

**Before the  
CALIFORNIA PUBLIC UTILITIES COMMISSION**

In the Matter of the Joint Application of  
Sprint Communications Company L.P.  
(U-5112) and T-Mobile USA, Inc., a Delaware  
Corporation, For Approval of Transfer of  
Control of Sprint Communications Company  
L.P. Pursuant to California Public Utilities  
Code Section 854(a).

Application 18-07-011

And Related Matter.

Application 18-07-012

Direct Testimony

of

**LEE L. SELWYN**

on behalf of the

Public Advocates Office  
at the California Public Utilities Commission

January 7, 2019

REDACTED FOR PUBLIC INSPECTION

DIRECT TESTIMONY OF LEE L. SELWYN

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### **Attachments**

- 1 Statement of Qualifications
- 2 "Arbitration Everywhere, Stacking the Deck of Justice," The New York Times, October 31, 2015; "In Arbitration, a Privatization of the Justice System," The New York Times, November 1, 2015.
- 3 Glossary of Acronyms Used in this Report

# DIRECT TESTIMONY OF LEE L. SELWYN

## EXECUTIVE SUMMARY

### Introduction

The October 4, 2018 Amended Scoping Memo and Ruling issued by Assigned Commissioner Rechtschaffen identified a “non-exhaustive” list of fifteen “factors that the Commission will consider in making a public interest determination regarding the effects of the proposed [T-Mobile/Sprint] merger on the residents of California.” This testimony addresses Issues 1, 2, 3, 5, 9, 10, 13, 14 and 15, although not in that order.

### **ISSUE 1. How would the merger impact competition for services currently provided by Sprint or T-Mobile in any metropolitan area or other geographically distinct market?**

The mobile wireless telecommunications market in California and throughout the US currently exceeds the “highly concentrated” threshold established by the US Department of Justice/Federal Trade Commission *Horizontal Merger Guidelines* (“HMG”). Markets exhibiting a Herfindahl-Hirschman Index (HHI) in excess of 2500 are deemed “highly concentrated,” and mergers involving firms in highly concentrated markets that would increase the HHI by more than 200 points will be presumed to be likely to enhance market power. The HMG provides that this “presumption may be rebutted by persuasive evidence showing that the merger is unlikely to enhance market power.” No such “persuasive evidence” has been presented by the Joint Applicants in this case.

There are currently four (4) large facilities-based wireless Mobile Network Operators (“MNOs”) with broad nationwide coverage; the merger would reduce that number to only three. Based upon 2016 revenues, the HHI (at an industry-wide level) will increase from its pre-merger level of 2843 to a post-merger HHI of 3257, an increase of 414 that is well in excess of the HMG’s 200-point threshold. When calculated on the basis of more relevant geographic and product markets, even larger post-merger increase in the HHI will result. Moreover, as my testimony concludes, the Joint Applicants have offered no evidence or assurance that their proposed merger will *not* enhance their market power as they are required to do in order to overcome the HMG’s presumption.

There is, in fact, strong evidence that prices are higher in wireless markets with fewer than four firms. This is the conclusion of a 2014 study by the Organization for Economic Cooperation and Development (OECD), and its validity has been further confirmed by a survey that I have undertaken of several developed countries with three, four and five wireless operators. As a general matter, wireless service price levels in the US are decidedly higher than



in other western countries where multiple facilities-based carriers are present and where competition appears more intense.

### ISSUE 3. What are the relevant markets to consider?

An analysis of the extent to which a given market is “competitive” requires, at the outset, that a definition of the subject market be established. Market definition is typically expressed in terms of a “relevant product or geographic market” within which products or services are generally *substitutable* for one another and between which they are not. The *HMG* provides guidelines, referred to as the “hypothetical monopolist test,” as to how this determination is to be made. “Specifically, the test requires that a hypothetical profit-maximizing firm, not subject to price regulation, that was the only present and future seller of those products (‘hypothetical monopolist’) likely would impose at least a small but significant and non-transitory increase in price (“SSNIP”) on at least one product in the market, including at least one product sold by one of the merging firms.”

“Market definition focuses solely on demand substitution factors, i.e., on customers’ ability and willingness to substitute away from one product to another in response to a price increase or a corresponding non-price change such as a reduction in product quality or service.” Conversely, two products or services are *not* in the same relevant product market if customers are not willing “to substitute away from one product to another in response to a price increase or a corresponding non-price change such as a reduction in product quality or service.” The “hypothetical monopolist test” is a specific analytical tool used to determine whether two products fall within the same or different relevant product markets. The firm would not qualify as a “hypothetical monopolist” if by imposing a SSNIP it would lose so much business as to make the price increase unprofitable, indicating the existence of a substitute product within the same relevant product market. For wireless mobile telecommunications, the *relevant geographic market* is local in nature because customers are only able to select among service providers that actually offer service in the customers’ primary areas of interest – where they live and where they work. There are two retail *relevant product markets* – postpaid services and prepaid services; the wholesale market is a third *relevant product market*.

Use of the HHI to assess the level of market concentration requires, at the outset, a proper definition of the relevant product and geographic market. The relevant geographic market for mobile wireless services is fundamentally local in nature, because a consumer will purchase service from only those providers that offer coverage within the consumer’s primary geographic areas of interest – typically where he or she lives and works. For this reason, I have undertaken to develop separate HHIs for each of the 58 California counties, and have determined that, for many of them, the merger-driven increase in the HHI will far exceed the apparent HHI change at an industry-wide level.

## EXECUTIVE SUMMARY (continued)

Prepaid and Postpaid wireless services constitute separate and distinct relevant product markets. As a general matter, prepaid services provide fewer features, more limited coverage, and slower data speeds than postpaid services. Prepaid services are primarily attractive to customers who lack a credit card or who cannot otherwise meet the credit requirements for postpaid services. Although prepaid services sometimes carry a lower price than facially similar postpaid offering, their inferior quality makes them unattractive to those who can qualify for higher quality postpaid services. Since many prepaid service customers are *unable* to substitute a postpaid service in response to a small but significant and nontransitory increase in price (“SSNIP”) of the prepaid offering and, conversely, since most postpaid customers would be unwilling to substitute a lower quality prepaid service in response to a SSNIP of the postpaid service, the HMG’s “hypothetical monopolist test” for separate and distinct relevant product markets is satisfied, and these two services constitute separate and distinct product markets.

Prepaid services are particularly important to low-income consumers and communities that are unable to meet the credit requirement for postpaid services, and who would be forced to continue purchasing prepaid services even in the face of a possibly substantial price increase. If the merger goes forward, New T-Mobile will control roughly 59% of the prepaid services market. The HHI as it applies specifically to prepaid services would increase from the current (pre-merger) level of 3040 to a post-merger HHI of 4508. This 1468-point increase far exceeds the HMG’s 200-point threshold, and would clearly afford the post-merger New T-Mobile a sufficiently large increase in market power that price increases for these services would almost certainly result.

### **ISSUE 9. Would the merger increase the market power of the incumbent local exchange carriers and their wireless affiliates?**

The Joint Applicants currently operate in a market dominated by AT&T and Verizon, but upon closer examination it is apparent that Sprint and T-Mobile primarily compete against each other rather than against the two currently dominant carriers. In fact, a substantial component of T-Mobile’s growth in recent years was primarily at the expense of Sprint, less so for AT&T and Verizon. Except for a small presence by US Cellular in a few California markets, there will be no further entry into the California wireless market, for at least two reasons: There is not likely to be any significant amount of additional wireless spectrum to be offered at auction by the FCC except in the millimeter band, and even if some modest amount of additional low- or mid-band spectrum did become available, it would be useful only as an adjunct to existing carriers’ existing holdings, not as a basis for any additional entry into the market. And when the merged Sprint and T-Mobile achieve a scale comparable to that of AT&T and Verizon, there will simply be no opportunity for any other entrant to challenge the three incumbents even if additional spectrum were to become available.

The mobile wireless telecommunications market in the United States is decidedly not a “contestable market” in the sense that incumbents’ conduct might be influenced by the threat of

## EXECUTIVE SUMMARY (continued)

additional entry. Entirely insulated from any threat of entry, there is simply no reason why any of the three post-merger roughly equal sized incumbents would perceive any long-term economic benefit in aggressively seeking to capture rivals' market shares rather than tacitly agree to a market allocation of roughly one-third share for each.

The Joint Applicants' already engage in some parallel conduct vis-a-vis their larger rivals, and the merger will create additional incentives and opportunities for the post-merger New T-Mobile to expand into new areas of parallel conduct going forward. AT&T and Verizon have succeeded in maintaining price levels well in excess of those set by Sprint and T-Mobile without materially sacrificing either market share or profits. A post-merger New T-Mobile will be far better off financially by engaging in tacit market allocation rather than attempting to capture small amounts of additional market share by maintaining price levels below those of AT&T and Verizon.

As an example of parallel conduct, Sprint and T-Mobile, together with all other US wireless providers, include mandatory arbitration/class action waiver provisions in their adhesion contracts for consumer and small business customers.

The Joint Applicants have engaged the Cornerstone Research firm to develop an econometric model purporting to empirically assess the likely competitive effects of the proposed merger. The model utilized a dataset compiled by Nielsen that consists of wireless performance data collected from a "panel" of some 45,000 smartphone users. However, the Nielsen software only works on Android phones. As a result, *no iPhone users are included in the Nielsen panel*. iPhones comprise some 39% of all wireless smartphones currently in use, but have been systematically excluded from the Cornerstone model. But this is hardly the only deficiency in the Nielsen dataset. It provides no information whatsoever on the service plan that the customer has chosen, the price being paid, whether the service is **[BEGIN T-MOBILE CONFIDENTIAL]** [REDACTED] **[END T-MOBILE CONFIDENTIAL]**, whether the data speed being measured for each user activity has been degraded due to the customer's choice of plan or the accumulated amount of usage during the billing cycle, or the fact that prepaid services typically receive lower priority from the carrier with respect to network speed.

The Cornerstone model inappropriately compares *current* pre-merger Sprint and T-Mobile costs and network quality with *future* post-merger New T-Mobile costs and quality, implicitly assuming that if the merger fails to go forward the two companies will make no network improvements on their own. The model also assumes that neither AT&T nor Verizon will make any network improvements or experience any cost reductions at all between now and the future time frame when New T-Mobile's gains are being projected to materialize. The model also assumes that any decrease in post-merger New T-Mobile's marginal costs relative to that of the two separate pre-merger companies will be flowed through, dollar-for-dollar, in lower prices to consumers, that none of the efficiency gains that are projected to result from the merger will be retained by the post-merger company or its shareholders. These gross oversimplifications of

complex wireless industry conditions strip the Cornerstone model of any relevance or value in assessing the economic merit of the proposed merger.

The Joint Applicants also seek to include cable multi-system operators (MSOs) such as Comcast and Charter in the relevant product market because of these companies' recent entry into the mobile wireless business. Such cable-based wireless services combine the MSOs' networks of wi-fi "hotspots" with wholesale services that they purchase from one or more MNOs, without which no competitively viable mobile wireless service could be offered. The notion that entry by cable companies poses a serious competitive challenge to Sprint, T-Mobile, AT&T or Verizon is utterly devoid of any merit, and should receive no consideration in the evaluation of the proposed merger.

**ISSUE 5. What merger-specific and verifiable efficiencies would be realized by the merger?**

The various "merger benefits" being claimed by the Joint Applicants have been exaggerated and, to the extent that any actually exist, are at best limited to facilitating their transition to 5G technology. The Joint Applicants' "benefits" theory is premised upon the notion that the increased scale of New T-Mobile's operations relative to those of the two companies standing alone will benefit from increased economies of scale, and in so doing will produce significant efficiency gains, lower marginal costs of inputs, and additional incentives both for New T-Mobile and for its customers. But this "bigger is better" theory could be applied to virtually any corporate merger or acquisition: The prospect of economic gains due to increased scale is not and must not be the sole consideration in addressing the public interest concerns surrounding a transaction of this magnitude. Moreover, in order for any public benefits to result from such efficiency gains (if, in fact, any would actually materialize), some significant portion of these gains would need to flow through to customers, or to the broader state and/or local economies. However, the loss of a competitor in this market makes the prospect of such flow-through highly unlikely.

The Joint Applicants' claims that the merger will dramatically increase the efficiency of their (joint) operation over that which exists under the two separate firms, even if true, is not a sufficient basis to overcome the potential anticompetitive effects that the merger will foster.

Prepaid services are provided by facilities-based MNOs as well as by resellers (MVNOs) that purchase wholesale services from one or more facilities-based carriers. Resellers such as MVNOs offer smaller MNOs such as Sprint and T-Mobile the ability to expand their retail distribution channels and, in particular, to address customers that might otherwise fall outside of their own marketing efforts. However, a facilities-based carrier's incentives to allow and to affirmatively support resale of their services diminishes as its market power increases. Because the post-merger New T-Mobile will have overwhelming dominance of the prepaid services market, it will have less incentive to support and facilitate MVNO resale, permitting it to exploit

its dominance of the prepaid market by raising prices. This outcome will be particularly detrimental for many low-income consumers, for whom prepaid services are the only type of wireless service for which they are qualified.

**ISSUE 2. What new services, if any, that are not currently provided by T-Mobile or Sprint, are contemplated to be provided by the merged entity? How would the merger impact competition for such services in any metropolitan area or other geographically distinct market?**

A second central theme of the Joint Applicants' case in support of the proposed merger is their claim that a post-merger New T-Mobile will be able to construct and deploy a far more extensive 5G wireless network with a total capacity many times as great as the sum of the capacities of the standalone 5G networks that each of the two companies could accomplish on their own. However, nationwide or even within California, availability of 5G is in no sense dependent upon the merger of T-Mobile and Sprint. Moreover, since this merger is likely to diminish competition in the US mobile wireless market, it is more likely to retard, rather than facilitate, 5G deployment. Prior to the announcement of their plan to merge in April of 2018, both companies had described their individual ambitious plans for 5G deployment in statement made to investors and to Wall Street. But in announcing their plans to merge, the Joint Applicants have revised their 5G story *du jour*. Now, T-Mobile can apparently no longer count on what its Chief Technology Officer had previously described as a "kick-ass" 5G future. Instead, he now testifies that "[o]n a standalone basis, we will deploy a nationwide 5G network, but will lack the bandwidth to deliver upon the full data rate and capacity gains possible for 5G." And where last year he had insisted that "[y]ou can deploy 5G on ANY frequency, and in the future, all spectrum will be 5G spectrum," his current story is that T-Mobile's "lack of access to significant amounts of available mid-band spectrum that is not encumbered with LTE subscribers (as well as a lack of large amounts of high-band spectrum nationally) will significantly limit [T-Mobile's] ability to provide a nationwide 5G system that can handle the most demanding high capacity 5G applications."

Upon closer examination, however, it becomes clear that such 5G efficiency gains as are being promised relate almost entirely to the *transition* to 5G rather than to a permanent post-transition condition. Moreover, even the kind of more rapid deployment of 5G that the Joint Applicants seek to ascribe to the merger will produce little or no actual public benefit inasmuch as the roll-out of 5G-capable handsets and other devices is expected to be far more gradual than the aggressive *network* deployment that the merger will purportedly permit. In any event, the type of transitory efficiency gains that the Joint Applicants describe can hardly overcome the anticompetitive losses that the permanent state of increased market concentration will produce.

**ISSUE 10. How would the merger impact the quality of, and access to, service to California consumers in metropolitan areas, rural areas, or other geographically distinct markets? What services would be affected?**

## EXECUTIVE SUMMARY (continued)

Both Sprint and T-Mobile individually possess more than sufficient spectrum capacity to serve rural areas. In California, T-Mobile currently holds between 110 and 172 MHz of bandwidth, and Sprint currently holds between 65.5 and 81.5 MHz of bandwidth. Many of these licenses cover expansive geographic areas and none cover areas smaller than a county. Carriers are not required to, and do not, provide service on a wall-to-wall basis throughout their licensed areas. Instead, service tends to be provided in the more densely populated areas, where radios and antennas are able to serve relatively large numbers of customers. Service in rural areas is generally confined to population centers such as town centers and principal highways. Also, because demand (in terms of volume of traffic) in rural areas is relatively low, even where service is available, only a small fraction of the licensed spectrum is actually placed into service.

