Knows scores > 100% and then to market that we deliver more than promised speeds.”

217. The overprovisioning strategy manipulated the Sam Knows test by padding the test result average with scores from times when a service group was not heavily utilized—either because at the moment the test ran the service group was not congested, or because the service group was not heavily utilized in general—to compensate for the lower scores from service groups that were congested.

218. A 2013 Spectrum-TWC engineering presentation, which predated the decision to overprovision speeds by 20%, bluntly characterized the overprovisioning maneuver as putting “lipstick on a pig.”

219. As the presentation explained, overprovisioning masked the widespread deployment of deficient older-generation, single-channel modems, the prevalence of

heavily congested service groups and the poor physical health of neighborhood cable lines.

220. Overprovisioning boosted Spectrum-TWC's average speed results in the FCC's speed test measurements and concealed the underlying problems. Spectrum-TWC's manipulation of the FCC test helped the company mask the fact that Spectrum-TWC consistently failed to deliver advertised speeds to most subscribers under typical service group utilization scenarios.

D. Spectrum-TWC Misled Subscribers By Promising Wireless Speeds That It Knew It Could Not Deliver

221. Spectrum-TWC knew that its advertising reinforced subscribers' expectations that they would experience the same Internet speed regardless of whether they connected through a wired connection or a wireless router.

222. For example, in a September 30, 2014 email, a senior customer service representative explained to other Spectrum-TWC executives, "[w]e are getting a ton of service calls in regards to slow wireless speeds, these customers have 300 down and only getting 50 down on wireless." The representative continued: "[c]ustomer expectation vs. actual results is what we are trying to get some clarity on. Customers are paying for 300 down and they are expecting wireless to be close."

223. Similarly, an internal Spectrum-TWC email dated July 8, 2015 noted:

The concern is around MAXX customers (that have recently received their new MAXX HSD speeds) **having the expectation** that their WiFi enabled devices in their home (primarily mobile devices – tablets, smart phones, smart TV's, etc.) will be able to **achieve the same wire-line MAXX speed on all WiFi devices**. This is leading to increased unnecessary truck [rolls] for customer education.¹⁶

(Emphases added.)

¹⁶ The reference to "truck rolls" described the need to dispatch a technician to the home to fix the problem.

224. The promised wireless connectivity, however, defied the technical bounds of wireless technology. In the real world, wireless speeds were almost always slower, often much slower, than the high-speed plans Spectrum-TWC advertised.

225. The quality of the wireless connection was affected by distance, interference and the number of devices simultaneously accessing the Internet.

226. In fact, Spectrum-TWC's engineers warned senior executives in a March 2014 presentation to "refrain from making any (implied) guarantees about wireless performance until we have a better way to measure it in the home."

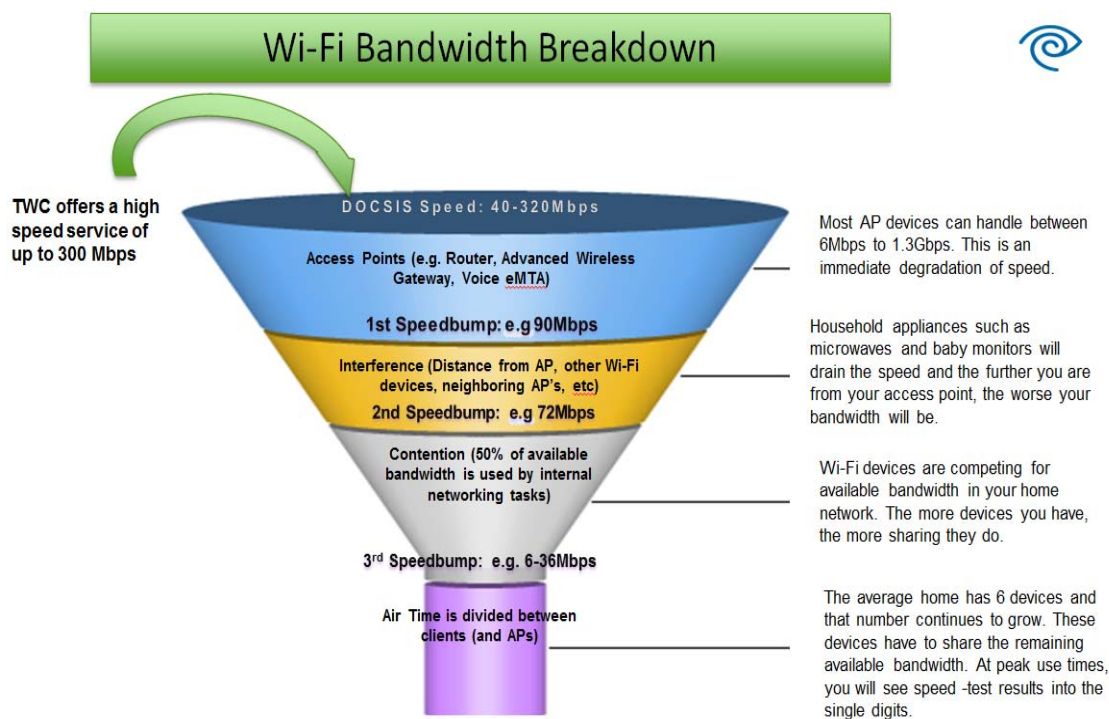
227. Spectrum-TWC nonetheless persisted with deceptive advertising, even though its executives acknowledged in internal communications that the company's advertising would result in complaints from subscribers confused about why their wireless speeds were much slower than promised.

228. A Spectrum-TWC engineering presentation from February 2015, titled "WiFi and Home Networking" included the slide below, which implied that Spectrum-TWC must address the proverbial elephant in the room that "Customers expect Ethernet connectivity, quality, speed and reliability from WiFi":¹⁷

¹⁷ The "Ethernet" reference in the slide is to a wired connection.



229. In another graphic from the same internal presentation, Spectrum-TWC’s engineers illustrated how subscribers on a 300 Mbps plan may only see “speed test results into the single digits” because of the various limitations on wireless speeds:



230. Notably, the presentation pointed out that there was an “immediate degradation of speed” from the moment a wireless router was used in the subscriber’s home.

231. An internal Spectrum-TWC Customer Care Department fact sheet, dated January 29, 2016, discussed the myriad factors that eroded wireless connectivity, including the limited “Indoor Range” of Spectrum-TWC wireless routers, the “slower speeds” experienced when “multiple users” access content at once, and the adverse effects of interference. These same factors caused dead spots within a home where connecting wirelessly might be impossible at any speed.

232. Spectrum-TWC ignored these basic facts and instead continued to promise subscribers through advertising and other means that they could use a wireless connection to access “blazing fast speeds” “throughout the home.”

233. Spectrum-TWC also instructed its customer service representatives to reiterate the same false advertising claims with little or no qualification when interacting with subscribers.

234. A Frequently Asked Questions (FAQ) guide for Spectrum-TWC customer service representatives, which was current as of February 2016, provided the following demonstrably false guidance:

- *Question:* “Will Wireless Home Networking affect the speed of my connection on any of my computers?”

Answer: “Under normal usage, with a maximum number of computers on the network, the speed of your Internet connection should not be affected.”

- *Question:* “What is the range of the wireless cable modem?”

Answer: “In ‘real-world’ testing, users were able to connect from as far as 150 feet away – more than enough range to connect from just about anywhere in your home.”

- *Question:* “How will multiple users affect the speed of my Internet cable modem?”

Answer: “Under normal usage, the speed of your Internet connection should not be affected.”