Providing service to rural areas is constrained by capital investment considerations, and is not spectrum-constrained. Capital investment responds to profit opportunities, which have tended to be low in rural areas due to the high costs and relatively low potential revenues that the small populations are capable of generating. The Joint Applicants have offered no evidence that their merger would materially improve profit opportunities in rural areas to the point where additional capital would flow to these communities. As such, there is simply no basis to expect that the merger will do anything to improve wireless services in currently unserved and underserved areas.

There is nothing in either the merger or in the characteristics of 5G technology that can bring down the amount of capital investment required to provide service in rural areas. But even if integrating the two companies' networks would facilitate the transition to 5G, the incremental benefits of such integration are not sufficient to overcome the potential competitive harms that would result from the elimination of a competitor in this market.

### **ISSUE 13. Would the merger preserve the jurisdiction of the Commission to effectively regulate those utilities and their operations in California?**

As a technical matter, the merger does not directly affect the jurisdiction that the Commission presently retains, but the increased concentration and diminution of competition that would result may warrant renewed examination of the Commission's regulatory role with respect to certain wireless carrier terms and conditions. The arguments as to the gains from scale to be realized from the merger harken back to the "natural monopoly" era, in that the Joint Applicants maintain that even firms of their current size and scale cannot effectively compete and survive. A logical extension of this argument is that even greater scale and greater overall efficiencies could be achieved by combining all of the existing wireless carriers into a single, regulated "natural" monopoly.

State PUC jurisdiction over wireless services is limited to terms and conditions, not ratesetting. And the FCC has expressly forbore from regulating wireless rates. But at the time that the FCC issued its forbearance order in 1994, it was in the process of licensing multiple new

## EXECUTIVE SUMMARY (continued)

wireless carriers in addition to the preexisting two 800 MHz licensees. The view at the time was that with multiple competitors offering service, marketplace forces would obviate the need for regulation. But if this merger is approved, the number of competitors will drop to only three. And three is simply not large enough to assure a competitive outcome. The CPUC has in the past exercised its regulatory authority with respect to wireless carrier terms and conditions and, at the very least, if a three-firm market is the result, it is important that the Commission revisit the need for ongoing regulatory oversight of such terms and conditions, and consider adopting affirmative regulatory measures where anticompetitive practices are in evidence.

### **ISSUE 14. Would the benefits of the merger likely exceed any detrimental effects?**

The potential impact of the merger on New T-Mobile's ability to deploy massive 5G capacity relative to what the two companies could achieve on a stand-alone basis is overblown. The Joint Applicants claim that when combined, their networks can support a far greater geographic scope and bandwidth of 5G capacity than the sum of the two firms' individual spectrum holdings if forced to continue to operate on a standalone basis. However, we've heard this song before: T-Mobile had advanced similar "scale" and "efficiency" arguments when it sought in 2011 to defend its then-proposed merger with AT&T. These arguments were not persuasive to the FCC staff, which recommended that the merger not be allowed. Moreover, T-Mobile's spectacular growth in the immediate aftermath of that merger's demise puts a lie to such claims. In fact, following the collapse of its attempt to merge with AT&T, standalone T-Mobile managed to nearly double its total wireless connections by the end of 2016, going from 40-million in 2011 to 71-million by the end of 2016.

The potential anticompetitive impacts of the proposed merger of Sprint and T-Mobile far exceed any benefits than can realistically be expected to arise, and for that reason the merger should not be allowed to go forward.

### **ISSUE 15. Should the Commission impose conditions or mitigation measures to prevent significant adverse consequences and, if so, what should those conditions or measures be?**

For the reasons discussed throughout this testimony, the potential anticompetitive impact of reducing the number of wireless providers from four to three far exceeds whatever nominal – and largely transitory – economic benefits that might result from the transaction *and* that would actually be flowed through to consumers. For all of these reasons, the Commission should determine that the proposed merger of Sprint and T-Mobile is decidedly *not* in the public interest and should therefore withhold its approval of the transaction.

However, in the event that the Commission determines otherwise and approves the merger, there are certain conditions and mitigation measures that might reduce, but in no sense eliminate, the anticompetitive consequences of losing a competitor in this market. Several Public

## EXECUTIVE SUMMARY (continued)

Advocates Office witnesses have proposed such conditions (Eileen Odell at 7, Adam Clark at 6, Kristina Donnelly at 4-5), and I will not repeat those here. I am, however, addressing one particularly important measure that would operate to significantly limit the ability of the merged New T-Mobile to wield its formidable economic power in the handling of disputes with individual consumers. As the number of potential service providers dwindles to three, consumers are less able to “vote with their feet” and take their business elsewhere in the event they become dissatisfied with any aspect of the service they are receiving. If the merger is approved and the Joint Applicants’ combined market power is allowed to escalate, it is critical that consumers be afforded a legitimate opportunity to settle disputes with the service provider in a fair and even-handed manner.

Thus, any approval of the proposed merger should be expressly conditioned upon the Joint Applicants’ agreement to eliminate all mandatory arbitration and class action waiver provisions in their adhesion contracts with residential and small business customers. Most customers do not read the fine print in the lengthy adhesion contracts that are presented to them at the point of sale. One of the CSAs used by T-Mobile, if presented in standard 12-point double-space typewriter format, would fill roughly 11 standard 8-1/2 by 11 inch sheets of paper. Customers are generally not aware of the mandatory arbitration / class action waiver provisions or their implications, nor are they aware of the limited “opt-out” opportunity or why they should or should not exercise it. Customers are not aware of these provisions because they are contained in the “fine print” of adhesion contracts that are rarely if ever read by the consumer. Most important, because these services are not actively regulated by the CPUC or the FCC, customers lack the traditional regulatory protections that had been available prior to deregulation. The Commission has the authority to, and should, eliminate mandatory arbitration / class action waiver provisions from all California wireless service adhesion contracts. However, at the very least, if the merger is to go forward, New T-Mobile should be required to consent to remove these unconscionable provisions as a condition for approval.

### Conclusion

When examined with respect to the relevant product and geographic markets, the proposed merger of Sprint and T-Mobile exceeds the HHI threshold for mergers in highly concentrated markets as established in the *Horizontal Merger Guidelines*, and thus will be presumed to be likely to enhance market power unless the merging parties are able to present persuasive evidence to the contrary. The Joint Applicants here have been unable to provide such persuasive evidence.

They have not shown any permanent substantive efficiency gains other than the possibility that the merger might facilitate the transition of the two companies’ networks to 5G. However, even that benefit, if present, would be only transitory. Similar arguments were offered by T-Mobile in support of its 2011 attempt to merge with AT&T, were soundly rejected by the FCC staff, and have since been belied by T-Mobile’s own success in almost doubling its customer



## EXECUTIVE SUMMARY (continued)

base on a standalone basis. Any efficiency gains that might result from the merger would benefit consumers only to the extent that any cost reductions are flowed through in lower prices. Other than *assertions* that this will occur, the escalation in the Joint Applicants' combined market power would likely make it far more profitable for New T-Mobile to increase its prices to those of AT&T and Verizon rather than to engage in aggressive price competition. The econometric model that the Joint Applicants have provided to support their claim that the merger is procompetitive is so fraught with errors, omissions, and incorrect and unsupported assumptions that it must be discounted in its entirety.

For all of the reasons addressed in this testimony, the proposed merger is decidedly not in the public interest and should not be permitted to go forward.

DIRECT TESTIMONY OF LEE L. SELWYN

1 I, Lee L. Selwyn, declare as follows:

2

3 **INTRODUCTION AND SUMMARY**

4

5 **Qualifications, background and experience**

6

7 1. My name is Lee L. Selwyn. I am President of Economics and Technology, Inc. (“ETI”),  
8 One Washington Mall, 15th Floor, Boston, Massachusetts 02108. ETI is a research and  
9 consulting firm specializing in telecommunications economics, regulation and public policy. My  
10 Statement of Qualifications is annexed hereto as Attachment 1 and is made a part hereof.

11

12 2. I hold a Ph.D. degree in Management from the Alfred P. Sloan School of Management,  
13 Massachusetts Institute of Technology (“MIT”). I also hold a Master of Science degree in  
14 Industrial Management from MIT and a Bachelor of Arts degree with Honors in Economics from  
15 Queens College of the City University of New York. In 1970, I was awarded a Post-Doctoral  
16 Research Grant in Public Utility Economics under a program sponsored by the American  
17 Telephone and Telegraph Company, to conduct research on the economic effects of telephone  
18 rate structures upon the computer time-sharing industry. This work was conducted at Harvard  
19 University’s Program on Technology and Society, where I was appointed a Research Associate.  
20 I was also a member of the faculty at the College of Business Administration at Boston  
21 University from 1968 through 1973, where I taught courses in economics, finance and  
22 management information systems. I founded my firm, Economics and Technology, Inc., in  
23 January 1972, and have served as its President continuously since that date.

1           3. I have been actively and continuously involved in the fields of telecommunications  
2 economics, policy and regulation since the late 1960s. I have provided expert testimony and  
3 analysis on telecommunications economics, technology, rate design, service cost analysis,  
4 market structure, form of regulation, and numerous other telecommunications issues before more  
5 than forty state public utility commissions, the Federal Communications Commission, the United  
6 States Congress, and regulatory bodies in a number of foreign countries, on behalf of commer-  
7 cial organizations, non-profit institutions, and local, state and federal government authorities.  
8 Attachment 1 to this Declaration provides a complete record of my publications and prior expert  
9 testimony and appearances before regulatory agencies and courts.

10

11           4. I have submitted expert reports and testimony in numerous telecommunications  
12 regulatory proceedings before the Federal Communications Commission (“FCC”) and state  
13 public utilities commissions in approximately forty states dating back to the late 1960s, dealing  
14 with a broad range of ratesetting and policy matters, including switched and special access  
15 charges, price cap regulation, Sec. 251/252 interconnection and unbundling requirements, total  
16 service resale and wholesale pricing, universal service, broadband and related Internet access  
17 issues, intercarrier compensation, spectrum allocation, handset interoperability, CMRS early  
18 termination fees, and many others. I have provided expert testimony in numerous California  
19 PUC proceedings dating back to the mid-1970s. A complete listing of these appearances is  
20 included in Attachment 1 hereto.

21

1           5. I have had extensive experience with the analysis of consumer and competitive impacts  
2 of mergers and spin-offs involving large telecommunications companies, including a number of  
3 matters before the California PUC on behalf of the Office of Ratepayer Advocates or Division of  
4 Ratepayer Advocates – A. 96-04-038, SBC/Pacific Bell merger (1996-7); A. 98-12-005, Bell  
5 Atlantic/GTE merger (1998); A. 05-02-027, SBC/AT&T merger (2005); A. 05-04-020,  
6 Verizon/MCI merger (2005), the Comcast/TWC merger, A.14-04-013/A.14-06-012, the  
7 Charter/TWC merger, A.15-07-009; and most recently, the transfer of control of Verizon’s ILEC  
8 operations in California, Texas and Florida to Frontier Communications, A.15-03-005. In 1993,  
9 I submitted testimony on behalf of DRA in I.93-02-028, the “spin-off” by Pacific Telesis Group  
10 of its cellular and other wireless subsidiaries. I also submitted expert testimony on similar  
11 merger-related issues before the FCC and in several other state PUC matters, including Maine  
12 PUC Docket No. 96-388, Bell Atlantic/NYNEX merger (1996), on behalf of the Maine Office of  
13 Public Advocate; Connecticut DPUC Docket No. 98-02-20, SBC/SNET merger (1998), on  
14 behalf of the Connecticut Office of Consumer Counsel; United States District Court for the  
15 District of Columbia, Civil Action No. 1:05CV02102 (EGS), SBC/AT&T merger; Verizon/MCI  
16 merger, Civil Action No. 1:05CV02103 (EGS) (1996), on behalf of the National Association of  
17 State Utility Consumer Advocates (NASUCA); Illinois Commerce Commission Docket No. 09-  
18 0268, Verizon sale of its Illinois exchanges to Frontier Communications, Inc. (2009), on behalf  
19 of the People of the State of Illinois and the Citizens Utility Board; and FCC WT Docket No. 11-  
20 65, AT&T/T-Mobile merger (2011), on behalf of the Ad Hoc Telecommunications Users  
21 Committee.

22

1           6. My experience with the Commercial Mobile Radio Service (“CMRS”) industry dates back to the  
2 “first round” 800 MHZ cellular application process that was initiated by the FCC in 1981, and includes  
3 several matters outside of the United States. I provided economic and financial analysis in support of  
4 approximately twenty applications in the “top ninety” cellular markets in 1982 and 1983. I was a  
5 principal in ten “third round” applications and served on the Partners Committee of Albany (New York)  
6 Cellular Telephone Company until approximately 1986 (neither I nor my firm currently hold any  
7 financial interest in any wireless service provider). I provided expert testimony on behalf of several “A-  
8 block” (non-wireline) cellular licensees in various state regulatory proceedings during the start-up phase  
9 of their operations in the late 1980s and early 1990s, in cases dealing with contested “head start” issues  
10 and wireline interconnection, including one such case in California. I was engaged by DRA as a  
11 consultant and expert in I.93-02-028 dealing with the 1993 spin-off of Pacific Telesis Group’s cellular  
12 and wireless subsidiaries. I also served as a consultant to the County of Los Angeles, a party in the  
13 California PUC’s *Investigation into Mobile Telephone Service and Wireless Communications*, (I.93-12-  
14 007). I co-authored comments, reply comments and *ex parte* presentation materials on behalf of the Ad  
15 Hoc Telecommunications Users Committee in the FCC’s Wireless Calling Party Pays rulemaking (WT  
16 Docket No. 97-207). In 1999, I provided expert testimony on behalf of Meteor Mobile Communications,  
17 Inc. before the High Court of Ireland (Docket 1998 No. 12160P) involving the Competition for the Third  
18 Mobile Telephony License in the Republic of Ireland. In July 2003, I was commissioned to prepare a  
19 white paper on “Market-based Solutions for Realigning Spectrum Use in the 800 MHZ Band,” and in  
20 December 2004, we authored “Market-based Valuation vs. Third-party Appraisals as a Means to Ensure  
21 Fair Valuation and Efficient Allocation of 1.9 GHz Spectrum.” Both of these papers were submitted in  
22 FCC WT Docket No. 02-55. In 2007, I prepared a study comparing “Wireless Service Price Levels in the  
23 US and Canada” for MTS Allstream, Inc., submitted to Industry Canada for its *Policy Framework for the*  
24 *Auction for Spectrum Licences for Advanced Wireless Services and other Spectrum in the 2 GHz Range*. I

1 submitted testimony on behalf of the Wireless Consumers Alliance *et al* and AARP in FCC WT Docket  
2 No. 05-194, *I/M/O CTIA Petition for Expedited Declaratory Ruling on Early Termination Fees*, and was  
3 invited by the FCC to testify at its June 12, 2008 *en banc* hearing on wireless early termination fees. I  
4 have been engaged by the Internal Revenue Service and by a number of state and municipal taxation  
5 authorities regarding excise, sales, property and other taxation issues relating to wireless services. In  
6 2011, I prepared a study on *The Price Cap LECs' "Broadband Connectivity Plan." Protecting Their*  
7 *Past, Hijacking the Nation's Future*, submitted on behalf of United States Cellular Corporation in FCC  
8 WC Docket No. 10-90. In 2013, I prepared a study on *Interoperability and Spectrum Efficiency:*  
9 *Achieving a Competitive Outcome in the US Wireless Market*, for United States Cellular Corporation in  
10 FCC WT Docket No. 12-69.

11

12 7. I have published several articles dealing specifically with Net Neutrality and related Open  
13 Internet issues, including "Revisiting the Regulatory Status of Broadband Internet Access: A  
14 Policy Framework for Net Neutrality and an Open Competitive Internet," (with Helen E.  
15 Golding), *Federal Communications Law Journal*, Vol. 63 Num. 1, December 2010. I have also  
16 contributed chapters to two recent American Bar Association publications, "Network Industry  
17 Markets: Telecommunications" (with Helen E. Golding), Chapter X in *Market Definition in*  
18 *Antitrust: Theory and Case Studies*, ABA Section of Antitrust Law (2012), at pp. 411-436, and  
19 "Economic Underpinnings: The Economics of Communications Networks, Market Power, and  
20 Vertical Foreclosure Theories" (with Helen E. Golding et al), Chapter I in *Telecom Antitrust*  
21 *Handbook, Second Edition*, ABA Section of Antitrust Law (2013), at pp. 1-61.

22

1           8. In addition to my various professional activities, I am an elected Town Meeting Member  
2 in the Town of Brookline, Massachusetts, and serve on the Town’s Advisory and Finance  
3 Committee and on the Town’s Audit Committee, and have served on a special Tax Override  
4 Study Committee.

5

6 **Assignment**

7

8           9. I have been asked by the Public Advocates Office at the California Public Utilities  
9 Commission (“CPUC” or “Commission”) to review Applications 18-07-011 and 18-07-012 filed  
10 herein by Sprint Communications Company L.P. (“Sprint”) and T-Mobile USA, Inc.  
11 (“T-Mobile”) collectively, “Joint Applicants,” for approval of the proposed merger of the two  
12 firms, with the merged entity to be referred to for purposes of this proceeding as “New  
13 T-Mobile.” I am to review the Joint Applicants’ documentation including their Application,  
14 supporting testimony, responses to data requests, and other submissions and, based thereon,  
15 provide the Commission with an assessment of the various economic and other public interest  
16 benefits being ascribed to the transaction by the Joint Applicants, the potential impact of the  
17 proposed transaction upon competition for mobile wireless telecommunications services within  
18 the state of California, the fairness of the transaction to the two companies’ shareholders and  
19 other issues identified by the Assigned Commissioner in the Amended Scoping Memo issued  
20 October 4, 2018, and to offer specific recommendations to the Commission regarding the  
21 manner in which economic and other benefits being ascribed to the transaction will flow through  
22 to consumers and other conditions that will protect the public interest, together with recommend-  
23 ations for the disposition of this Application.

1 **The public Interest and other issues identified in the Scoping Memo**  
2

3 10. The October 4, 2018 Amended Scoping Memo and Ruling issued by Assigned  
4 Commissioner Rechtschaffen provides what it describes as a “non-exhaustive” list of fifteen  
5 “factors that the Commission will consider in making a public interest determination regarding  
6 the effects of the proposed merger on the residents of California.” The issues identified in the  
7 Scoping Memo that I will be addressing in this testimony, although not in this order, are as  
8 follows:

- 9  
10 1. How would the merger impact competition for services currently provided by Sprint  
11 or T-Mobile in any metropolitan area or other geographically distinct market?  
12  
13 2. What new services, if any, that are not currently provided by T-Mobile or Sprint, are  
14 contemplated to be provided by the merged entity? How would the merger impact  
15 competition for such services in any metropolitan area or other geographically  
16 distinct market?  
17  
18 3. What are the relevant markets to consider?  
19  
20 5. What merger-specific and verifiable efficiencies would be realized by the merger?  
21  
22 9. Would the merger increase the market power of the incumbent local exchange  
23 carriers and their wireless affiliates?  
24  
25 10. How would the merger impact the quality of, and access to, service to California  
26 consumers in metropolitan areas, rural areas, or other geographically distinct  
27 markets? What services would be affected?  
28  
29 13. Would the merger preserve the jurisdiction of the Commission to effectively regulate  
30 those utilities and their operations in California?  
31  
32 14. Would the benefits of the merger likely exceed any detrimental effects?  
33



1           15. Should the Commission impose conditions or mitigation measures to prevent  
2           significant adverse consequences and, if so, what should those conditions or measures  
3           be?  
4

5           **ISSUE 1. How would the merger impact competition for services currently**  
6           **provided by Sprint or T-Mobile in any metropolitan area or other**  
7           **geographically distinct market?**

8           **The mobile wireless telecommunications market in California and throughout the US is**  
9           **already highly concentrated, and further market consolidation is neither warranted nor in**  
10           **the public interest.**

11           11. If approved, the proposed merger of Sprint and T-Mobile would reduce the number of  
12           national facilities-based mobile network operators (“MNOs”) in the United States and in  
13           California from four to three, making an already highly-concentrated market even more  
14           concentrated. This major increase in concentration can be expressed quantitatively by means of  
15           the Herfindahl-Hirschman Index (HHI), a widely-accepted measure of market concentration that  
16           has been adopted by the United States Department of Justice and Federal Trade Commission as a  
17           key element of their *Horizontal Merger Guidelines* (“HMG”).<sup>1</sup> The HHI (calculated industry-  
18           wide based upon 2016 revenue shares) will increase from its pre-merger level of 2843 to a post-  
19           merger HHI of 3257, an increase of 414 that is well in excess of the HMG’s 200-point threshold  
20           for highly concentrated markets.<sup>2</sup> A market with only three roughly equal sized participants is  
21           more likely to behave like a cartel than an effectively competitive market, with each firm, inde-

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1. United States Department of Justice and Federal Trade Commission, *Horizontal Merger Guidelines 2010 edition* (“HMG”)

2. See Table 17, *infra*, for the revenues and revenue shares used in this calculation.

1 pendently and without the need for any overt collusion, coming to the conclusion that there are  
2 more profits to be made by maintaining their existing market shares rather than aggressively  
3 competing with one another by successively reducing their prices and the market price level  
4 overall. There is considerable evidence that the two larger MNOs – AT&T and Verizon – are  
5 already engaging in such conduct *vis-à-vis* each other and *vis-à-vis* their two smaller rivals,  
6 Sprint and T-Mobile. There is considerable evidence that Sprint and T-Mobile – the two firms  
7 that are here seeking to become one – have been mainly competing with each other rather than  
8 with the “big two.” Additionally, there is evidence that even the existing four-firm market has  
9 resulted in parallel conduct among the four firms with respect to the terms and conditions  
10 associated with their services as set out in substantively identical adherence contracts with their  
11 residential and small business customers.

12

13 12. In effectively competitive markets, all firms are price-takers, and the market price will  
14 approach marginal cost. In monopoly markets, a single firm is a price-setter, and sets its price  
15 above marginal cost at a level that maximizes its economic profits. In markets with a small  
16 number of firms – oligopoly markets – the few firms effectively carve up all of the available  
17 demand in the market. This is especially true where barriers to entry – legal, economic or both –  
18 are sufficiently high that no further entry is realistically possible or practical. While each  
19 individual firm in an oligopoly will exhibit unique characteristics, it is widely acknowledged that  
20 firms in such markets will, like a monopoly, charge a price in excess of marginal costs (albeit  
21 possibly somewhat lower than might exist in a single-firm monopoly market). Each of the firms

1 exercises market power, and each will have the ability to make price-setting decisions. These  
2 conditions can and do exist in oligopolistic markets, even in the absence of overt collusion.

3

4 13. The mobile wireless market in the US has been undergoing massive consolidation for  
5 more than a decade. In 2003, the FCC had identified a total of six carriers offering service  
6 across broad nationwide footprints, with another dozen or so regional carriers each serving more  
7 limited geographic areas.<sup>3</sup> By 2004, the number of national carriers had dropped to five,<sup>4</sup> and by  
8 the following year (2005) there were only four national Commercial Mobile Radio Service  
9 (“CMRS”) carriers left, following Sprint’s merger with Nextel.<sup>5</sup> After the 2005 AT&T/SBC  
10 merger, Cingular was renamed AT&T Mobility, and the AT&T brand was once again present in  
11 the wireless market. In 2011, an attempt by T-Mobile to merge with AT&T – which would  
12 have brought the number of national CMRS providers down to only three – was soundly  
13 rebuffed in a November 2011 report issued by the Wireless Bureau staff,<sup>6</sup> and the merger was  
14 subsequently called off by the two parties.

15 14. There is in fact considerable empirical evidence in telecommunications to support the  
16 notion that “three is not enough” to achieve a competitive outcome. When the FCC initially

---

3. FCC, Tenth CMRS Report, at Table 4, p. 86. The “top 6” CMRS carriers in 2003 were, from largest to smallest, Verizon, Cingular, AT&T, Sprint, T-Mobile and Nextel.

4. *Id.* The “top 5” in 2004 were Cingular, Verizon, Sprint, T-Mobile and Nextel. AT&T Corp. had sold its wireless affiliate, AT&T Wireless, to SBC Communications, which had then merged it into its own wireless affiliate, Cingular.

5. FCC, Eleventh CMRS Report, at Table 4, p. 102. The “top 4” CMRS carriers in 2005 were, from largest to smallest, Cingular, Verizon, Sprint Nextel, and T-Mobile.

6. FCC WT Docket No. 11-65, Staff Analysis and Findings, November 28, 2011.

1 authorized Commercial Mobile Radio Service in 1982, it created two equal sized blocks of  
2 spectrum in the 800 MHZ band and granted one of the two blocks to each of two rival providers  
3 – an affiliate of a wireline incumbent local exchange carrier (“ILEC”) serving the area (the “B”  
4 block) and an applicant with no such affiliation (the “A” block) in each of more than 700  
5 metropolitan and rural Cellular Geographic Service Areas (“CGSAs”) nationwide. These initial  
6 CMRS licensees were granted without charge, at first through a competitive application process  
7 and, ultimately, through lotteries. This duopoly market arrangement in each CGSA persisted  
8 well into the 1990s. There was virtually no price competition between the “A” and “B” block  
9 carriers under the duopoly arrangement, and the licensees in each CGSA typically resisted the  
10 requirement to offer wholesale services for resale,<sup>7</sup> and so stand-alone retail-level competition  
11 was minimal.

12

13 15. In 1993, Congress authorized the FCC to issue additional spectrum licenses through an  
14 auction process,<sup>8</sup> increasing the number of potential rival providers in each market to four, five  
15 or in some cases six. By year-end 2000, there were six major carriers with a nationwide scope  
16 (Verizon Wireless, Cingular, AT&T, Sprint PCS, Nextel, and Alltel) and a number of others  
17 each with a more limited geographic presence.<sup>9</sup> Some of the major regional CMRS providers in

---

7. *I/M/O An Inquiry Into the Use of the Bands 825-845 MHZ and 870-890 MHZ for Cellular Communications Systems; and Amendment of Parts 2 and 22 of the Commission's Rules Relative to Cellular Communications Systems*, FCC CC Docket No. 79-318, Release No. FCC 81-161, Re. May 4, 1981, 86 F.C.C.2d 469 \*; 1981 FCC LEXIS 522 \*\*; 49 Rad. Reg. 2d (P & F) 809

8. *Omnibus Budget Reconciliation Act of 1993*, Pub. L. 103-66, Aug. 10, 1993, 107 Stat. 312, as amended.

9. FCC, *Sixth Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services*, rel. July 17, 2001, at p. C-4, Table 4.

1 existence at that time included VoiceStream, US Cellular, Western Wireless, Powertel, and  
2 Quest.<sup>10</sup> AT&T Mobility and Cingular had merged (following the mergers of parent companies  
3 AT&T, SBC and BellSouth), and Sprint and Nextel had merged. Alltel, Metro PCS, and Leap  
4 were still identified as independent companies.<sup>11</sup> By the end of 2010, there were approximately  
5 292.5-million wireless handsets in the US, of which about 266.7-million – roughly 92% – were  
6 being served by the four largest carriers.<sup>12</sup> Alltel (which had acquired Western Wireless in 2005)  
7 had by then been absorbed into Verizon. Leap, together with its Cricket brand, were still  
8 operating independently of any of the “top four,” until Leap was acquired by AT&T in 2014. By  
9 June 2016, the most recent date for which FCC data is available, there were 416.8-million  
10 wireless “connections,”<sup>13</sup> of which 411.7-million – about 98.8% – were being provided by the  
11 four largest “Publicly Traded Facilities-Based Mobile Wireless Service Providers” – Verizon,  
12 AT&T, Sprint and T-Mobile.<sup>14</sup> As of June 2016, there were 41.8-million wireless subscriptions  
13 in California.<sup>15</sup> Individual carrier shares are not, however, reported at the state level.

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10. *Id.*

11. FCC, *Twelfth Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services*, rel. February 4, 2008, at p. 132, Table A-4.

12. FCC, *Sixteenth Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services*, rel. March 21, 2013, at p. 55, Table 14.

13. FCC, *Twentieth Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services*, WT Docket No. 17-69, rel. September 27, 2017, at para. 23, Table II.B.1. The Twentieth Report uses “connections” instead of “subscribers” to refer to the total number of connected wireless devices, which includes, in addition to handsets and smartphones, tablets and others.

14. *Id.*

15. FCC, *Voice Telephone Services as of 06/30/17*. Released 11/18, at Supplemental Table 1. Voice Subscriptions (in Thousands) - California, available at <https://www.fcc.gov/voice-telephone-services-report> (accessed 12/24/18)..

1           16. Once the number of incumbents grew from the original two to four or more, price  
2 competition developed, and some carriers sought out resellers and began aggressively to  
3 encourage retail-level competition through so-called “Mobile Virtual Network Operator”  
4 (“MVNO”) arrangements. The mid-2000s saw some consolidation of CMRS providers, but with  
5 four national carriers, some regional competitors, and MVNOs competing at the retail level,  
6 price competition persisted. Over the next decade-plus, disruptive competitors such as T-Mobile  
7 and Metro PCS introduced a variety of new pricing arrangements that, together with techno-  
8 logical innovations that worked to reduce marginal cost, resulted in a precipitous drop in  
9 wireless prices overall, as well as the introduction of new services.

10

11           17. In 2011, T-Mobile and AT&T announced plans to merge, and sought FCC approval for  
12 their proposed transaction.<sup>16</sup> In support of its conclusion that the proposed 2011 AT&T/  
13 T-Mobile merger would create the potential for serious competitive harms, the FCC Staff  
14 addressed the consequences of reducing the number of national facilities-based wireless carriers  
15 from four to three:

16                   75. Coordinated effects are of particular concern here because the retail  
17 mobile wireless services market, being relatively concentrated and hard to enter,  
18 appears conducive to coordination. In addition, T-Mobile plays a disruptive role  
19 in this market to the benefit of buyers, and, thus, likely constrains coordination.  
20 An acquisition eliminating a disruptive firm in markets vulnerable to coordinated  
21 conduct is likely to cause adverse coordinated effects.

22

---

16. *Applications of AT&T Inc. and Deutsche Telekom AG for Consent to Assign or Transfer Control of Licenses and Authorizations*, FCC WT Docket No. 11-65, FCC Staff Analysis and Findings, November 30, 2011 (“*WT Docket No. 11-65, FCC Staff Report*”).

1           76. The retail mobile wireless services market would be more vulnerable to  
2 coordination post-transaction. Features of this market make it likely that the  
3 remaining three nationwide providers would be able to reach a consensus on the  
4 terms of coordination (by identifying a mutually agreeable coordinated price),  
5 deter cheating on that consensus (by undercutting the coordinated price to steal  
6 high-margin business from its rivals), and prevent new competition in this market.  
7 Because these providers offer the same plans and charge the same prices  
8 nationwide, increased coordination would most likely take the form of raising the  
9 level of prices.

10  
11           77. Reaching a consensus would be facilitated by the small number of firms  
12 and the use of national prices and service plan offerings by most providers across  
13 most geographic markets. ...<sup>17</sup>  
14

15 Notwithstanding the less-than-enthusiastic reception that the FCC afforded the idea of an  
16 AT&T/T-Mobile combination, in 2014 Sprint initiated discussions to acquire T-Mobile for a  
17 purported \$32-billion, but later abandoned the effort. Following the announcement by Sprint  
18 that it would no longer pursue a deal with T-Mobile,<sup>18</sup> then-FCC Chairman Tom Wheeler  
19 declared that “[f]our national wireless providers are good for American consumers. Sprint now  
20 has an opportunity to focus their efforts on robust competition.”<sup>19</sup> While there is no question that  
21 the wireless market is more competitive than other telecommunications markets characterized by  
22 an even smaller number of large competitors, wireless’s highly concentrated condition still  
23 produces monopolistic conduct, as is evident in the universal adoption by all four national  
24 CMRS carriers of certain customer service agreement terms and conditions that would be far

---

17. *Id.*, at paras. 75-77, footnote references omitted.

18. “Sprint Abandons Pursuit of T-Mobile, Replaces CEO,” *Wall Street Journal*, August 5, 2014,  
<http://www.wsj.com/articles/sprint-abandoning-pursuit-of-T-Mobile-1407279448> (accessed 8/19/15)

19. Statement by FCC Chairman Tom Wheeler on Competition in the Mobile Marketplace, August 6, 2014.  
<https://www.fcc.gov/document/chairman-wheeler-statement-competition-mobile-marketplace> (accessed 8/19/15).