235. Each of the above answers was false or misleading.
236. First, as noted above, wireless speeds were consistently slower than wired speeds.
237. Second, numerous factors reduced the speeds achieved wirelessly, including electronic interference, building materials, and other ordinary household conditions.
238. Third, when multiple devices attempted to simultaneously access a single wireless connection, they shared the available bandwidth. For example, if four devices simultaneously ran a speed test on a 20 Mbps connection, the maximum speed any one device could achieve would be 5 Mbps.
239. Consumer speed test data from thousands of tests run on the popular Speedtest.net website confirmed that Spectrum-TWC subscribers experienced a sharp drop in speeds when connecting wirelessly.
240. Table 5 below summarizes the Speedtest.net results of tests measured on handheld devices that relied exclusively on wireless connectivity for the period August 2015 to January 2016:¹⁸

¹⁸ Table 5 is constructed using a similar methodology to Table 3 above to represent the results of the Speedtest.net tests. It reports results taken from tests run on devices that use a mobile operating system, and therefore necessarily connected to the Internet wirelessly.

Table 7: Speedtest.net Results For Handheld Devices (Aug. 2015 – Jan. 2016)

| Speed Plan | Subscribers Who Took Tests | Median Speed |
|-------------------|-----------------------------------|---------------------|
| 50 Mbps | 43,390 | 29 Mbps |
| 100 Mbps | 11,328 | 39 Mbps |
| 200 Mbps | 15,572 | 41 Mbps |
| 300 Mbps | 6,669 | 46 Mbps |

241. The results show that the average subscriber on the 50 Mbps plan achieved about 29 Mbps, the average subscriber on the 100 Mbps plan achieved about 39 Mbps; the average subscriber on the 200 Mbps plan achieved about 41 Mbps; the average subscriber on the 300 Mbps plan achieved about 46 Mbps, or just over one-fifth of the promised speed.

II. Spectrum-TWC Misled Subscribers By Promising Reliable Access To Online Content That It Chose Not to Deliver

242. Subscribers use the Internet to access online content, which can include Internet websites and applications like Facebook, YouTube and FreshDirect; gaming platforms like League of Legends; television shows and sports events through streaming video connections on Hulu or ESPN.com; and movies on sites like Netflix, to name a few examples.

243. During the Relevant Period, Spectrum-TWC served as a virtual gatekeeper to a subscriber's access to such products and services available on the Internet. Not only did Spectrum-TWC have control over the equipment it leased to a subscriber and the bandwidth it made available to her, Spectrum-TWC also determined whether a subscriber had reliable access to online content because that content had to travel through Spectrum-TWC's interconnection points with backbone and content providers.

244. Despite making reliable access to online content a cornerstone of its marketing during much of the Relevant Period, Spectrum-TWC did not maintain sufficient ports¹⁹ in its connections with backbone and content providers to process the ever-increasing volume of online content sought by its subscribers.

245. Spectrum-TWC's decision not to install the required port capacity led to its interconnection points routinely becoming over-congested with traffic.

246. This congestion was the result of Spectrum-TWC's deliberate strategy to use its own subscribers as leverage to extract fees from backbone and content providers.

247. As a result of this congestion, Spectrum-TWC subscribers faced the slowdowns, buffering, interruptions and other frustrations that Spectrum-TWC's ads specifically promised would not exist when accessing online content, including Netflix, online games and other content featured in Spectrum-TWC's advertising materials.

A. Spectrum-TWC Represented That Subscribers Would Get Reliable Access To Online Content

248. Virtually every Spectrum-TWC advertisement for Internet service during the Relevant Period explicitly promised reliable Internet service, or made one or more of several concrete claims about the type of Internet service it would provide to its subscribers.

249. For example, Spectrum-TWC ads repeatedly told subscribers they could get Internet content with “no buffering,” “no slowdowns,” “no lag,” and that they could access online content “without interruptions,” “without downtime” and “without the wait.”

¹⁹ Ports are physical hardware sockets where one network can plug into another network through a fiber-optic wire. Ports are located at interconnection points between the ISP and backbone and content providers. Higher port capacity at an interconnection point allows more data to be transferred between networks at a given time.

250. Often, Spectrum-TWC linked the company's performance claims to popular Internet activities, like streaming movies on Netflix or playing online games.

251. In early 2012, to highlight its role in getting its subscribers popular online content, Spectrum-TWC launched an \$80 million advertising campaign called "Enjoy better."

252. As Spectrum-TWC's Chief Marketing Officer explained at the time, the new campaign aimed to link Spectrum-TWC to "the things that consumers love to do and get through us" so that consumers would understand that "we help you get to things you love."

253. Spectrum-TWC's campaign ran extensively in New York and highlighted the popular online products and services that subscribers could access through Spectrum-TWC's Internet service.

254. Often, Spectrum-TWC's commercials inserted the names of companies like Facebook and Netflix between "Enjoy" and "better," so they read, for example, "Enjoy Netflix better."

255. During this time, Spectrum-TWC also promised its customers that they could "Stream Netflix and Hulu movies and shows effortlessly" and "Watch YouTube video[s] without waiting."

256. A Spectrum-TWC commercial in 2012 showed wireless devices reliably streaming movies and games, displayed logos for popular web services like Netflix, and featured a voiceover pledging that Spectrum-TWC would deliver: "Movies *without downtime*. Games *without lag time*. Do whatever you love with the best Internet around":



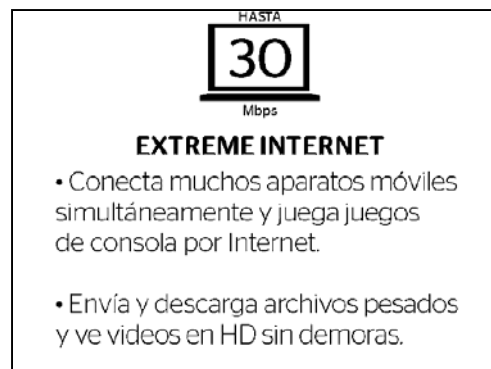
257. A mailer from 2013 promised:

With Internet from TWC, you're connected to everything you love to do online, faster. Streaming your favorites for movie night? **With no buffering**, you can spend more time watching and less time waiting. Getting your game on? You've got a true edge with all the speed you need and **none of the lag**. Your wait is over. Get ready to log on to the most instant Internet ever.

(Emphases added.)

258. The 2013 mailer also pledged, without qualification, that subscribers could stream high-definition movies with “absolutely no buffering.”

259. Spectrum-TWC delivered a similar message to Spanish speakers. For example, a Spectrum-TWC mailer from 2013 (excerpted below) promoted the 30 Mbps “Extreme Internet” speed plan by assuring subscribers, among other things, that they could stream high-definition video content “sin demoras” (which translates as “without delays”):



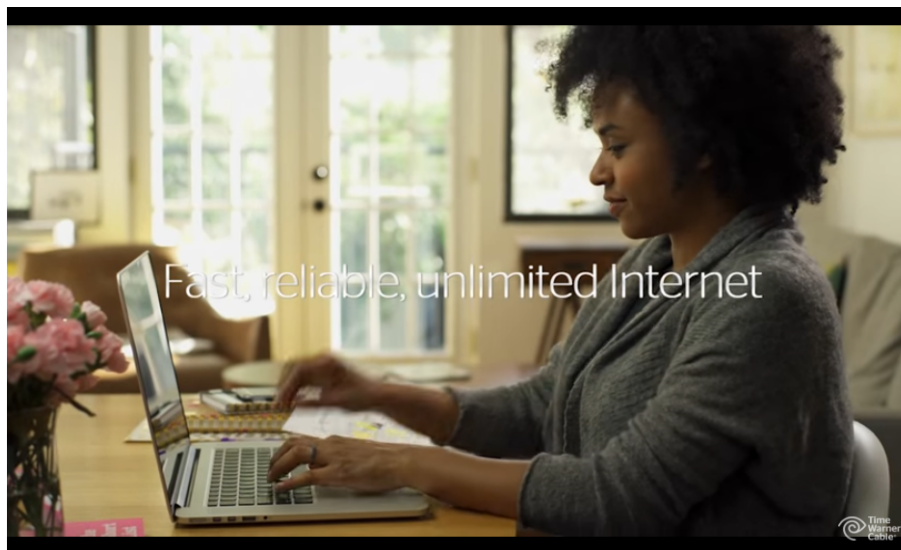
260. Similarly, a Spectrum-TWC mailing in 2015 specifically promised that subscribers could stream Netflix and Hulu “without interruptions:”



261. The second page of the mailing made the same claim in Spanish: “El redimiento que necesitas para transmitir y ver películas y programas en Netflix™ y Hulu™, sin interrupciones.”