1 more difficult to enforce industry-wide under truly competitive conditions. These include,  
2 among other things, limitations on liability, and mandatory arbitration and class action waiver  
3 provisions.

4

5 **An analytical framework for assessing the level of market concentration**

6

7 18. The *HMG* utilizes the Herfindahl-Hirschman Index (HHI) as a basis for assessing the  
8 effect of a proposed merger upon market concentration.

9

10 Market concentration is often one useful indicator of likely competitive effects of  
11 a merger. In evaluating market concentration, the Agencies consider both the  
12 post-merger level of market concentration and the change in concentration  
13 resulting from a merger. ...

14

15 The Agencies often calculate the Herfindahl-Hirschman Index (“HHI”) of market  
16 concentration. The HHI is calculated by summing the squares of the individual  
17 firms’ market shares, and thus gives proportionately greater weight to the larger  
18 market shares. When using the HHI, the Agencies consider both the post-merger  
19 level of the HHI and the increase in the HHI resulting from the merger. ...

20

21 Based on their experience, the Agencies generally classify markets into three  
22 types:

23

24 • Unconcentrated Markets: HHI below 1500

25

26 • Moderately Concentrated Markets: HHI between 1500 and 2500

27

28 • Highly Concentrated Markets: HHI above 2500

29

30 The Agencies employ the following general standards for the relevant markets  
31 they have defined:

32



- 1           • *Small Change in Concentration:* Mergers involving an increase in the HHI of  
2           less than 100 points are unlikely to have adverse competitive effects and  
3           ordinarily require no further analysis.  
4  
5           • *Unconcentrated Markets:* Mergers resulting in unconcentrated markets are  
6           unlikely to have adverse competitive effects and ordinarily require no further  
7           analysis.  
8  
9           • *Moderately Concentrated Markets:* Mergers resulting in moderately  
10          concentrated markets that involve an increase in the HHI of more than 100  
11          points potentially raise significant competitive concerns and often warrant  
12          scrutiny.  
13  
14          • *Highly Concentrated Markets:* Mergers resulting in highly concentrated  
15          markets that involve an increase in the HHI of between 100 points and 200  
16          points potentially raise significant competitive concerns and often warrant  
17          scrutiny. *Mergers resulting in highly concentrated markets that involve an*  
18          *increase in the HHI of more than 200 points will be presumed to be likely to*  
19          *enhance market power. The presumption may be rebutted by persuasive*  
20          *evidence showing that the merger is unlikely to enhance market power.*  
21

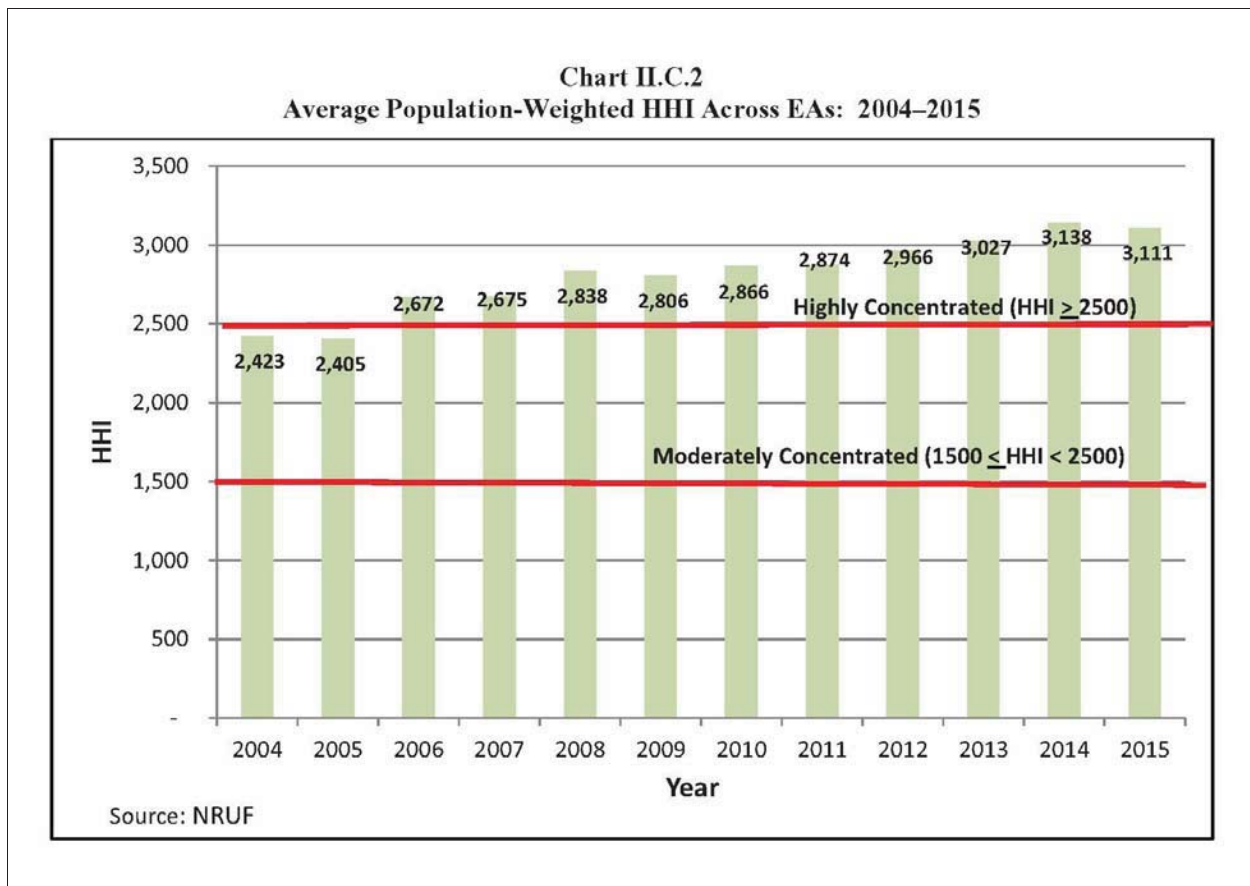
22          The purpose of these thresholds is not to provide a rigid screen to separate compe-  
23          tively benign mergers from anticompetitive ones, although high levels of  
24          concentration do raise concerns. Rather, they provide one way to identify some  
25          mergers unlikely to raise competitive concerns and some others for which it is  
26          particularly important to examine whether other competitive factors confirm,  
27          reinforce, or counteract the potentially harmful effects of increased concentration.  
28          *The higher the post-merger HHI and the increase in the HHI, the greater are the*  
29          *Agencies' potential competitive concerns and the greater is the likelihood that the*  
30          *Agencies will request additional information to conduct their analysis.*<sup>20</sup>  
31

32          19. The FCC has been calculating a *revenue-based* HHI for the wireless telecommunications  
33          market on an annual basis since 2004, and has been publishing these in its *Annual Report and*  
34          *Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services*

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20. HMG, at §5.3, Market Concentration. Footnotes omitted, emphasis supplied.

1 (“CMRS Reports”). Figure 1 below, taken from the FCC’s *Nineteenth CMRS Report*, shows the  
2 progression of increases in wireless HHI from 2004 through the end of 2015. The HHI has  
3 exceeded 2,500 – the threshold level for “Highly Concentrated” markets as specified in the *HMG*  
4 – in each year from 2006 on.



**Figure 1.** FCC HHI estimates 2004-2015, from 19th Annual CMRS Report.

5 20. The *HMG* defines a market with an HHI in excess of 2500 as “highly concentrated,” and  
6 suggests that “[m]ergers resulting in highly concentrated markets that involve an increase in the

1 HHI of more than 200 points will be presumed to be likely to enhance market power.”<sup>21</sup> If the  
2 merger of Sprint and T-Mobile is allowed to go forward, the increase in the HHI of the  
3 California mobile wireless telecommunications market that would result is many multiples of the  
4 200-point threshold set out in the *HMG*.

5 21. Up through the *Nineteenth CMRS Report* issued September 23, 2016, the FCC had also  
6 been publishing HHIs separately for each of 146 individual Economic Areas (“EAs”), and then  
7 had developed a weighted average based upon EA populations, as shown in Figure 1 above. The  
8 *Nineteenth* and earlier *CMRS Reports* also provide the HHIs for each of the 146 EAs. Table 1  
9 below provides the FCC 2011 through 2015 HHIs for the six California EAs. It also includes the  
10 national industry-wide HHIs as reported by the FCC in the *Nineteenth CMRS Report* (see Figure  
11 1 above). The larger California EAs have HHIs that are generally below the industry-wide  
12 average; the Fresno and Redding HHIs are, in most years, above the national average.  
13

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21. *Id.*, at §5.3, Market Concentration.

**Table 1**

**WIRELESS HHIs FOR CALIFORNIA ECONOMIC AREAS  
 2011-2015**

EA	Economic Area	2011	2012	2013	2014	2015
162	Fresno	2953	2989	3787	3787	2989
165	Redding (incl. part of OR)	3299	3405	3621	3621	3405
161	San Diego	2581	2637	2913	2913	2637
163	San Francisco-Oakland-San Jose	2720	2742	2899	2899	2742
164	Sacramento-Yolo	2727	2741	2882	2882	2741
160	Los Angeles-Riverside-Orange County	2415	2437	2634	2634	2437
	Industry-wide (national)	2874	2956	3027	3138	3111

Source: FCC, Seventeenth Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services, rel. Dec. 18, 2014, Table II.C.i Market Concentration by EA, 2011-2013, p. 111-115; Nineteenth Report, Web Appendix II: Competitive Dynamics Within The Industry. Table II.C.i. Market Concentration by EA, 2012-2015, <https://www.fcc.gov/appendix-ii-competitive-dynamics-within-industry> (accessed 11/30/18)

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19 The wireless market in all of the California EAs has, like the industry nationally, shown a steady  
 20 progression of HHI increases over the 2011-2014 period, but dropped slightly in 2015, and, with  
 21 the exception of the Los Angeles EA in 2011, 2012 and 2015, all are now “highly concentrated.”  
 22

23 22. It had been, in fact, this “highly concentrated” character of the US wireless market that  
 24 was a key driver of the FCC’s several previous actions rejecting wireless mergers that would  
 25 have resulted in less than four national wireless carriers. The FCC no longer publishes HHIs for  
 26 individual EAs, and in the *Twentieth CMRS Report* has instead reduced these data to dots on a  
 27 scatter diagram.<sup>22</sup>  
 28

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22. FCC, *Twentieth CMRS Report*, at para. 33, Chart II.C.1.

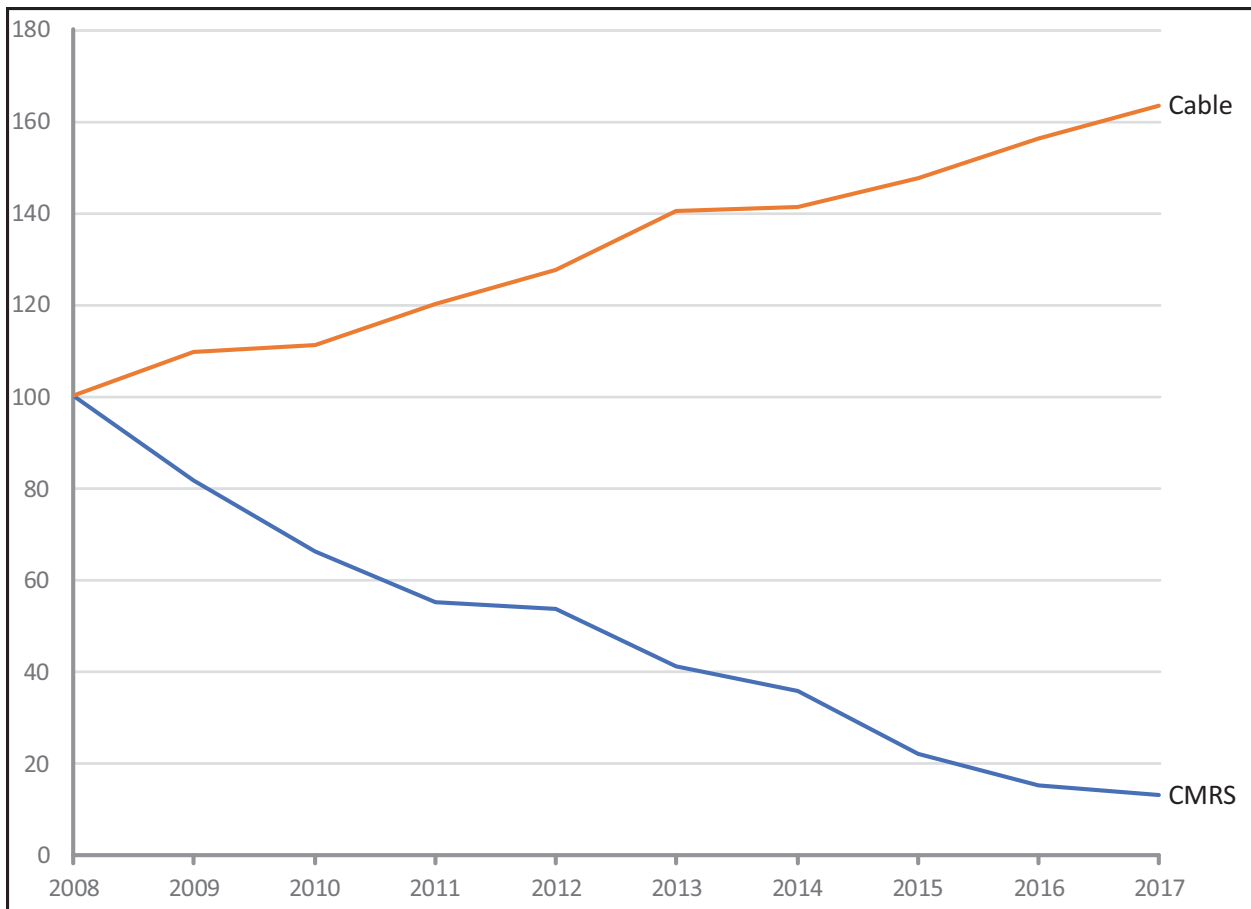
1       23. With respect to the wireline broadband market, the FCC’s 2010 *National Broadband*  
2 *Plan* had determined that “[a]n initial universalization target of 4 Mbps of actual download  
3 speed and 1 Mbps of actual upload speed, with an acceptable quality of service for interactive  
4 applications, would ensure universal access.”<sup>23</sup> But in stark contrast to the relatively competitive  
5 four-provider condition extant in the wireless market, FCC data showed that as of 2010, for  
6 residential broadband access at (by today’s standards) these modest speed levels, only about 4%  
7 of all US households had a choice of three or more providers; 78% had a choice of two  
8 providers, and the remaining 18% had either no service at all (5%) or only one provider (13%).<sup>24</sup>  
9 More recent FCC data has reflected the generally increased speeds being offered by wireline  
10 broadband service providers, but competition among wireline broadband providers is not  
11 reported in the latest FCC *Broadband Report*.<sup>25</sup> Not surprisingly, and as shown in Figure 2,  
12 prices in the noncompetitive cable and broadband market have been steadily increasing, while  
13 wireless prices have been dropping rapidly.  
14

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23. FCC, *Connecting America: The National Broadband Plan*, March 17, 2010 (“*National Broadband Plan*”), at 135.

24. *Id.*, at 37.

25. *Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, GN Docket No. 17-199, *2018 Broadband Deployment Report*, FCC 18-10.



**Figure 2.** Prices for wireless voice and data services have been steadily decreasing, while Basic Cable prices have steadily risen. Index (2008=100) of Basic Cable average service price and Average Revenue per Mixed Unit for CMRS. Sources: FCC Cable Report; CTIA Semi-Annual Wireless Industry Survey, year end 2013, 2017. Note that prices for Basic Cable for 2016 and 2017 have not been published; those shown here are linearly extrapolated from the previous trend. Wireless usage rates for 2015 were not published; the 2015 index value was constructed using actual 2015 pricing and the average for the 2014 and 2016 usage values.

1 **As a general matter, wireless service price levels in the US are decidedly higher than in**  
2 **other western countries where multiple facilities-based carriers are present and where**  
3 **competition appears more intense.**  
4

5 24. Another approach to assessing the potential effect of reducing the number of national  
6 wireless carriers from four to three would be to see how the number of MNOs affects price  
7 levels in other developed countries. The Organization for Economic Cooperation and  
8 Development (“OECD”), whose members consist of 36 western industrialized nations, routinely  
9 compiles and publishes reports comparing conditions for various industries in OECD member  
10 countries. In 2014, the OECD published a report on Wireless Market Structures and Network  
11 sharing.<sup>26</sup> The OECD study reviewed recent changes in “mobile market participation” for three  
12 categories of competitive alternatives – markets where the number of MNOs decreased from  
13 four to three, markets where the number of MNOs increased from three to four or five, and  
14 markets where the number of MNOs remained unchanged at four (after earlier mergers over the  
15 prior few years).<sup>27</sup> The evidence suggests that optimal competition occurs in markets with at  
16 least four MNOs.<sup>28</sup> The OECD report also found that for countries that had dropped from four  
17 national carriers to three, the result was higher prices for consumers, deteriorating service  
18 quality, and reduced innovation.<sup>29</sup> Decreased competition was shown to have resulted in  
19 increased prices for consumers or to have decreased their available services and content

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26. “Wireless Market Structures and Network Sharing,” OECD Digital Economy Papers, No. 243, OECD Publishing, Paris (2014), <http://dx.doi.org/10.1787/5jxt46dzl9r2-en>

27. *Id.*, at 25.

28. *Id.*, at 8.

29. *Id.*, at 17.

1 offerings.<sup>30</sup> For example, following Australia’s 2009 merger between Hutchinson-3 and  
2 Vodafone, pricing across carriers became less competitive, primarily due to fewer competitive  
3 broadband offerings. “The downward trend in the pricing of traditional mobile services has  
4 tended to continue but that broadband data pricing has been more volatile and, in some cases,  
5 has increased when the amount of data included in bundles is considered.”<sup>31</sup>

6

7 25. The OECD report noted that improving service quality and investments in network  
8 infrastructure are tools for maintaining and increasing a carrier’s market share. “In markets  
9 introducing new players or maintaining at least four operators, investments in new network  
10 infrastructure increase and are pulled forward by existing operators, to defend against challen-  
11 gers.”<sup>32</sup> With fewer competitive alternatives, evidence suggests that MNOs decrease their  
12 investments in maintaining quality standards. Innovations, such as roaming and simplified  
13 offers to consumers, are a result of sufficient competitive forces. OECD’s report concludes that  
14 “a larger number of MNOs is often the source for innovative offers that challenge existing  
15 market wisdom and practices.”<sup>33</sup> Following a reduction in the number of MNOs, creative and  
16 challenging offerings dissipate. In light of the OECD findings, I examined wireless prices in  
17 five OECD-member countries with varying number of MNOs. The results are summarized on  
18 Table 2 below.

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30. *Id.*, 18.

31. *Id.*, at 26.

32. *Id.*, at 9.

33. *Id.*, at 5.



Table 2a

ILLUSTRATIVE PREPAID WIRELESS RATES IN SELECTED COUNTRIES WITH 3 TO 5 MNOs

Country	Number of Carriers	Carrier	Prepaid - Monthly					
			Basic Minimum Plan			Unlimited Plan		
			Price	Roaming	Description	Price	Roaming	Description
United Kingdom	4	EE	£ 5.00 (US\$ 6.30)	EU	150MB, 250 texts, data rollover	£ 30.00 (US\$ 37.80)	EU	16GB, unlimited text, 3000 mins, data rollover
		O2	£ 10.00 (US\$ 12.60)		3p(US\$ 0.04)/min, 2p (US\$ 0.03)/text, data 1p (US\$ 0.01)/MB	£ 30.00 (US\$ 37.80)	EU	20GB, 5000 text, 5000 min, data rollover
		Three	£ 0.00 (US\$ 0.00)		3p(US\$ 0.04)/min, 2p (US\$ 0.03)/text, data 1p (US\$ 0.01)/MB	£ 35.00 (US\$ 44.10)	International	unlimited data, text & minutes
		Vodafone	£ 13.00 (US\$ 16.38)	International	500MB, unlimited text, 500 minutes	£ 37.00 (US\$ 46.62)	International	4GB, unlimited text & minutes
Israel	5	Pelephone	US\$ 15.00*		NIS 1.10 (US\$ 0.30)/min, NIS 0.63 (US\$ 0.17)/SMS, NIS 0.70 (US\$ 0.19)/MMS, NIS 3.00 (US\$ 0.81)for 10MB (additional NIS 2.00 (US\$ 0.54)/MB)	NIS 95.00 (US\$ 25.65)		20GB, unlimited text & minutes
		Cellcom	US\$ 15.00*		NIS 1.15 (US\$ 0.31)/min, NIS 0.70 (US\$ 0.19)/text, NIS 3.00 for 10MB (US\$ 0.81) (additional NIS 10.00 (US\$ 2.70)/MB)	NIS 119.00 (US\$ 32.12)		30GB, unlimited text & minutes
		Partner (Formerly Orange)	US\$ 15.00*		NIS 1.21 (US\$ 0.33)/min, NIS 0.68 (US\$ 0.18)/SMS, NIS 0.70 (US\$ 0.19)/MMS, NIS 4.01 (US\$ 1.08)/MB	NIS 140 (US\$ 37.8)		45GB, unlimited text & minutes
		Hot Mobile	US\$ 15.00*		NIS 0.49 (US\$ 0.13)/min, NIS 0.49 (US\$ 0.13)/text, NIS 0.49 (US\$ 0.13)/MB	NIS 49.90 (US\$ 13.47)		20GB, 3000 text, 3000 minutes
		Golan Telecom	NIS 50.00 (US\$ 13.50)		(Valid For 365 days) pay for only what is used	NIS 49.00 (US\$ 13.23)		20GB, unlimited text & minutes
France	4	Orange	€ 3.90 (US\$ 4.45)		€ 0.40 (US\$ 0.46) / min, € 0.10 (US\$ 0.11) / SMS, € 0.24 (US\$ 0.27) / MMS, € 0.50 (US\$ 0.57) / MB.	€ 30.00 (US\$ 34.20)	EU (International roaming available with holiday plan)	20GB, unlimited text & minutes
		SFR	€ 3.99 (US\$ 4.55)		SFR Card (One time fee) with monthly recharge packages. Minimum recharge packages start at € 5 (US\$ 5.70) for unlimited text and min during evenings and weekends	€ 35.00 (US\$ 39.90)		8GB, unlimited text & minutes
		Free	€ 2.00 (US\$ 2.28)	EU, DOM	50MB, unlimited text, 120 minutes	€ 19.00 (US\$ 21.60)	International	100 GB, unlimited text & minutes
		Bouygues Telecom	€ 5.00 (US\$ 5.70)		55 text, 13 minutes, € 0.30 (US\$ 0.34) / MB	€ 20.00 (US\$ 22.80)		2 GB, unlimited text & minutes
Australia	3	Telestra	A\$ 30.00 (US\$ 21.00)	International	8GB, unlimited text & minutes	A\$ 60.00 (US\$ 42.00)	International	38GB, unlimited text & minutes
		Optus	A\$ 15.00 (US\$ 10.50)		500MB, unlimited text & minutes, datarollover	A\$ 45.00 (US\$ 31.50)		3GB, unlimited text & minutes
		Vodafone	A\$ 35.00 (US\$ 24.50)		2GB, unlimited national text & minutes	A\$ 60.00 (US\$ 42.00)		20GB, unlimited national text & minutes, 2000 Zone 1 min, 200 Zone 2 min
Canada	3	Bell	C\$ 5.00 (US\$ 3.70)		10 local minutes, C\$ 0.50 (US\$ 0.37)/min additional local, Canada, US min, C\$ 0.50(US\$ 0.37) text	C\$ 35.00 (US\$ 25.90)		150 local minutes, unlimited local evenings & weekends, unlimited text, C\$ 0.20 (US\$ 0.15)/min additional local min, C\$ 0.50 (US\$ 0.37)/min Canada wide & US min
		Rogers	C\$ 10.00 (US\$ 7.40)		50 text, 50 local minutes, C\$ 0.35 (US\$ 0.26) additional text (C\$ 0.75(US\$ 0.56) picture) C\$ 0.30 (US\$ 0.22)/min additional local min, C\$ 0.50 (US\$ 0.37)/min Canada wide & US min	C\$ 65.00 (US\$ 48.10)		1GB, unlimited text & minutes (evening & weekend), 150 min local daytime calls, C\$ 0.15 (US\$ 0.11) additional MB, C\$ 0.30 (US\$ 0.22)/min additional local min, C\$ 0.50 (US\$ 0.37)/min Canada wide & US min
		TELUS	C\$ 10.00 (US\$ 7.40)		50 text, 50 local minutes, C\$ 0.15 (US\$ 0.11)/min additional local, C\$ 0.30 (US\$ 0.22) additional text	C\$ 65.00 (US\$ 48.10)		1.5GB, unlimited text & minutes

\*Israel MNOS offer basic minimum prepaid SIMs for an initial fee of US\$ 15.00 with additional costs per use.

EXCHANGE RATES AS OF 1/4/19		
UK	UK L 1.00	US \$ 1.26
Israel	NIS 1.00	US \$ 0.27
France	EURO 1.00	US \$ 1.14
Australia	A\$ 1.00	US \$ 0.70
Canada	C\$ 1.00	US \$ 0.74

Table 2b

ILLUSTRATIVE POSTPAID WIRELESS RATES IN SELECTED COUNTRIES  
WITH 3 TO 5 MNOS

Country	Number of Carriers	Carrier	Postpaid - SIM Only					
			Essentials			Unlimited		
			Price	Roaming	Description	Price	Roaming	Description
United Kingdom	4	EE	£ 17.00 (US\$ 21.42)	EU (up to 15GB)	12 month, 3GB, up to 60mbps, unlimited text & minutes	£ 30.00 (US\$ 37.80)	EU(up to 15GB)	12 month, 60GB, up to 60Mbps, unlimited text & minutes
		O2	£ 13.00 (US\$ 16.38)	EU	12 month, 2GB, unlimited text & minutes	£ 35.00 (US\$ 44.10)	International	12 month, 60GB, unlimited text & minutes, 6 mo Netflix
		Three	£ 9.00 (US\$ 11.34)	International	12 month, 4GB, unlimited text & minutes	£ 27.00 (US\$ 34.02)	International	12 month, unlimited data, text & minutes
		Vodafone	£ 11.00 (US\$ 13.86)	International	12 month, 500MB, unlimited text, 500 minutes	£ 31.00 (US\$ 39.06)	International	12 month, 45GB, unlimited text & minutes, 12 mo entertainment pack
Israel	5	Pelephone	NIS 29.9 (US\$ 8.07)		24 month, 20GB, 3000 text and minutes	NIS 34.90 (US\$ 9.42)		24 month, 40GB, unlimited text & minutes
		Cellcom	NIS 49.9 (US\$ 13.47)		30GB, unlimited text & minutes, 500 international minutes	NIS 59.90 (US\$ 16.17)		50GB, unlimited text & minutes, 500 international minutes
		Partner (Formerly Orange)	NIS 59.90 (US\$ 16.17)		12 month, 40GB, 5000 text, 5000 minutes	NIS 79.90 (US\$ 21.57)		12 month, 100GB, 5000 text, 5000 minutes
		Hot Mobile	NIS 39.90 (US\$ 10.77)	International	24 month, 50GB, 3000 text, 3000 minutes, 200 international minutes	NIS 44.90 (US\$ 12.12)	International	24 month, 100GB, 3000 text, 3000 minutes, 300 international minutes
		Golan Telecom	NIS 37.00 (US\$ 9.99)		12 month, 60GB, unlimited text & minutes,	NIS 99.00 (US\$ 26.73)	International	12 month, 40GB data, unlimited text & minutes, 500 international minutes
France	4	Orange	€ 16.99 (US\$ 19.37)	International	12 month, 5GB, unlimited text, 120 minutes	€ 34.99 (US\$ 39.89)	International	12 month, 50GB, unlimited text & minutes
		SFR	€ 5.00 (US\$ 5.70)	EU, DOM	12 month, 40Mb, unlimited text, 120 min	€ 30.00 (US\$ 34.20)	International	12 month, 100GB, unlimited text & minutes
		Free			Package not offered			
		Bouygues Telecom	€ 7.99 (US\$ 9.11)	EU, DOM	Month-to-month, 20MB, unlimited text & minutes	€ 24.99 (US\$ 28.49)	International	Month-to-mnth, 50GB, unlimited text & minutes
Australia	3	Telestra	A\$ 49.00 (US\$ 34.30)		12 month, 15GB, unlimited text & minutes	A\$ 89.00 (US\$62.30)	International	12 month, 60GB, unlimited text & minutes
		Optus	A\$ 25.00 (US\$ 17.50)		12 month, 3GB, unlimited text & minutes	A\$ 45.00 (US\$ 31.50)	International	12 month, 50GB, unlimited text & minutes
		Vodafone	A\$ 35.00 (US\$ 24.50)	International	12 month, 3GB, unlimited text & minutes	A\$ 60.00 (US\$ 42.00)	International	12 month, 60GB, unlimited text & minutes
Canada	3	Bell	C\$ 80.00 (US\$ 59.20)		24 month, 1GB, unlimited text and local minutes	C\$ 160.00 (US\$ 118.40)		24 month, 15GB, unlimited text & Canada wide minutes
		Rogers	C\$ 80.00 (US\$ 59.20)		Month-to-month, 1GB, unlimited text and Canada wide minutes	C\$ 280.00 (US\$ 207.20)		Month-to-month, 40GB, unlimited text and Canada wide minutes
		TELUS	C\$ 80.00 (US\$ 59.20)	US & Canada	Month-to-month, 1GB, unlimited text and local minutes	C\$ 280.00 (US\$ 207.20)	US & Canada	Month-to-month, 40GB, unlimited text and Canada wide minutes

EXCHANGE RATES AS OF 1/3/19

UK	UK L 1.00	US \$ 1.26
Israel	NIS 1.00	US \$ 0.27
France	EURO 1.00	US \$ 1.14
Australia	A\$ 1.00	US \$ 0.70
Canada	C\$ 1.00	US \$ 0.74

1       26. My findings are consistent with the general conclusions provided in the OECD report.  
2 Countries with four or more MNOs appear to have consistently lower prices for roughly  
3 comparable wireless plans than those with fewer carriers. I compared prepaid and postpaid plans  
4 for the top national MNOs for several of the countries referenced in the report. The OECD  
5 report had identified Australia and Canada as having only three national operators, France and  
6 the United Kingdom with four each, and Israel with five.<sup>34</sup> Table 2 compares the prices both for  
7 prepaid and for postpaid, for the most basic “essential” plans and for relatively similar unlimited  
8 plans. I noted elements differentiating the various plans, such as availability and geographic  
9 scope of roaming, amount of data, and price per text and per voice minute. I only included  
10 “bring your own SIM” plans so as to eliminate price differentials based upon handset model.  
11 Promotions were not included in calculating prices. Taxes and fees have also been excluded  
12 from the comparison (due to different tax rates applicable in different parts of some countries) in  
13 order to capture a national price perspective. All prices are shown in the home currency as well  
14 as in US dollars based upon current (as of 1/3/19) exchange rates.

15

16       27. As the OECD report suggests, wireless service prices are significantly higher in areas  
17 with fewer than four MNOs. As shown in the table, the countries with the fewest MNOs –  
18 Canada and Australia – have significantly higher prices for postpaid services, and offer less  
19 substantial packages. The opposite is true for those with more than four national MNOs. In  
20 Israel, where wireless competition is particularly intense among five national MNOs, one can  
21 purchase an unlimited postpaid monthly plan with 50 GB of data, unlimited text and voice

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34. *Id.*, at 75-76.

1 minutes, and 500 international voice minutes, for NIS 59.90 per month, which is approximately  
2 \$16.00 in US funds at current exchange rates. Although prepaid prices tend to fall in a relatively  
3 similar range, content offerings are greater in countries with more MNOs. Moreover, France,  
4 with four operators, shows signs of competition driving innovative offers, such as Free’s “no  
5 obligation” framework. Geographic size (and thus lack of sufficient broadband infrastructure)  
6 may play a significant role in Canada, where the wireless rates of the three national MNO are  
7 higher than in the US for equivalent service packages.