262. In certain advertisements, Spectrum-TWC depicted the frustrations users commonly faced with a spotty and unreliable connection in an effort to induce consumers to sign up with Spectrum-TWC.

263. For example, a 2016 web commercial, shown in the screenshot below, promised “Fast, reliable, unlimited Internet” on screen while a voiceover assured consumers that they would receive Internet service that “includes much more than just a connection. It starts with our *blazing fast, super-reliable* connection.” The voiceover continued, “stream your favorite movies and TV shows with *no buffering*.”



264. Based on these ads, a Spectrum-TWC subscriber would have expected to receive reliable access to online content in general and, in particular, to Netflix, online games, and the other popular content providers. Conversely, the same subscriber would have expected to avoid several specific hallmarks of an unreliable and underperforming Internet connection, including buffering, interruptions and lag time.

B. Spectrum-TWC's Failure To Add Port Capacity Deprived Its Subscribers Of Reliable Access To Online Content

265. Throughout the Relevant Period, subscribers' demand for online content continued to grow exponentially, causing traffic flowing through Spectrum-TWC's interconnection points to grow by 40% or more each year.

266. To keep up with this exponential growth in traffic, Spectrum-TWC needed to regularly add ports to its interconnection points to meet the growing content demands of its subscribers.

267. Spectrum-TWC knew that by failing to add more ports to its interconnection points with its backbone and content providers, its network would suffer

from interruptions and slowdowns during peak hours, and deprive its subscribers of reliable access to online content.

268. Despite making access to online content a central theme of its “Enjoy better” marketing campaign, Spectrum-TWC, for much of the Relevant Period, failed to maintain sufficient ports at its interconnection points with backbone and content providers.

269. Spectrum-TWC’s subscribers were effectively pawns in the company’s deliberate strategy to extract fees from backbone and content providers in exchange for granting access to Spectrum-TWC’s subscribers.

270. The high congestion levels at interconnection points had a foreseeable and measurable negative impact on the reliability of a Spectrum-TWC subscriber’s access to online content.

271. The effects of high congestion levels at interconnection points are measured by two metrics of Internet reliability: packet loss and latency.

272. Packet loss is when packets of data being communicated between networks fail to reach their destination. High levels of packet loss result in slower download and upload speeds, poor quality Internet phone services and pauses or interruptions when streaming media or playing games online.

273. Latency is the time for a data packet to go from a device to the content provider and back. High latency, also called “lags,” adversely affects the reliability of Internet service. A high-latency network connection could disrupt the performance of online gaming, videoconferencing, internet phone service, and streaming media services.

274. Spectrum-TWC used an industry rule of thumb to assess whether there was traffic congestion at an interconnection point. This standard generally dictated that ISPs should add more ports if over 70% of the interconnection ports' capacity were utilized during peak hours.

275. At 70% port capacity utilization, ports may have episodes of congestion that result in slowdowns and interruptions for subscribers. The episodes of congestion increase in frequency and severity as port utilization approaches 90%, and can cause certain applications like streaming video and online gaming to stop working entirely. To continue with the highway analogy, if there are not enough access lanes to a bridge, that can cause a traffic jam.

276. At various times during the Relevant Period, Spectrum-TWC's ports with certain of its backbone and content providers far exceeded the 70% threshold.

277. Table 8 provides a snapshot of the monthly peak hours port utilization for Spectrum-TWC's top backbone and content providers between December 2013 and February 2014:

Table 8: Monthly Peak Hours Port Utilization (2013-2014)

| Backbone/Content Provider | Dec. | Jan. | Feb. |
|----------------------------------|-------------|-------------|-------------|
| XO | 91% | 92% | 92% |
| Tata | 88% | 83% | 87% |
| Akamai | 73% | 73% | 81% |
| Level3 | 82% | 87% | 91% |
| NLayer | 87% | 89% | 80% |
| Cogent | 96% | 96% | 90% |

278. These high levels of port utilization with Spectrum-TWC's backbone and content providers resulted in Spectrum-TWC's subscribers failing to receive reliable access to online services and applications.

C. Spectrum-TWC Promised Reliable Access To Online Content That It Intentionally Failed To Deliver In A Bid To Extract Fees From Backbone and Content Providers

279. At the same time it advertised reliable access to online content, Spectrum-TWC rolled out a new interconnection strategy that it knew would cause subscribers to experience the very performance issues that Spectrum-TWC's ads promised they would avoid.

280. In 2011, with consumer demand for content poised to grow dramatically, Spectrum-TWC saw an opportunity to generate additional revenue by renegotiating its arrangements with its backbone and content providers.

281. Revisiting earlier arrangements, in which Spectrum-TWC often exchanged data with backbone and content providers for free, Spectrum-TWC now sought to make those providers pay Spectrum-TWC for access to its subscribers.

282. A March 2011 strategy document for senior management titled "Internet Economics" detailed Spectrum-TWC's approach.

283. In that document, Spectrum-TWC outlined how ending such free arrangements "should eventually lead to longer-term revenue growth and cost containment."

284. A senior Spectrum-TWC executive explained in an email a short time later that, as consumer demand for content exploded, the company wanted to take the opportunity to extract additional revenues from content providers:

Our interconnect strategy these days, is more about how we manage our backbone and especially edge resources with the enormous growth in content. The transit costs are rounding errors compared to impacts to the edge of making the wrong decisions. **We really want content networks paying us for access** and right now we force those through transit that do not want to pay.

(Emphasis added.)

285. Spectrum-TWC's ability to control access to Spectrum-TWC subscribers gave it leverage over backbone and content providers in the negotiations.

286. Absent a payment, Spectrum-TWC could effectively "throttle" or limit the ability of backbone and content providers to deliver online content by either decommissioning ports or failing to maintain sufficient ports at interconnection points to handle the ever-increasing traffic load.

287. As a Spectrum-TWC executive observed in an internal email from 2013, its contentious relationships with its backbone and content providers "may be **artificially throttling** [subscriber] demand." (Emphasis added.)

288. The specific tactic Spectrum-TWC used most frequently to limit port capacity was to refuse to add additional ports, thereby leaving its backbone and content providers to drop data packets or find a more circuitous route to transmit the traffic, which increases latency.

289. Internal documents from Spectrum-TWC confirmed that subscribers experienced the harm expected from Spectrum-TWC's sharp interconnection practices.

290. In the second quarter of 2015, for example, as part of an effort to track the experience of subscribers, Spectrum-TWC surveyed its customers about certain reliability issues. In the prior 30 days: (i) 42% of subscribers reported an "interruption in Internet

service”; (ii) 37% of subscribers reported a “buffering problem”; and (iii) 25% experienced “Issue with streaming video content.”

291. These poor customer survey results were the predictable outcome of Spectrum-TWC’s strategy to extract revenues from backbone and content providers, at the expense of Spectrum-TWC’s subscribers.

1. Spectrum-TWC Misled Subscribers By Falsely Promising Reliable Access To Online Content Broadly

292. Content providers rely on several major backbone providers to carry their traffic to ISPs.

293. For example, one major backbone provider was Cogent. For much of the Relevant Period, Cogent and Spectrum-TWC had a dispute because Cogent refused to pay for access to Spectrum-TWC’s subscribers.

294. Spectrum-TWC responded to Cogent’s refusal to pay for access to its subscribers by delaying or avoiding capacity upgrades, which had the effect of throttling incoming traffic from Cogent.

295. Cogent explained the consequences of Spectrum-TWC’s actions to delay or avoid capacity upgrades in a letter dated July 29, 2015:

The problem that exists today – packets dropping on the ground to the detriment of your customers and ours – is the direct and foreseeable result of TWC’s decision to cease upgrading peering capacity with Cogent This has been going on for **more than two years**. Our proposal is that the parties use all the tools to alleviate congestion . . . with each side bearing its own very small expense (\$10,000 for a 10 Gbps port) of adding capacity. TWC has rejected that.

(Emphasis added.)

296. As mentioned in the letter, Spectrum-TWC could have unclogged the congested interconnection ports with Cogent at any time for a relatively low cost of

\$10,000 per 10 Gbps²⁰ of additional capacity. But Spectrum-TWC did not do so for many years.

297. On one occasion during its dispute with Cogent, a senior Spectrum-TWC executive even suggested temporarily alleviating congestion with Cogent because high levels of congestion could have harmed Spectrum-TWC's FCC test scores.

298. In an email, dated June 17, 2013, Spectrum-TWC's head of strategy for Spectrum-TWC, suggested:

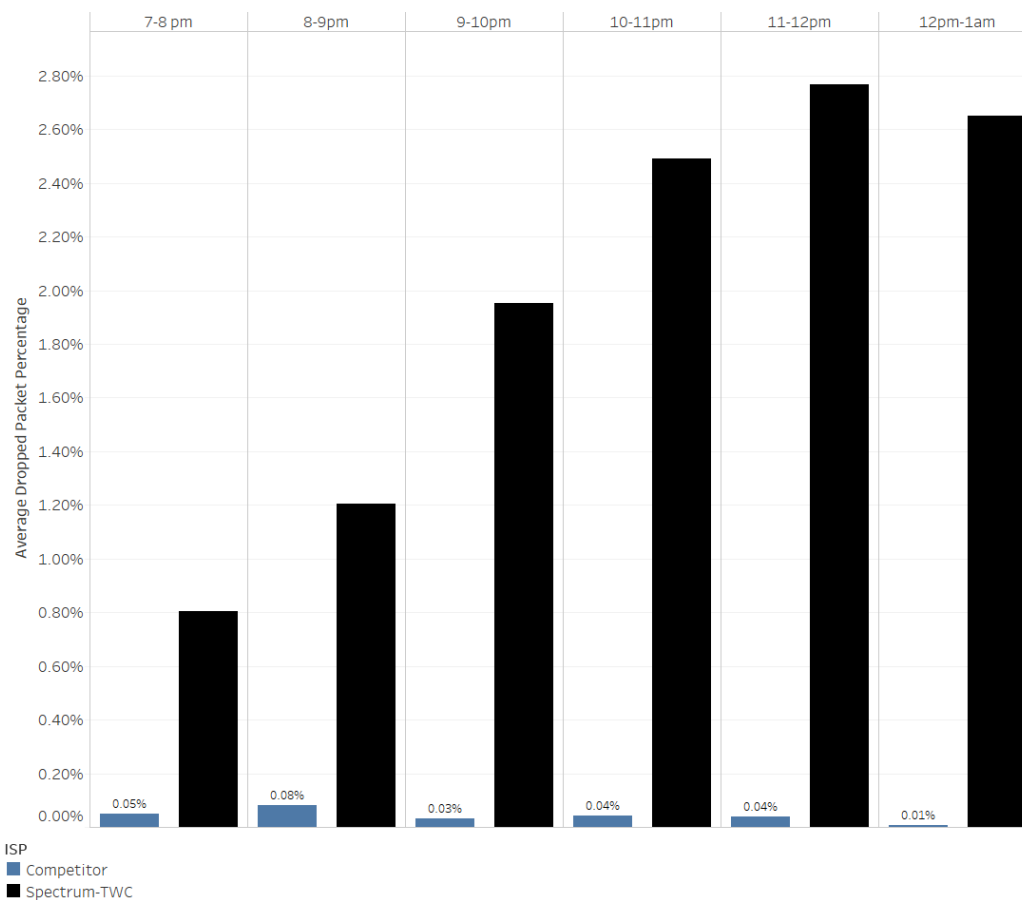
Our Sam Knows scores are like watching a slow-motion train wreck. We need to get in front of this. One thing I think we may need to be prepared to do **is just give more ports to Cogent during sweeps month** [when FCC results are measured for purposes of the MBA report]. **We don't have to make any promises, we just have to make it work temporarily.**

(Emphasis added.)

299. As depicted in Chart 5 below, the average peak hour packet loss for traffic carried by Cogent to Spectrum-TWC subscribers from 2014 through 2015 was far higher than the packet loss experienced by subscribers to another major New York-area cable ISP that maintained sufficient port capacity with Cogent.²¹

²⁰ "Gbps" is gigabits-per-second.

²¹ Chart 5 was constructed using Cogent packet loss data.

Chart 5: Cogent Ports Average Peak Hour Packet Loss (2014-2015)

300. Spectrum-TWC's higher level of packet loss led to interruptions and slowdowns for its subscribers seeking content delivered through Cogent's network.

301. Spectrum-TWC knew that during the pendency of its dispute with Cogent, Spectrum-TWC's subscribers were not getting reliable access to online content, and were experiencing packet loss and high latencies. Despite its knowledge that it was not delivering the Internet services it had promised to its subscribers, Spectrum-TWC failed to take any steps to invest in additional port capacity for its network for much of the Relevant Period.

302. It was only after the FCC's Open Internet Order required Spectrum-TWC to provide Cogent with equal access to its subscribers, did Spectrum-TWC resolve its

dispute with Cogent and agreed to add additional ports. Within a few months after it signed the agreement in October 2015, Spectrum-TWC added additional ports. This quickly reduced the level of packet loss and improved the experience of Spectrum-TWC's subscribers who consumed content delivered through Cogent.

2. Spectrum-TWC Misled Subscribers By Falsely Promising Reliable Access To Netflix

303. Between 2012 and 2014, Spectrum-TWC ran advertisements assuring subscribers they could "Enjoy Netflix better." At the same time Spectrum-TWC ran these ads it was engaged in a long running dispute with Netflix that had a measurable negative impact on the quality of subscribers' Netflix video streams.

304. During the Relevant Period, Netflix was one of the most popular sources of streaming video and was also a competitor to Spectrum-TWC's own cable television offerings.

305. For much of the Relevant Period, Netflix accounted for over 40% of Internet traffic on Spectrum-TWC's network.

306. Netflix could only deliver its content to subscribers through the last mile access network controlled by Spectrum-TWC. Netflix even offered to install for free its own equipment on Spectrum-TWC's network to ensure smooth content delivery to subscribers. Spectrum-TWC, however, rejected that offer and sought payment from Netflix in exchange for unimpeded access to the last mile connection to Spectrum-TWC subscribers.

307. Absent a payment, Spectrum-TWC failed to maintain enough port capacity at interconnection points to handle the ever-increasing traffic load, and thereby, effectively limited the Netflix traffic flowing to Spectrum-TWC subscribers.

308. While negotiations with Netflix were ongoing between 2012 and June 2014 (the “Dispute Period”), Spectrum-TWC did not inform subscribers about the negative effect that the protracted dispute with Netflix had on its subscribers’ ability to enjoy content from Netflix.