8

9 **ISSUE 3. What are the relevant markets to consider?**

10

11 **To properly utilize the Herfindahl-Hirschman Index (HHI) to assess the level of market**  
12 **concentration, one must firmly establish a proper definition for the relevant product and**  
13 **geographic market.**

14

15 28. An analysis of the extent to which a given market is “competitive” requires, at the  
16 outset, that a definition of the subject market be established. Market definition is typically  
17 expressed in terms of a “relevant product or geographic market” within which products or  
18 services are generally *substitutable* for one another and between which they are not. The *HMG*  
19 provides guidelines, referred to as the “hypothetical monopolist test,” as to how this  
20 determination is to be made:

21

22 The hypothetical monopolist test requires that a product market contain enough substitute  
23 products so that it could be subject to post-merger exercise of market power significantly  
24 exceeding that existing absent the merger. Specifically, the test requires that a hypothe-  
25 tical profit-maximizing firm, not subject to price regulation, that was the only present and  
26 future seller of those products (“hypothetical monopolist”) likely would impose at least a

1 small but significant and non-transitory increase in price (“SSNIP”) on at least one  
2 product in the market, including at least one product sold by one of the merging firms.  
3 For the purpose of analyzing this issue, the terms of sale of products outside the  
4 candidate market are held constant. ...<sup>35</sup>  
5

6 “Market definition focuses solely on demand substitution factors, i.e., on customers’ ability and  
7 willingness to substitute away from one product to another in response to a price increase or a  
8 corresponding non-price change such as a reduction in product quality or service.”<sup>36</sup> Conversely,  
9 two products or services are *not* in the same relevant product market if customers are not willing  
10 “to substitute away from one product to another in response to a price increase or a correspon-  
11 ding non-price change such as a reduction in product quality or service.” The “hypothetical  
12 monopolist test” is a specific analytical tool used to determine whether two products fall within  
13 the same or different relevant product markets. The firm would not qualify as a “hypothetical  
14 monopolist” if by imposing a SSNIP it would lose so much business as to make the price  
15 increase unprofitable, indicating the existence of a sufficiently close substitute product that must  
16 be considered to fall within the same relevant product market. For wireless mobile telecom-  
17 munications, the *relevant geographic market* is local in nature because customers are only able  
18 to select among service providers that actually offer service in the customers’ primary areas of  
19 interest – where they live and where they work – and would not relocate to a different area  
20 merely because providers of wireless service in those areas had raised prices. There are two  
21 retail *relevant product markets* – postpaid services and prepaid services; the wholesale market is  
22 a third *relevant product market*.

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35. *HMG*, at §4.1.1, “Hypothetical Monopolist Test.”

36. *Id.*, at §4, “Market Definition.”

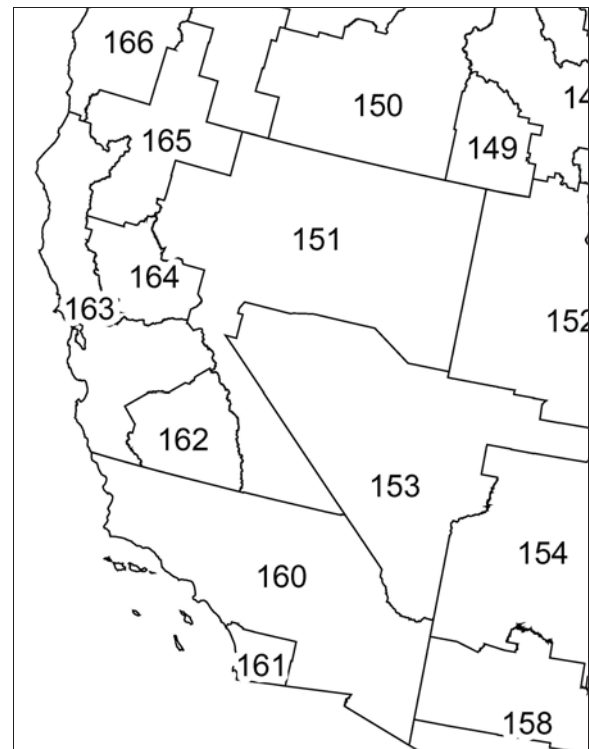
1 **The relevant geographic market for mobile wireless services is fundamentally local in**  
2 **nature.**  
3

4 29. Although each of the “big four” MNOs operate expansive networks with clear to  
5 ubiquitous nationwide coverage, the relevant geographic market for mobile wireless service is  
6 fundamentally local in nature. Customers will necessarily purchase service only from a provider  
7 that serves the customer’s primary geographic area of interest. Customers will perceive services  
8 available within their primary geographic area of interest as *substitutable* and will be “willing[]  
9 to substitute away from one product to another in response to a price increase or a corresponding  
10 non-price change such as a reduction in product quality or service.” A customer will not  
11 perceive a service as substitutable, even if offered at a lower price or with superior quality or  
12 features, if the service is not accessible within the customer’s primary geographic area of  
13 interest. Thus, while four large wireless carriers offer services across wide swaths of territory  
14 across the US and within California, if one or more of those providers does not offer service at a  
15 location of primary interest to a particular customer, that provider falls outside of the relevant  
16 geographic market for that customer.

17  
18 30. The wide variation in HHIs across individual EAs both within California and nationally,  
19 together with the FCC’s reliance upon *EA-level HHIs* as the basis for its calculations of national  
20 industry-wide HHIs, underscores the fundamentally *local* nature of wireless markets and the  
21 importance of assessing the extent of competition *at the local level*. The fact that four carriers  
22 exist nationally is of no real importance to a customer whose primary geographic area of interest  
23 is served by less than all four providers. For most consumers, the choice among wireless service

1 providers is limited to those that can furnish adequate coverage in the places where the consum-  
2 ers lives and works. Thus, the “relevant geographic market” applicable to CMRS will generally  
3 be quite limited in scope and will be much smaller than even the FCC’s “Economic Areas.”

4  
5 31. “Economic Areas,” as the term is used by  
6 the FCC, while certainly much smaller than the  
7 entire US, are still quite extensive in their indi-  
8 vidual geographical scope. Figure 3 identifies  
9 the six California EAs as well as those in adja-  
10 cent states, some of which also include portions  
11 of California. EA 151, for example, whose prin-  
12 cipal population center is Reno, Nevada, also  
13 includes a large swath of eastern and northeastern  
14 California. EA 160, which includes nine  
15 southern California counties – San Luis Obispo,  
16 Santa Barbara, Ventura, Los Angeles, Orange,  
17 Kern, San Bernardino, Riverside and Imperial –  
18 also extends into southwestern Arizona. That one single Economic Area includes densely  
19 populated Los Angeles County as well as sparsely populated desert lands in San Bernardino  
20 County and southwestern Arizona. EA 165 (Redding) extends into southern Oregon, and EA  
21 166 (Eugene, Oregon) extends into northern California.



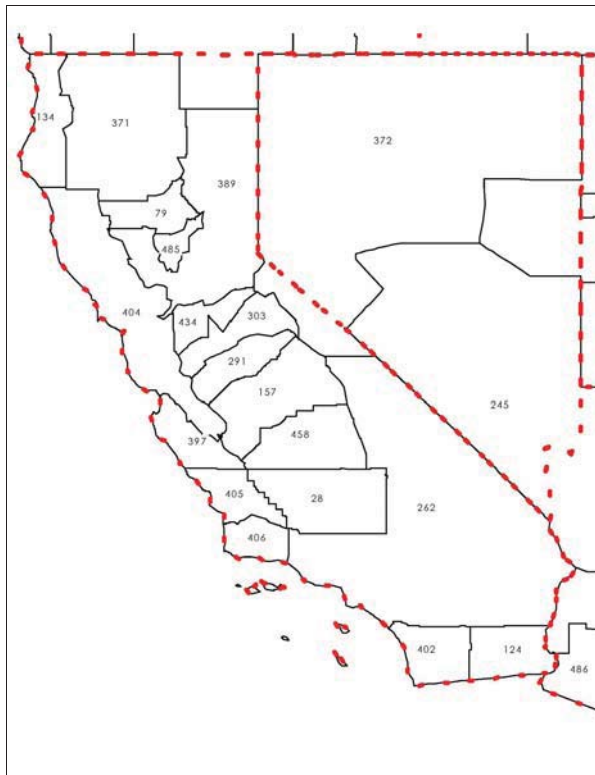
**Figure 3.** FCC Economic Areas that include portions of California.

1       32. Notably, the FCC does not generally use these “Economic Areas” as the geographic  
2 basis for mobile wireless spectrum licenses. For these, the FCC uses or has used any of several  
3 other geographic designations, including Standard Metropolitan Statistical Areas (“SMSAs”),  
4 individual counties, “Basic Trading Areas” (“BTAs”), and “Major Trading Areas” (“MTAs”). In  
5 one recently announced spectrum action in the 24 GHz band, the FCC is using Economic Areas  
6 and “Partial Economic Areas” (“PEAs”) as the geographic licensing unit.<sup>37</sup> BTAs are much  
7 smaller than “Economic Areas.” There are 18 BTAs in California plus portions of one Nevada  
8 and one Oregon BTA that extend into California. MTAs are much larger than EAs. California  
9 is divided into two MTAs – MTA 2, which includes the southern halves of California and  
10 Nevada as well as northwestern Arizona, and MTA 4, which includes the northern halves of  
11 California and Nevada. MTA 30, which covers most of Oregon, also includes Modoc County in  
12 the northeastern-most corner of California. Figures 4 and 5 below provide portions of the FCC’s  
13 BTA and MTA maps that include California and adjacent areas.

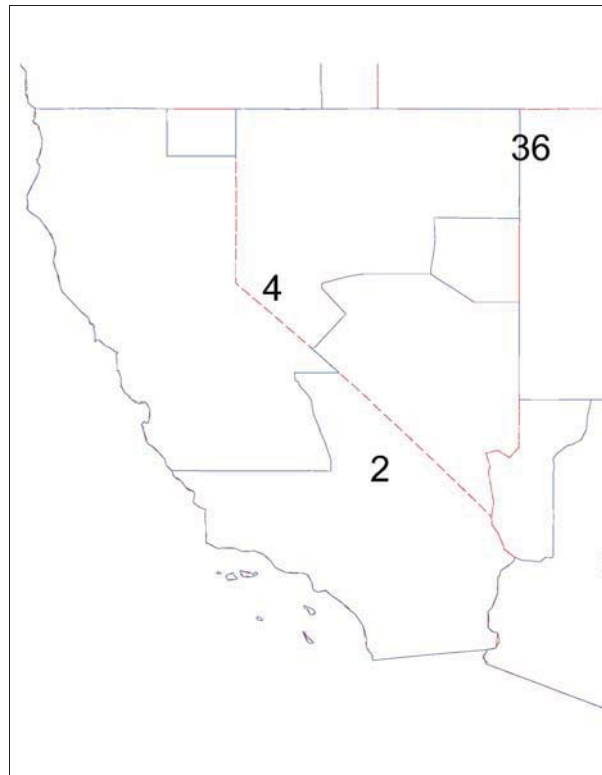
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37. <https://www.fcc.gov/auction/102/factsheet> (accessed 12/27/18)





**Figure 4.** FCC “Basic Trading Areas” in California.



**Figure 5.** FCC “Major Trading Areas” in California.

1        33. Examining competitive conditions across wireless markets nationally or even for  
2 markets extending across an entire Economic Area, as the FCC has and continues to do, teaches  
3 little or nothing about competitive market conditions confronting consumers in specific *and*  
4 *relevant* local geographic markets. EAs have not been used to define most spectrum license  
5 areas; they do not correspond with Metropolitan Statistical Areas or with any other recognized  
6 definition of a *local* geographic market, whether used for ordinary commercial purposes or for  
7 the specific task of assessing the status of competition for mobile wireless telecommunications  
8 services.  
9

1       **The merger-driven increase in market concentration far exceeds the industry-wide HHI**  
2       **change when the geographic scope is properly limited to relevant *local* markets.**  
3

4       34. A far more appropriate – and relevant – basis for examining local wireless markets is at  
5 the *county* level. And in some cases even a county may be too expansive for this purpose. A  
6 number of California counties include moderately dense urban/suburban areas as well as  
7 sparsely populated rural communities that present starkly different challenges in the provision of  
8 mobile wireless services. Kern, San Bernardino and Riverside Counties are good examples. All  
9 include Los Angeles metropolitan area suburbs as well as large and virtually unpopulated areas.  
10

11       35. Fortunately, data is available that support an analysis of wireless competition at the  
12 individual county level and, where needed, covering even smaller geographic scopes. The FCC  
13 maintains data on wireless service deployment by service provider at the individual census block  
14 level. The CPUC’s Communications Division maintains postpaid mobile wireless subscriber  
15 data at the census tract level. The numeric designation assigned to census blocks identifies the  
16 census tract within which it falls, and both the census block and census tract numeric designa-  
17 tions include county codes. In addition, while the FCC has used a number of different  
18 geographic area definitions for wireless spectrum licenses since the first 800 MHz cellular  
19 licenses were made available in 1982, all involved areas embracing entire counties. – i.e., (with  
20 the exception of the six New England states) counties were never split up and assigned to  
21 different spectrum license areas; for any license area designation (e.g., CGSA, BTA, MTA) an  
22 entire county was either in or out.  
23

1       36. In an effort to extend the analysis of fundamentally *local* wireless markets to geographic  
2 areas that are more directly relevant to the manner in which these services are actually purchased  
3 and used, I have calculated HHIs separately for each of the 58 counties in California. HHIs are  
4 typically calculated based upon the sum of the squares of each of the four largest firm’s  
5 respective market shares (expressed as numbers rather than as percentages). The term “market  
6 share” as used here refers to some quantitative measure of each firm’s relative size, such as its  
7 sales as expressed in terms of units of output, or its revenues.

8  
9       37. For example, suppose that the four largest firms in a given market have shares of 40%,  
10 25%, 20% and 10%, respectively – note that these add up to 95%, indicating that there are  
11 additional, but much smaller, firms that make up the remaining 5%. HHI is then calculated as:

$$40^2 + 25^2 + 20^2 + 10^2 = 2725$$

12  
13 HHIs can also be calculated using other types of firm size data where units of output or revenues  
14 are either not readily available or where they are not directly relevant going forward. Market  
15 shares based upon units sold or revenues are necessarily backward-looking, in that they reflect  
16 essentially historical conditions that have led to each incumbent’s current market position, while  
17 not necessarily capturing conditions that may arise going forward.

18  
19       38. In I.93-12-007, the CPUC’s 1993 *Investigation on the Commission’s own Motion into*  
20 *Mobile Telephone Service and Wireless Communications*, the issue being addressed was not  
21 where things stood at that time – there were only two carriers serving any given geographic area  
22 each of which controlled roughly 50% of the market – but what the market would look like after

1 the FCC made more spectrum available and issued additional licenses through auctions, which  
2 the US Congress had just authorized.<sup>38</sup> An HHI calculated based upon the two incumbent  
3 carriers' then-current sales would have had no relevance to the matter being examined by the  
4 CPUC.

5

6 39. Parties to I.93-12-007 offered two alternative HHI calculations. The Cellular Carriers  
7 Association of California ("CCAC"), representing the facilities-based CMRS carriers then  
8 operating in the state, presented an HHI analysis that had been prepared by Charles River  
9 Associates, the same firm with which Joint Applicant witnesses Drs. Salop and Sarafidis are  
10 associated. Charles River had calculated HHIs using the prospective spectrum bandwidth  
11 allocations to be awarded by the FCC to individual carriers following the PCS spectrum  
12 auctions. As the Commission explained it, Charles River's approach was premised upon an  
13 assumption that "the market will divide according to spectrum allocations"<sup>39</sup> – i.e., firms' market  
14 shares will come to reflect their respective shares of the total spectrum bandwidth allocated to  
15 mobile wireless services. At that time, the two 800 MHZ "A" and "B" block carriers had each  
16 been allocated 40 MHZ of spectrum in each of the 714 urban and rural "Cellular Geographic  
17 Service Areas" ("CGSAs") in the initial CMRS licensing that occurred in the early to mid-1980s.  
18 The FCC was preparing to issue new PCS licenses in the 1900 MHZ band through auctions, but  
19 this had not yet occurred. Charles River Associates based its "market shares" on the previously

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38. *Omnibus Budget Reconciliation Act of 1993*, Pub. L. No. 103-66, Title VI, § 6002(b)(2)(A), 6002(b)(2)(B), 107 Stat. 312, 392 (1993).