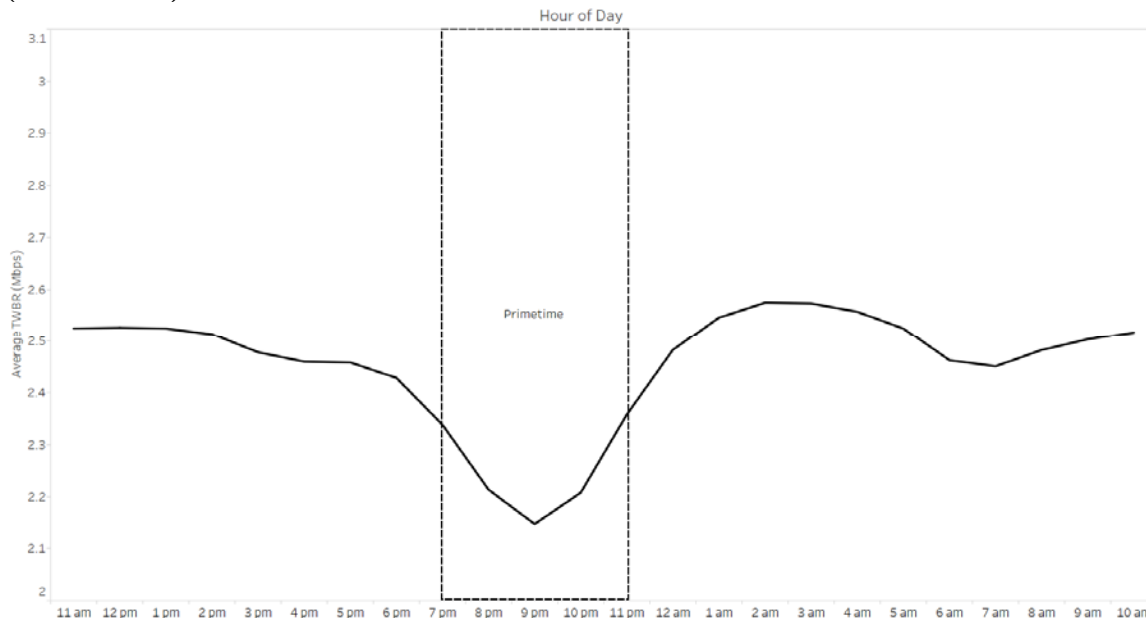
309. The negative effects of Spectrum-TWC’s bargaining tactics, which included deliberately failing to provide sufficient interconnection capacity to meet subscriber demand for Netflix, are reflected in Netflix’s time-weighted bit rate metric (“TWBR”). TWBR measures the average streaming video speed received by Spectrum-TWC subscribers. Slower streaming speeds are associated with reduced picture resolution (e.g., from high definition to standard definition or lower), additional buffering and other video performance issues, including pixelated screens, interruptions and outages.

310. Netflix’s top high-definition streams traveled at a bit rate of about 4.8 Mbps. Standard definition streams traveled at speeds below 3 Mbps.

311. Chart 6 below shows that the quality of the Netflix video streams received by Spectrum-TWC subscribers dipped significantly during peak hours during the Dispute Period.²² This resulted in subscribers getting poorer quality streams during the very hours when they were most likely to access Netflix.

²² Chart 6 is constructed using Netflix data.

Chart 6: Average Netflix Streaming Speed For Spectrum-TWC Subscribers (2012 - 2014)



312. In June 2014, Netflix finally agreed to Spectrum-TWC’s demands and paid for access to Spectrum-TWC’s network. In a few months, Spectrum-TWC upgraded its interconnection ports and the quality of Netflix streams for subscribers improved dramatically.

313. Spectrum-TWC knew that its refusal to add capacity to ports carrying Netflix traffic reduced the quality of Netflix content provided to its subscribers.

314. In an email to a Netflix employee, dated July 23, 2014, an employee of Spectrum-TWC expressed concern at the company’s poor streaming quality results and asked: “Do you have a high level explanation for that (that you’re at liberty to say)? I’m just wondering if there is something we need to address on our side (**besides firing up the peering with you** we have on deck).” (Emphasis added.)

315. Netflix’s response confirmed that “firing up the peering,” (in other words, adding ports) would solve the problem and explained that “[i]n the end, if you increase

hours of viewing at peak without having any more bandwidth available it results in lower speed per subscriber.”

316. An internal Spectrum-TWC presentation, dated February 2015, summarized the impact on various performance metrics after Netflix agreed to pay Spectrum-TWC for access to the last mile:

NFLX Bit Rate impact on Backbone Traffic (TWC+ BHN backbone traffic)

| | Apr 2014 | December 2014 | December 2014 | |
|-----------------------------|------------------|-------------------|---------------|------------|
| | Pre Netflix Deal | Post Netflix Deal | No Deal | Assumption |
| Backbone Traffic P95 (Gbps) | 5,478 | 7,951 | 7,261 | |
| Netflix % | 34% | 40% | 34% | |
| Netflix Peak Traffic (Gbps) | 1,846 | 3,180 | 2,490 | |
| TWC Avg. Stream Rate (Mbps) | 2.49 | 3.18 | 2.49 | |
| Netflix Peak Streams | 741,400 | 1,000,126 | 1,000,126 | |

317. This table showed that once Netflix agreed in June 2014 to pay Spectrum-TWC, Spectrum-TWC subscribers’ average TWBR (referenced in the table as “TWC Avg. Stream Rate”) quickly jumped by 28%—from 2.49 Mbps in April 2014 to 3.18 Mbps in December 2014. The higher speeds improved picture quality and reduced buffering and other interruptions that Spectrum-TWC’s subscribers experienced.

318. Had Spectrum-TWC not reached a deal with Netflix, as represented in the column marked “December 2014 No Deal Assumption,” Spectrum-TWC calculated that subscribers would have continued to suffer by receiving slower, lower quality streams despite Spectrum-TWC’s promises to the contrary.

3. Spectrum-TWC Misled Subscribers By Falsely Promising Reliable Access To Online Games

319. In its advertisements, Spectrum-TWC made specific appeals to online gamers, featuring popular gaming systems in its advertisements and promising gaming

without “lag time.” However, for much of the Relevant Period, Spectrum-TWC’s interconnection practices led to many subscribers experiencing lag and other interruptions when playing online games.

320. One of the most popular online games during the Relevant Period was League of Legends, which was developed and published by Riot Games. League of Legends is a multiplayer, online battle arena video game. It was launched in October 2009 and rapidly grew in popularity.

321. As of January 2014, globally, over 67 million people played League of Legends per month, 27 million per day, and over 7.5 million concurrently during peak hours. In September 2016, Riot Games estimated that over 100 million people worldwide played each month.

322. Riot Games carefully tracked the latency of its servers and packet loss to measure its customers’ service quality.

323. In general, Riot Games specified a “stable latency” of less than 60 milliseconds and a packet loss of less than two percent to ensure a “good network experience.”

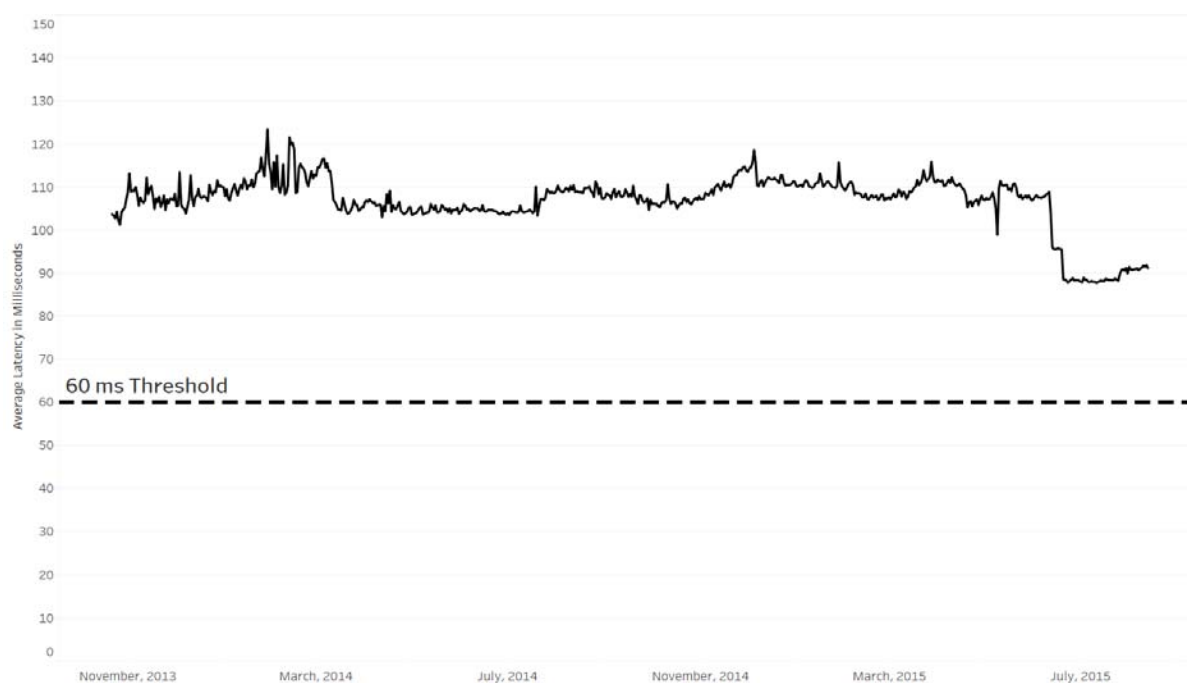
324. Latency above 100 milliseconds affected performance in key parts of the game, creating lag time that put Spectrum-TWC subscribers at a disadvantage to their gaming competitors on other ISP networks. Similarly, packet loss of more than two percent resulted in interruptions, buffering, and other performance issues.

325. Data from Riot Games confirmed that from at least September 2013, when Riot Games started to maintain this data, through August 2015, when Riot Games agreed

to pay Spectrum-TWC for access, Spectrum-TWC subscribers did not enjoy a “good network experience.”

326. As reflected in Chart 7 below, Spectrum-TWC subscribers in New York experienced average latencies above 100 milliseconds when playing League of Legends until the summer of 2015:²³

Chart 7: Average Latency For Spectrum-TWC Subscribers On League of Legends (Nov. 2013-Aug. 2015)

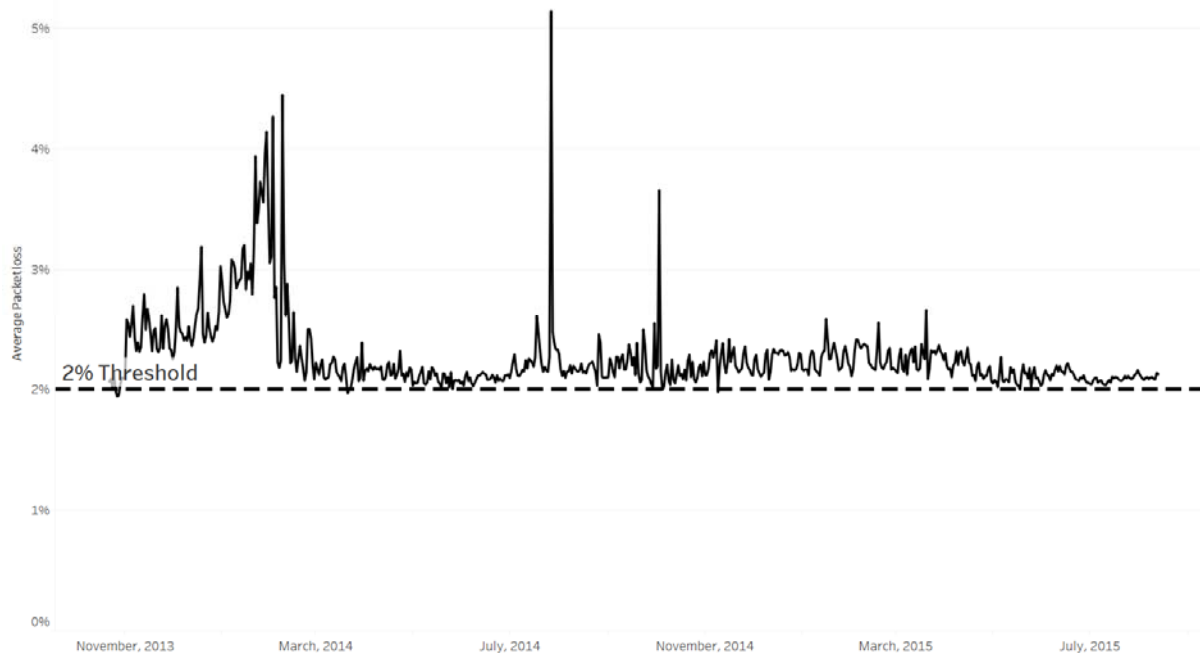


327. On average, these Spectrum-TWC subscribers experienced greater latency than subscribers of other New York-based ISPs.

328. Similarly, as shown in Chart 8 below, for most of the Relevant Period the packet loss experienced by Spectrum-TWC subscribers ran at or significantly above Riot Games’ two percent threshold:

²³ Chart 7 and 8 are constructed using Riot Games data.

Chart 8: Average Packet Loss For Spectrum-TWC Subscribers On League Of Legends (Nov. 2013-Aug. 2015)



329. It was not until Riot Games agreed to pay Spectrum-TWC for access to its subscribers, that Spectrum-TWC agreed to connect its ports to Riot Games. Prior to this, Spectrum-TWC deprived its subscribers of reliable access to online content as promised.

330. This data confirmed that Spectrum-TWC's network failed to deliver the reliable, interruption and lag-free gaming experience it had promised to subscribers.

CONCLUSION

331. Throughout the Relevant Period, Spectrum-TWC relentlessly touted consistently fast Internet speeds and reliable access to online content to solicit and retain subscribers. However, in reality, Spectrum-TWC knowingly failed to deliver on such promises.

332. Spectrum-TWC's deceptive advertising and business practices induced New York subscribers to overpay month-in and month-out for Internet services that Spectrum-TWC deliberately refused to provide.

**FIRST CAUSE OF ACTION PURSUANT TO
EXECUTIVE LAW § 63(12):
REPEATED AND PERSISTENT FRAUDULENT CONDUCT**

333. The OAG repeats and realleges paragraphs 1 through 332 as if fully set forth herein.

334. Executive Law § 63(12) authorizes the OAG to bring an action to enjoin repeated or persistent fraudulent conduct.

335. As set forth above, Defendants have engaged in repeated and persistent fraudulent acts, including but not limited to:

- a. Misrepresenting the speed of the Internet service consistently delivered to subscribers, including by:
 - i. Leasing subscribers older-generation, single-channel modems and deficient wireless routers that were incapable of delivering the promised speeds;
 - ii. Failing to allocate sufficient resources for Spectrum-TWC's network to reliably deliver the speeds promised to subscribers, including by failing to reduce the size of service groups or to add additional channels to each service group; and
 - iii. Promising subscribers wireless speeds that Spectrum-TWC could not deliver, including by omitting to disclose the real-world conditions that significantly limit wireless performance.

b. Misrepresenting the ability of subscribers to reliably access online content, including by:

- i. Failing to maintain sufficient port capacity to ensure that subscribers would not experience buffering, slowdowns, interruptions, lags, down times or other indicators of unreliable Internet service; and
- ii. Failing to maintain sufficient port capacity to ensure that subscribers could reliably access Netflix, online games and other specifically promised sources of content.