39. *Investigation on the Commission's own Motion into Mobile Telephone Service and Wireless Communications*, D.94-08-22, 55 CPUC2d 538, 583, 1994 Cal. PUC LEXIS 487, \*48.

1 allocated 800 MHz spectrum plus the announced but yet-to-be-allocated 1900 MHz PCS  
2 spectrum, which was to be offered to additional carriers in bandwidth blocks of varying sizes  
3 and geographic scopes. In all, the FCC had initially announced plans to offer 26 blocks of  
4 spectrum in several different bandwidth sizes to licensees on a national, regional, Major Trading  
5 Area (“MTA”) and Basic Trading Area (“BTA”) basis, allowing no single licensee to hold more  
6 than three (3) blocks (“channels”) in any given geographic area.<sup>40</sup> Charles River calculated its  
7 HHI using the respective shares represented by the bandwidths represented by each of the four  
8 largest spectrum blocks (including the two 40 MHz blocks in the 800 MHz band) divided by the  
9 total CMRS bandwidth, including the then-announced PCS channels. Because the Charles River  
10 analysis assumed spectrum holdings by as many as six new carriers in addition to the two then-  
11 incumbents, the resulting HHIs were relatively low.

12

13 40. The Cellular Resellers Association (“CRA”), which represented, as the name implies,  
14 non-facilities-based retail providers, proposed an approach that used firms’ projected market  
15 shares based upon near-term industry projections of PCS carrier penetration levels in light of the  
16 two 800 MHz incumbents’ substantial first-mover advantages. Thus, neither of the two HHI  
17 studies that were presented in that case were based upon then-existing volumes or revenues as  
18 the basis for market share calculations; both were based upon forward-looking prospective  
19 market shares. The Commission adopted the CRA method over that put forward by the CCAC  
20 industry group specifically because of its reliance upon near-term penetration projections.

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40. *I/M/O Amendment of the Commission’s Rules to Establish New Narrowband Personal Communications Services*, RM-7617 et al, GEN Docket No. 90-314, ET Docket No. 92-100, FCC 94-30, 9 FCC Red 1309, 1312, 1319, at para. 24, adopting §99.101.

1       41. The first-mover advantage does not arise in the current Sprint/T-Mobile matter, and a  
2 combined New T-Mobile can minimally be expected to retain the combined shares of the two  
3 separate firms. However, the Joint Applicants have asserted, as a central element of their  
4 Application, that the combined firm will be in a better position to use and exploit the two firms'  
5 licensed bandwidths on a combined basis.<sup>41</sup> Thus, the two alternative methods that had been  
6 advanced in I.93-12-007 – both of which relied upon forward-looking projections rather than  
7 current or historical sales or revenues – effectively converge upon the same overall outcome in  
8 the current context.

9  
10       42. The methodology that I have adopted for calculating county-level HHIs here is similar to  
11 the approach that had been used by the CMRS carriers' economic consultant, Charles River  
12 Associates, but with several important refinements:

13  
14 (1) I compiled FCC licensing data for each spectrum band for each of the five carriers that hold  
15 spectrum licenses in California – the four largest, plus US Cellular. Because the geographic  
16 scope of all spectrum licenses has always included entire counties, I compiled a database of  
17 spectrum holdings for each spectrum band for each carrier in each of the 58 California  
18 counties.<sup>42</sup>

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41. *Applications of T-Mobile US, Inc. and Sprint Corporation for Consent to Transfer Control of Licenses and Authorizations*, FCC WT Docket No. 18-197, *Description of Transaction, Public Interest Statement, and Related Demonstrations*, June 18, 2018 (“*Public Interest Statement*”), at 17.

42. While I believe that the HHI calculations that I have presented here are accurate, the underlying licensing data upon which it relies has certain limitations. Bandwidth numbers are created using the FCC Universal Licensing System (“ULS”). Licenses for cellular companies are listed under multiple names, so it is possible that I have not  
(continued...)

1 (2) Although spectrum licenses cover large geographic areas, carriers offer service in only  
2 portions of the licensed geography. The FCC has compiled data indicating the deployment,  
3 by carrier, of each category of wireless service – e.g., analog, 2G, 3G, 4G – in each Census  
4 Block. This does not include any demand data, but indicates the percentage of coverage in  
5 each census block, for each category of wireless service that is available.

6

7 (3) The US Census Bureau provides a variety of data at the census block level, including total  
8 area, total population, number of households, and median household income.

9

10 (4) I calculated spectrum bandwidth allocation shares for each carrier in each census block  
11 where the carrier was providing service. This calculation was performed across all  
12 categories of service using the entirety of each carrier’s licensed bandwidth. Thus, if a  
13 carrier had no availability in a given census block even though it held spectrum licenses in  
14 that location, its share for that census block would be zero. This included carriers other than  
15 the “big four” – specifically, it included US Cellular, the only other facilities-based mobile  
16 wireless carrier owning spectrum and offering service in the state.

17

---

42. (...continued)

included some licenses that should be attributed to a specific carrier. Additionally, the FCC has subdivided the C band of the PCS+ spectrum block and as the subdivisions now overlap, the data does not allow the user to make a distinction between the sub group within which a particular license may fall. Where this has occurred, I have attributed the entire 30 MHz of bandwidth to any license that falls under the C band, thus possibly overstating the carriers’ total bandwidth. Also, there appears to be some discrepancies between the data contained in the FCC’s ULS and data on Sprint and T-Mobile spectrum licenses as contained in the Joint Applicants’ revised Appendix L-1 as submitted to the FCC on July 5, 2018. I am undertaking to resolve these discrepancies. However, the differences are, in any event, small, and certainly do not affect any of the conclusions that I have stated here.

- 1 (5) Using the spectrum bandwidth allocation shares for each census block, I then calculated pre-  
2 and post-merger HHIs for that census block.  
3
- 4 (6) These individual census block-level pre- and post-merger census block HHIs were then  
5 aggregated to the county level by weighting each census block HHI by the percentage of the  
6 total county population in that census block.  
7
- 8 (7) Pre-merger HHIs were calculated using the spectrum bandwidth allocation shares of each of  
9 the four largest carriers in each census block. In some cases, where less than all of the “big  
10 four” had an availability/deployment presence, the HHI calculation also included the  
11 bandwidth allocation share held by US Cellular if it was offering service in that census  
12 block.  
13
- 14 (8) Post-merger HHIs were calculated by combining the Sprint and T-Mobile availability-  
15 adjusted bandwidth shares in each census block held by the two carriers, and calculating a  
16 *pro forma* New T-Mobile share that was then aggregated to the county level as in (6) above.  
17 Because HHIs are normally based upon the four largest incumbents, when the “big four”  
18 became the “even bigger three,” I included as the fourth incumbent US Cellular in those  
19 census blocks where the FCC data identified US Cellular as having service availability.  
20 Where a census block had less than four providers (counting New T-Mobile as only one of  
21 them), the HHI was based upon all of the those with availability/deployment in that census  
22 block.



1        43. Table 3 below provides FCC licensing data for each carrier, spectrum band, and each of  
2 the five carriers that hold spectrum licenses in California. Table 4 provides the county-level  
3 market shares for each wireless service category. Table 5 provides the HHI calculations based  
4 upon these shares.

**Table 3**

**LICENSED BANDWIDTH BY SPECTRUM BAND  
 (Values shown are in MegaHertz)**

<b>County</b>	<b>Band</b>	<b>Verizon</b>	<b>AT&amp;T</b>	<b>T-Moible</b>	<b>Sprint</b>	<b>USCOC</b>
Alameda	Low Band	82	90	38	10	0
	Mid-Band	200	150	120	127	0
	Total	282	230	138	137	0
Alpine	Low Band	32	74	48	10	0
	Mid-Band	180	160	120	121.5	0
	Total	212	234	138	131.5	0
Amador	Low Band	32	74	38	0	0
	Mid-Band	180	180	110	82	0
	Total	212	254	128	82	0
Butte	Low Band	82	74	38	0	0
	Mid-Band	180	150	110	82	0
	Total	262	224	128	82	0
Calaveras	Low Band	32	80	48	10	0
	Mid-Band	180	150	110	121.5	0
	Total	212	230	128	131.5	0
Colusa	Low Band	82	62	38	0	0
	Mid-Band	180	180	110	82	0
	Total	262	242	128	82	0
Contra Costa	Low Band	82	90	38	10	0
	Mid-Band	200	150	120	127	0
	Total	282	230	138	137	0
Del Norte	Low Band	82	12	30	0	50
	Mid-Band	170	150	110	121.5	0
	Total	252	162	110	121.5	50
El Dorado	Low Band	82	74	38	0	0
	Mid-Band	180	180	110	82	0
	Total	262	254	128	82	0
Fresno	Low Band	82	74	38	10	0
	Mid-Band	160	180	150	82	0
	Total	242	254	168	92	0
Glenn	Low Band	82	62	38	0	0
	Mid-Band	180	150	110	82	0
	Total	262	212	128	82	0
Humboldt	Low Band	82	18	48	10	60
	Mid-Band	170	170	100	121.5	0
	Total	252	188	118	131.5	50
Imperial	Low Band	82	30	48	10	0
	Mid-Band	180	190	80	121.5	0
	Total	262	220	98	131.5	0
Inyo	Low Band	82	74	48	10	0
	Mid-Band	150	130	110	121.5	0
	Total	232	204	128	131.5	0
Kern	Low Band	82	80	38	10	0
	Mid-Band	190	180	100	121.5	0
	Total	272	260	118	131.5	0
Kings	Low Band	82	74	38	10	0
	Mid-Band	170	210	90	121.5	0
	Total	252	284	108	131.5	0

County	Band	Verizon	AT&T	T-Moible	Sprint	USCOC
Lake	Low Band	82	18	48	10	60
	Mid-Band	200	150	150	127	0
	Total	282	168	168	137	50
Lassen	Low Band	32	12	48	10	50
	Mid-Band	180	160	120	82	0
	Total	212	172	138	92	50
Los Angeles	Low Band	82	80	38	10	0
	Mid-Band	180	180	110	121.5	0
	Total	262	260	128	131.5	0
Madera	Low Band	32	74	38	10	0
	Mid-Band	140	210	120	82	0
	Total	172	284	138	92	0
Marin	Low Band	82	90	38	10	0
	Mid-Band	200	150	120	127	0
	Total	282	230	138	137	0
Mariposa	Low Band	32	80	48	10	0
	Mid-Band	170	170	100	121.5	0
	Total	202	250	118	131.5	0
Mendocino	Low Band	82	18	48	10	60
	Mid-Band	200	150	150	127	0
	Total	282	168	168	137	50
Merced	Low Band	32	80	48	10	0
	Mid-Band	140	200	100	121.5	0
	Total	172	280	118	131.5	0
Modoc	Low Band	32	12	30	0	60
	Mid-Band	150	100	80	121.5	30
	Total	182	112	80	121.5	80
Mono	Low Band	82	74	48	10	0
	Mid-Band	150	160	120	121.5	0
	Total	232	234	138	131.5	0
Monterey	Low Band	82	90	38	10	0
	Mid-Band	170	180	120	76.5	0
	Total	252	260	138	86.5	0
Napa	Low Band	82	90	38	10	0
	Mid-Band	200	150	120	127	0
	Total	282	230	138	137	0
Nevada	Low Band	82	74	38	0	0
	Mid-Band	180	180	110	82	0
	Total	262	254	128	82	0
Orange	Low Band	82	80	38	10	0
	Mid-Band	180	180	110	121.5	0
	Total	262	260	128	131.5	0
Placer	Low Band	82	74	38	0	0
	Mid-Band	180	180	110	82	0
	Total	262	254	128	82	0
Plumas	Low Band	32	12	48	10	50
	Mid-Band	180	160	120	82	0
	Total	212	172	138	92	50
Riverside	Low Band	82	80	38	10	0
	Mid-Band	180	180	110	121.5	0
	Total	262	260	128	131.5	0
Sacramento	Low Band	82	74	38	0	0
	Mid-Band	180	180	110	82	0
	Total	262	254	128	82	0

County	Band	Verizon	AT&T	T-Moible	Sprint	USCOC
San Benito	Low Band	32	80	48	10	0
	Mid-Band	170	180	120	127	0
	Total	202	260	138	137	0
San Bernardino	Low Band	82	80	38	10	0
	Mid-Band	180	180	110	121.5	0
	Total	262	260	128	131.5	0
San Diego	Low Band	82	74	38	10	0
	Mid-Band	150	150	120	121.5	0
	Total	232	224	138	131.5	0
San Francisco	Low Band	82	90	38	10	0
	Mid-Band	200	150	120	127	0
	Total	282	230	138	137	0
San Joaquin	Low Band	82	90	38	10	0
	Mid-Band	180	150	110	121.5	0
	Total	262	230	128	131.5	0
San Luis Obispo	Low Band	32	80	38	10	0
	Mid-Band	180	180	100	121.5	0
	Total	212	260	118	131.5	0
San Mateo	Low Band	82	90	38	10	0
	Mid-Band	200	150	120	127	0
	Total	282	230	138	137	0
Santa Barbara	Low Band	32	80	38	10	0
	Mid-Band	220	150	100	121.5	0
	Total	252	230	118	131.5	0
Santa Clara	Low Band	82	90	38	10	0
	Mid-Band	190	150	150	127	0
	Total	272	230	168	137	0
Santa Cruz	Low Band	82	90	38	10	0
	Mid-Band	170	180	120	127	0
	Total	252	260	138	137	0
Shasta	Low Band	82	62	30	0	10
	Mid-Band	170	140	120	82	0
	Total	252	202	120	82	0
Sierra	Low Band	82	74	48	10	0
	Mid-Band	180	160	120	82	0
	Total	262	234	138	92	0
Siskiyou	Low Band	82	12	30	0	60
	Mid-Band	170	140	120	82	0
	Total	252	152	120	82	50
Solano	Low Band	82	90	38	10	0
	Mid-Band	200	150	120	127	0
	Total	282	230	138	137	0
Sonoma	Low Band	82	90	38	10	0
	Mid-Band	170	180	120	127	0
	Total	252	260	138	137	0
Stanislaus	Low Band	82	90	38	10	0
	Mid-Band	150	220	110	121.5	0
	Total	232	300	128	131.5	0
Sutter	Low Band	82	74	38	0	0
	Mid-Band	180	150	110	82	0
	Total	262	224	128	82	0
Tehama	Low Band	82	62	30	0	10
	Mid-Band	170	140	120	82	0
	Total	252	202	120	82	0

County	Band	Verizon	AT&T	T-Moible	Sprint	USCOC
Trinity	Low Band	82	18	48	10	60
	Mid-Band	170	160	110	82	0
	Total	252	178	128	92	50
Tulare	Low Band	82	74	38	10	0
	Mid-Band	200	180	90	121.5	0
	Total	282	254	108	131.5	0
Tuolumne	Low Band	32	80	48	10	0
	Mid-Band	180	180	110	121.5	0
	Total	212	260	128	131.5	0
Ventura	Low Band	82	80	38	10	0
	Mid-Band	190	150	110	121.5	0
	Total	272	230	128	131.5	0
Yolo	Low Band	82	74	38	0	0
	Mid-Band	180	180	110	82	0
	Total	262	254	128	82	0
Yuba	Low Band	82	74	38	0	0
	Mid-Band	180	150	110	82	0
	Total	262	224	128	82	0

Source: FCC Universal Licensing System; Joint Applicants' Appendix L-1 rev. 7/5/18. NOTE: The table uses data from the FCC ULS and does not include bandwidth licensed in the Educational Broadband System (EBS) because precise coverage areas included within such licenses was not identified by county

Table 4

**CALIFORNIA WIRELESS CARRIER SPECTRUM BANDWIDTH ALLOCATION SHARES  
BY COUNTY AND TECHNOLOGY**

County	All						4G LTE					
	Verizon	AT&T	Sprint	T-Mobile	USCOC	T-Mobile& Sprint	Verizon	AT&T	Sprint	T-Mobile	USCOC	T-Mobile& Sprint
Alameda	35.8	29.2	17.4	17.5	0.0	34.9	35.8	29.2	17.4	17.5	0.0	35.0
Alpine	31.9	31.4	17.4	19.3	0.0	37.7	37.1	21.5	18.6	22.8	0.0	44.6
Amador	31.8	38.2	10.6	19.4	0.0	31.8	34.3	38.1	6.7	21.0	0.0	34.4
Butte	37.7	32.3	11.7	18.3	0.0	30.1	38.0	31.8	11.6	18.5	0.0	30.4
Calaveras	32.8	33.8	15.5	18.0	0.0	36.5	35.7	30.8	14.3	19.1	0.0	38.8
Colusa	36.8	34.0	11.3	17.9	0.0	29.3	36.9	34.0	11.2	18.0	0.0	29.5
Contra Costa	35.8	29.2	17.4	17.5	0.0	34.9	35.8	29.3	17.3	17.6	0.0	35.0
Del Norte	39.0	25.1	11.6	16.5	7.8	34.7	39.0	25.1	11.6	16.5	7.7	34.8
El Dorado	36.2	35.0	11.1	17.7	0.0	29.0	37.0	34.0	10.9	18.1	0.0	29.8
Fresno	32.0	33.6	12.1	22.2	0.0	34.4	32.2	33.7	11.8	22.3	0.0	34.6
Glenn	38.4	31.1	11.9	18.6	0.0	30.5	38.4	31.1	11.9	18.6	0.0	30.6
Humboldt	34.3	25.3	17.8	16.0	6.6	33.8	34.3	25.4	17.6	16.1	6.5	34.0
Imperial	36.9	31.0	18.2	13.8	0.0	32.4	37.2	31.2	17.6	13.9	0.0	32.6
Inyo	33.9	29.9	17.5	18.7	0.0	37.9	36.9	32.5	10.2	20.5	0.0	41.5
Kern	34.9	33.3	16.8	15.1	0.0	31.9	35.3	33.0	16.4	15.3	0.0	32.3
Kings	32.8	37.0	16.2	14.1	0.0	31.2	33.3	37.6	14.8	14.3	0.0	31.7
Lake	36.1	21.3	14.9	21.5	6.3	39.0	38.9	22.9	8.2	23.3	6.7	42.2
Lassen	33.0	26.3	11.9	21.1	7.7	35.2	37.8	29.1	0.1	24.2	8.8	40.4
Los Angeles	33.5	33.3	16.8	16.4	0.0	33.2	33.6	33.3	16.7	16.4	0.0	33.3
Madera	25.2	41.6	13.1	20.1	0.0	33.4	25.6	41.2	12.8	20.4	0.0	34.0
Marin	35.9	29.3	17.2	17.5	0.0	35.0	36.1	29.5	16.7	17.7	0.0	35.2
Mariposa	32.4	36.4	14.1	17.1	0.0	36.2	35.8	27.4	15.5	21.3	0.0	44.9
Mendocino	40.9	24.2	3.0	24.7	7.2	44.9	42.0	25.1	0.4	25.2	7.3	45.8
Merced	24.6	40.0	18.6	16.9	0.0	35.6	24.6	40.1	18.4	16.9	0.0	35.7
Modoc	42.5	24.6	4.3	10.6	18.1	26.6	43.7	24.7	4.2	10.1	17.3	25.5
Mono	32.2	32.4	16.5	18.8	0.0	36.8	34.4	29.2	15.8	20.5	0.0	40.1
Monterey	34.3	35.4	11.7	18.7	0.0	30.4	34.3	35.3	11.7	18.7	0.0	30.5
Napa	35.9	29.3	17.3	17.5	0.0	34.9	36.1	29.0	17.2	17.6	0.0	35.1
Nevada	36.1	35.1	11.1	17.7	0.0	29.0	37.1	34.9	9.8	18.2	0.0	29.9
Orange	33.5	33.3	16.8	16.4	0.0	33.2	33.6	33.3	16.6	16.4	0.0	33.3
Placer	36.1	35.0	11.2	17.7	0.0	29.0	36.2	34.9	11.2	17.7	0.0	29.0
Plumas	37.1	29.8	0.5	24.0	8.6	39.9	37.2	29.8	0.0	24.4	8.5	40.7
Riverside	33.6	33.3	16.7	16.4	0.0	33.2	33.7	33.4	16.4	16.5	0.0	33.4
Sacramento	36.1	35.0	11.3	17.6	0.0	28.9	36.1	35.0	11.3	17.6	0.0	28.9
San Benito	27.4	35.3	18.6	18.7	0.0	37.3	27.5	35.0	18.6	18.8	0.0	37.5
San Bernardino	33.6	33.3	16.7	16.4	0.0	33.2	34.0	32.9	16.6	16.6	0.0	33.6
San Diego	32.0	30.9	18.0	19.0	0.0	37.2	32.1	31.0	17.8	19.1	0.0	37.4
San Francisco	35.8	29.2	17.4	17.5	0.0	34.9	35.8	29.2	17.4	17.5	0.0	34.9
San Joaquin	34.9	30.6	17.5	17.0	0.0	34.5	34.9	30.6	17.5	17.0	0.0	34.5
San Luis Obispo	29.6	36.3	17.8	16.4	0.0	34.6	30.3	36.7	16.2	16.8	0.0	35.6
San Mateo	35.9	29.3	17.4	17.5	0.0	34.9	36.0	29.3	17.2	17.5	0.0	34.9
Santa Barbara	34.5	31.5	17.9	16.1	0.0	34.1	34.8	31.7	17.2	16.3	0.0	34.4
Santa Clara	33.7	28.5	17.0	20.8	0.0	37.8	33.7	28.5	16.9	20.8	0.0	37.8
Santa Cruz	32.2	33.3	17.3	17.1	0.0	34.8	32.2	33.1	17.3	17.4	0.0	34.8
Shasta	38.9	31.2	12.3	17.6	0.0	30.3	39.3	30.9	12.0	17.7	0.0	29.8
Sierra	38.8	30.7	11.9	18.6	0.0	31.0	41.5	30.7	8.2	19.6	0.0	32.6
Siskiyou	39.3	23.2	11.7	18.2	7.7	30.7	41.3	21.9	11.7	19.0	6.1	32.0
Solano	35.8	29.2	17.4	17.5	0.0	34.9	35.9	29.3	17.3	17.6	0.0	35.0
Sonoma	32.1	33.1	17.3	17.5	0.0	34.9	32.4	33.1	16.9	17.7	0.0	35.2
Stanislaus	29.3	37.9	16.6	16.2	0.0	32.8	29.4	37.9	16.5	16.2	0.0	32.8
Sutter	37.6	32.2	11.8	18.4	0.0	30.2	37.6	32.2	11.8	18.4	0.0	30.2
Tehama	39.6	31.7	12.1	16.6	0.0	29.8	40.2	31.1	11.8	16.9	0.0	29.1
Trinity	46.3	26.2	0.0	20.3	7.2	34.8	59.8	2.9	0.0	28.2	9.1	48.5
Tulare	36.4	32.8	16.9	13.9	0.0	30.8	36.6	33.0	16.4	14.0	0.0	31.0
Tuolumne	31.8	38.8	15.2	14.3	0.0	29.9	37.6	44.5	1.0	16.9	0.0	34.3
Ventura	35.7	30.2	17.2	16.8	0.0	34.1	35.9	30.3	17.0	16.9	0.0	34.2
Yolo	36.1	35.0	11.2	17.6	0.0	28.9	36.2	35.1	11.1	17.7	0.0	29.0
Yuba	37.9	32.2	11.4	18.5	0.0	30.4	38.6	31.5	11.0	18.9	0.0	31.0

Source: Market shares are derived from bandwidth holders as shown in Table 3, supra, scaled by FCC wireless availability by census block data.

Table 5

**CHANGES IN HHI THAT WOULD RESULT FROM SPRINT/T-MOBILE MERGER  
 BASED UPON FCC WIRELESS CARRIER AVAILABILITY DATA  
 WEIGHTED BY POPULATION AND LICENSED BANDWIDTHS**

County	Population	All			4G LTE		
		Current	Combined	Change	Current	Combined	Change
Alameda	1,663,190	2751	3358	608	2750	3358	608
Alpine	1,120	3167	3304	137	3906	4104	198
Amador	38,626	3066	3344	278	3184	3361	177
Butte	229,294	2981	3372	391	2979	3385	406
Calaveras	45,670	3197	3337	140	3204	3368	165
Colusa	21,805	3066	3381	315	3069	3383	314
Contra Costa	1,147,439	2750	3358	608	2753	3356	604
Del Norte	27,470	3117	3146	28	3100	3130	30
El Dorado	188,987	2976	3362	386	2992	3369	378
Fresno	989,255	2810	3329	519	2850	3328	479
Glenn	28,094	3139	3437	298	3130	3433	303
Humboldt	136,754	2576	2958	382	2577	2959	383
Imperial	182,830	2916	3341	425	3011	3377	366
Inyo	18,026	3005	3255	250	3202	3351	149
Kern	893,119	2878	3327	450	2973	3360	387
Kings	150,101	2896	3343	448	2961	3364	403
Lake	64,246	2791	2911	120	2969	3030	61
Lassen	31,163	2975	3041	66	3279	3286	7
Los Angeles	10,163,507	2788	3333	545	2794	3333	538
Madera	156,890	2976	3466	490	2929	3424	495
Marin	260,955	2774	3345	571	2799	3347	548
Mariposa	17,569	3366	3422	56	3171	3250	78
Mendocino	88,018	3016	3016	0	3024	3024	0
Merced	272,673	2856	3440	584	2856	3432	576
Modoc	8,859	4011	4163	152	4319	4449	130
Mono	14,168	2979	3232	253	2942	3211	269
Monterey	437,907	3006	3368	362	2966	3352	386
Napa	140,973	2804	3328	524	2799	3342	543
Nevada	99,814	2995	3371	376	3093	3402	309
Orange	3,190,400	2782	3333	551	2787	3333	546
Placer	386,166	2973	3363	390	2983	3366	382
Plumas	18,742	3115	3115	0	3130	3130	0
Riverside	2,423,266	2813	3330	517	2833	3333	500
Sacramento	1,530,615	2965	3363	398	2965	3363	398
San Benito	60,310	2791	3347	555	2672	3354	682
San Bernardino	2,157,404	2837	3330	493	2835	3339	504
San Diego	3,337,685	2708	3332	624	2706	3335	629
San Francisco	884,363	2745	3360	615	2745	3360	615
San Joaquin	745,424	2750	3344	595	2750	3344	595
San Luis Obispo	283,405	2904	3356	452	2899	3335	435
San Mateo	771,410	2763	3354	590	2768	3358	590
Santa Barbara	448,150	2812	3336	524	2867	3346	480
Santa Clara	1,938,153	2681	3371	690	2682	3372	690
Santa Cruz	275,897	2760	3327	567	2739	3328	589
Shasta	179,921	3264	3487	223	3286	3519	233
Sierra	2,999	3426	3443	17	3664	3680	16
Siskiyou	43,853	3159	3268	109	3382	3493	111
Solano	445,458	2753	3358	605	2768	3358	589
Sonoma	504,217	2768	3314	547	2774	3315	541
Stanislaus	547,899	2846	3358	512	2850	3358	508
Sutter	96,648	2932	3364	432	2931	3364	432
Tehama	63,926	3316	3531	215	3322	3548	226
Trinity	12,709	4822	4822	0	5508	5508	0
Tulare	464,493	2928	3351	423	2956	3363	407
Tuolumne	54,248	3867	3869	2	3797	3797	0
Ventura	854,223	2782	3347	565	2797	3348	551
Yolo	219,116	2978	3357	379	2985	3359	374
Yuba	77,031	2983	3362	378	3002	3379	377

technology weighted by FCC availability data, then aggregated to county levels weighted by

1 From an examination of these HHI results, several important observations can be made:

2

3 (1) There is no county in California where the HHI covering all categories of wireless service  
4 currently falls below the *Horizontal Merger Guidelines*' "highly concentrated" threshold of  
5 2500. The lowest HHI is in Humboldt County (2576); the highest is in Trinity County  
6 (4822).

7

8 (2) The increase in HHI that will result from the merger is in excess of the 200 point threshold  
9 specified in the *HMG* in all but some of the least populated rural California counties, where  
10 only Sprint or T-Mobile, but not both, currently has a presence in most census blocks.

11

12 44. Calculating HHIs across large and diverse geographic areas, such as the FCC's  
13 "Economic Areas," has the effect of concealing the disproportionately high levels of market  
14 concentration extant in rural communities. For example, Table 6 below compares the most  
15 recent (2015) HHIs by economic area as reported by the FCC in its *Nineteenth CMRS Report*  
16 with the HHIs for individual counties within those EAs that I have calculated. Notably, the  
17 FCC's calculation for the San Diego EA is quite close to my figure for San Diego County, the  
18 only county in the San Diego EA. For all other EAs that include multiple counties, there is a  
19 significant disparity between the FCC EA HHIs and the individual County HHIs.



Table 6				
2015 WIRELESS HHIs FOR CALIFORNIA ECONOMIC AREAS AND FOR SELECTED COUNTIES WITHIN THOSE EAs				
EA	Economic Area	FCC 2015 HHI	COUNTY	2017 HHI
162	Fresno	2989	Fresno	2810
			Kings	2895
			Tulare	2927
			Madera	2975
165	Redding (incl. part of OR)	3405	Modoc	4011
			Shasta	3263
			Tehama	3316
			Siskiyou	3159
161	San Diego	2637	San Diego	2707
163	San Francisco-Oakland-San Jose	2742	San Francisco	2744
			Monterey	3006
			Santa Cruz	2759
			Santa Clara	2681
			Alameda	2750
			Mendocino	3015
164	Sacramento-Yolo	2741	Sacramento	2965
			Yolo	2977
			Solano	2753
160	Los Angeles-Riverside-Orange County	2437	Los Angeles	2787
			Orange	2782
			San Bernardino	2837
			Kern	2877
			Imperial	2916
			Riverside	2813
Source: FCC, Seventeenth Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services, rel. Dec. 18, 2014, Table II.C.i Market Concentration by EA, 2011-2013, p. 111-115; Nineteenth Report, Web Appendix II: Competitive Dynamics Within The Industry. Table II.C.i. Market Concentration by EA, 2012-2015, <a href="https://www.fcc.gov/appendix-ii-competitive-dynamics-within-industry">https://www.fcc.gov/appendix-ii-competitive-dynamics-within-industry</a> (accessed 11/30/18); 2017 HHIs as calculated on Table 5, supra.				

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18 There are approximately 710,145 individual Census Blocks in the state of California. For many  
 19 individual Census Blocks, wireless services are available from less than all of the “big four”

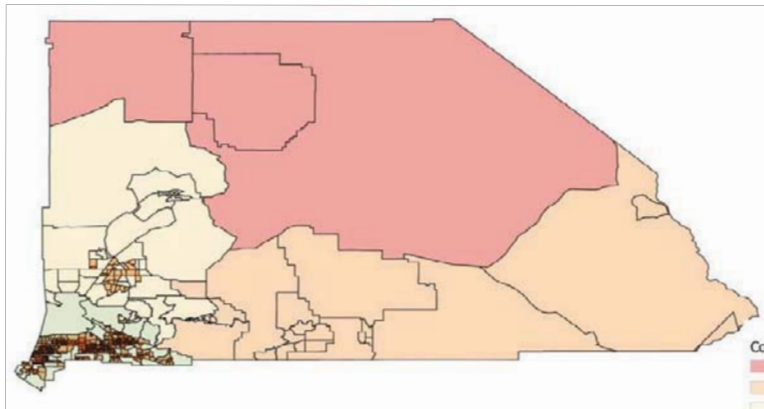
1 carriers. In urbanized areas, Census Blocks are small, typically bounded by four streets. For  
2 example, the block bounded by Van Ness, Golden Gate, Franklin and McAlister in San  
3 Francisco (where the CPUC's offices are located) is one Census Block. Census Blocks are  
4 grouped into Census Tracts, which generally include areas with populations in the range of 1,200  
5 to 8,000.<sup>43</sup> For example, there are 7386 Census Blocks and 197 Census Tracts in San Francisco  
6 County. In rural areas, Census Blocks are typically much larger in area, and