336. By these actions, Defendants have engaged in repeated and persistent fraudulent conduct in violation of Executive Law § 63(12).

**SECOND CAUSE OF ACTION PURSUANT TO EXECUTIVE LAW § 63(12):
VIOLATIONS OF GENERAL BUSINESS LAW § 349:
DECEPTIVE BUSINESS PRACTICES**

337. The OAG repeats and re-alleges paragraphs 1 through 332 and incorporates them by reference herein.

338. Executive Law § 63(12) authorizes the Attorney General to bring an action to enjoin repeated illegal acts or persistent illegality in the carrying on, conducting, or transaction of business.

339. GBL § 349 prohibits deceptive acts and practices in the conduct of any business, trade, or commerce or in the furnishing of any service in the state of New York.

340. Defendants have engaged in repeated and persistent deceptive acts and practices, including but not limited to:

- a. Misrepresenting the speed of the Internet service consistently delivered to subscribers, including by:
 - i. Leasing subscribers older-generation, single-channel modems and deficient wireless routers that were incapable of delivering the promised speeds;
 - ii. Failing to allocate sufficient resources for Spectrum-TWC's network to reliably deliver the speeds promised to subscribers, including by failing to reduce the size of service groups or to add additional channels to each service group; and
 - iii. Promising subscribers wireless speeds that Spectrum-TWC could not deliver, including by omitting to disclose the real-world conditions that significantly limit wireless performance.
- b. Misrepresenting the ability of subscribers to reliably access online content, including by:
 - i. Failing to maintain sufficient port capacity to ensure that subscribers would not experience buffering, slowdowns, interruptions, lags, down times or other indicators of unreliable Internet service; and
 - ii. Failing to maintain sufficient port capacity to ensure that subscribers could reliably access Netflix, online games and other specifically promised sources of content.

341. By these actions in violation of GBL § 349, Defendants have engaged in repeated and persistent illegality in violation of Executive Law § 63(12).

**THIRD CAUSE OF ACTION PURSUANT TO EXECUTIVE LAW § 63(12):
VIOLATIONS OF GENERAL BUSINESS LAW § 350:
FALSE ADVERTISING**

342. The OAG repeats and re-alleges paragraphs 1 through 332 and incorporates them by reference herein.

343. Executive Law § 63(12) authorizes the Attorney General to bring an action to enjoin repeated illegal acts or persistent illegality in the carrying on, conducting, or transaction of business.

344. GBL § 350 prohibits false advertising in the conduct of any business, trade, or commerce or in the furnishing of any service in the state of New York

345. Defendants have engaged in false advertising, including but not limited to:

- a. Misrepresenting the speed of the Internet service consistently delivered to subscribers, including by:
 - i. Leasing subscribers older-generation, single-channel modems and deficient wireless routers that were incapable of delivering the promised speeds;
 - ii. Failing to allocate sufficient resources for Spectrum-TWC's network to reliably deliver the speeds promised to subscribers, including by failing to reduce the size of service groups or to add additional channels to each service group; and
 - iii. Promising subscribers wireless speeds that Spectrum-TWC could not deliver, including by omitting to disclose the real-world conditions that significantly limit wireless performance.

b. Misrepresenting the ability of subscribers to reliably access online content, including by:

- i. Failing to maintain sufficient port capacity to ensure that subscribers would not experience buffering, slowdowns, interruptions, lags, down times or other indicators of unreliable Internet service; and
- ii. Failing to maintain sufficient port capacity to ensure that subscribers could reliably access Netflix, online games and other specifically promised sources of content.

346. By these actions in violation of GBL § 350, Defendants have engaged in repeated and persistent illegality in violation of Executive Law § 63(12).

**FOURTH CAUSE OF ACTION
VIOLATIONS OF GENERAL BUSINESS LAW § 349**

347. The OAG repeats and realleges paragraphs 1 through 332 as if fully set forth herein.

348. GBL § 349 prohibits deceptive acts and practices in the conduct of any business, trade, or commerce or in the furnishing of any service in the state of New York.

349. As set forth above, Defendants have engaged in deceptive acts and practices in violation of GBL § 349, including, but not limited to:

- a. Misrepresenting the speed of the Internet service consistently delivered to subscribers, including by:

- i. Leasing subscribers older-generation, single-channel modems and deficient wireless routers that were incapable of delivering the promised speeds;
 - ii. Failing to allocate sufficient resources for Spectrum-TWC's network to reliably deliver the speeds promised to subscribers, including by failing to reduce the size of service groups or to add additional channels to each service group; and
 - iii. Promising subscribers wireless speeds that Spectrum-TWC could not deliver, including by omitting to disclose the real-world conditions that significantly limit wireless performance.
- b. Misrepresenting the ability of subscribers to reliably access online content, including by:
 - i. Failing to maintain sufficient port capacity to ensure that subscribers would not experience buffering, slowdowns, interruptions, lags, down times or other indicators of unreliable Internet service; and
 - ii. Failing to maintain sufficient port capacity to ensure that subscribers could reliably access Netflix, online games and other specifically promised sources of content.

**FIFTH CAUSE OF ACTION
VIOLATIONS OF GENERAL BUSINESS LAW § 350**

350. The OAG repeats and realleges paragraphs 1 through 332 as if fully set forth herein.

351. GBL § 350 prohibits false advertising in the conduct of any business, trade, or commerce or in the furnishing of any service in the state of New York.

352. As set forth above, Defendants have engaged in false advertising in violation of GBL § 350, including, but not limited to:

- a. Misrepresenting the speed of the Internet service consistently delivered to subscribers, including by:
 - i. Leasing subscribers older-generation, single-channel modems and deficient wireless routers that were incapable of delivering the promised speeds;
 - ii. Failing to allocate sufficient resources for Spectrum-TWC's network to reliably deliver the speeds promised to subscribers, including by failing to reduce the size of service groups or to add additional channels to each service group; and
 - iii. Promising subscribers wireless speeds that Spectrum-TWC could not deliver, including by omitting to disclose the real-world conditions that significantly limit wireless performance.
- b. Misrepresenting the ability of subscribers to reliably access online content, including by:
 - i. Failing to maintain sufficient port capacity to ensure that subscribers would not experience buffering, slowdowns, interruptions, lags, down times or other indicators of unreliable Internet service; and

- ii. Failing to maintain sufficient port capacity to ensure that subscribers could reliably access Netflix, online games and other specifically promised sources of content.

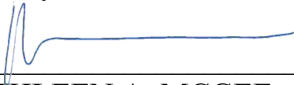
PRAYER FOR RELIEF

WHEREFORE, plaintiff requests an order and judgment:

- a. Permanently and preliminarily enjoining Defendants from violating the laws of the State of New York, including: Executive Law § 63(12); General Business Law §§ 349 and 350;
- b. Directing Defendants to produce an accounting of monies collected from consumers in New York paying for Internet services in violation of Executive Law § 63(12) or General Business Law §§ 349 and 350;
- c. Directing Defendants to disgorge all monies resulting from the fraudulent and illegal practices alleged herein;
- d. Directing Defendants to make full restitution to consumers and pay damages caused, directly or indirectly, by the fraudulent and deceptive acts and repeated fraudulent acts and persistent illegality complained of herein plus applicable pre-judgment interest;
- e. Directing Defendants to pay a civil penalty of \$5,000 for each violation of GBL Article 22-A, pursuant to GBL § 350-d;
- f. Directing such other equitable relief as may be necessary to redress defendants' violations of New York law;
- g. Awarding plaintiff costs of \$2,000 pursuant to CPLR § 8303(a)(6); and
- h. Granting such other and further relief as the Court deems just and proper.

New York, NY
January 31, 2017

Respectfully submitted,
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APPENDIX

Chart 1: FCC Panel Consistent Speeds (Aug. 2015 – Jan. 2016)

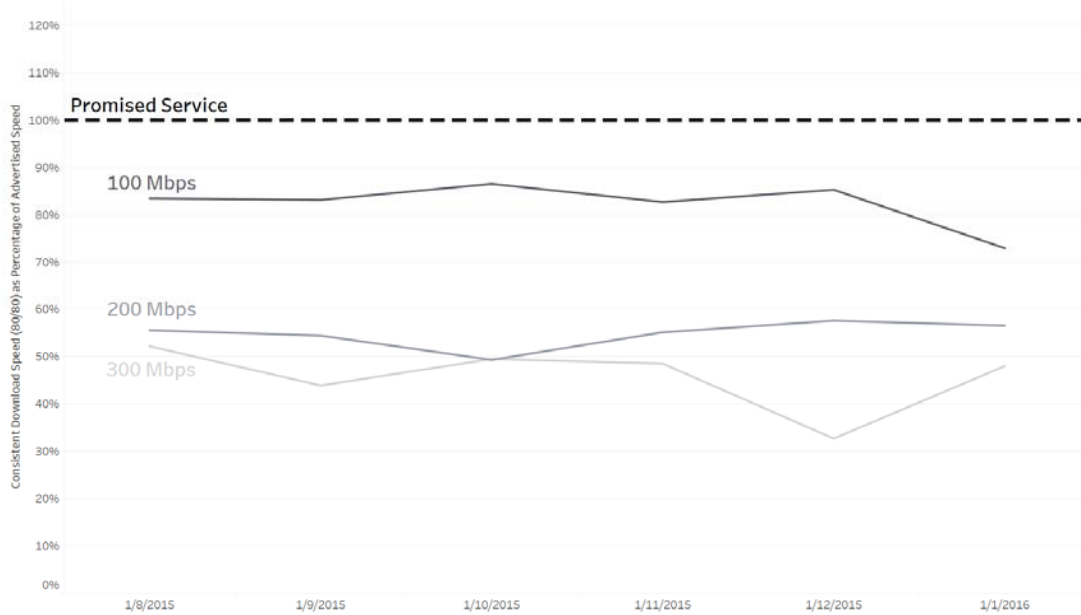


Chart 2: Spectrum-TWC Panel Consistent Speeds (Aug. 2015 – Jan. 2016)

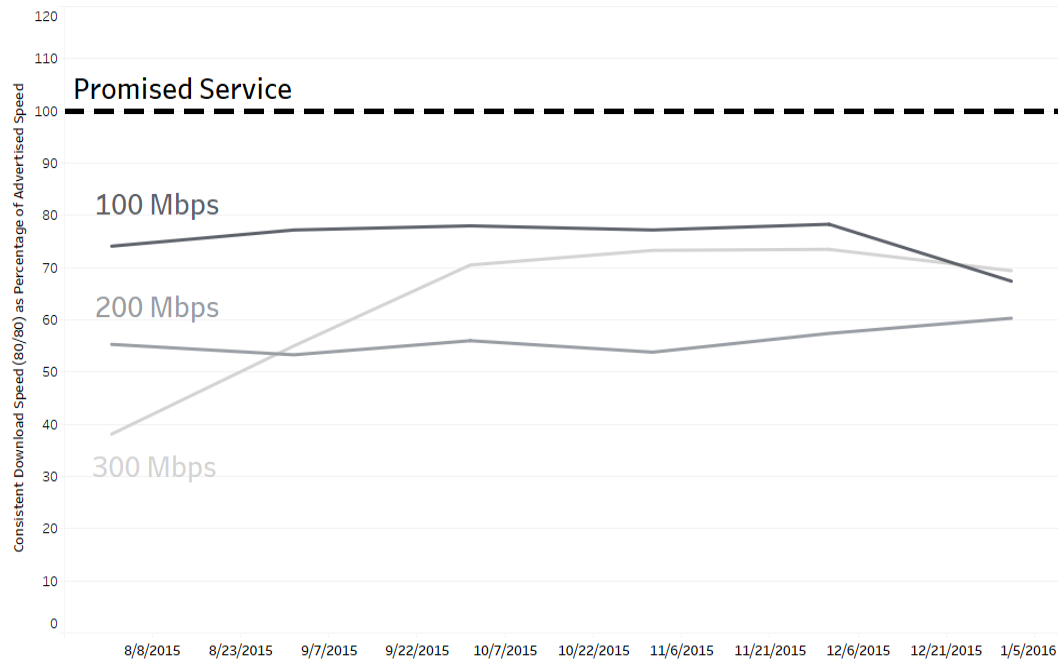


Chart 3: FCC Panel Consistent Speed Results (Mar. 2013 - Mar. 2014)

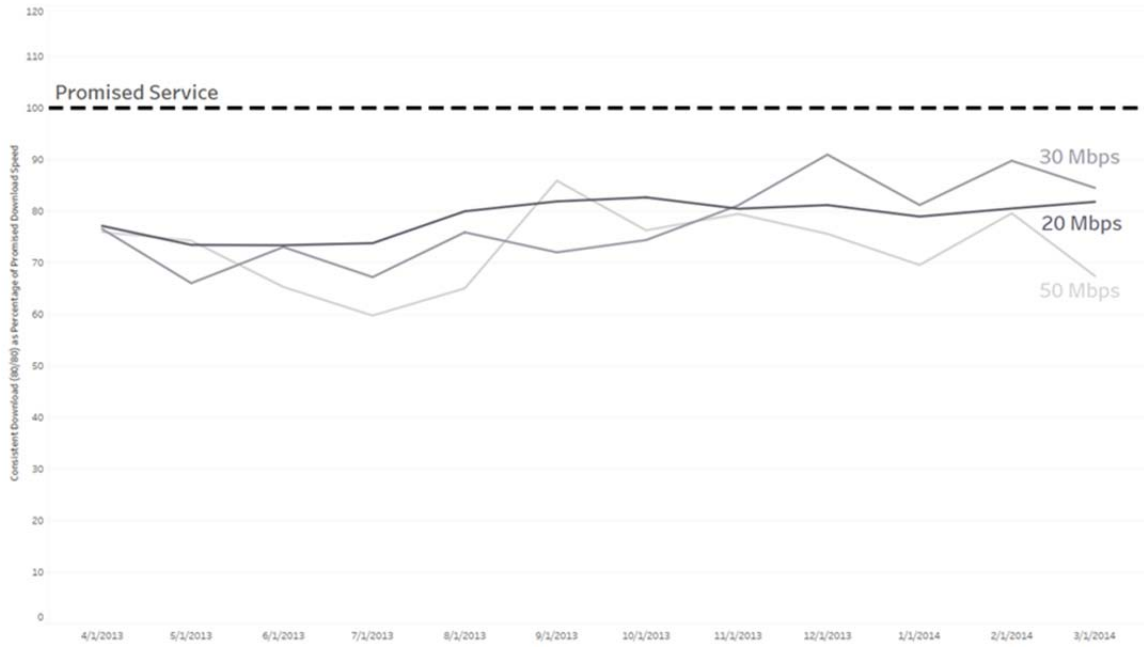


Chart 4: Spectrum-TWC Consistent Speed Results (Mar. 2013 - Mar. 2014)

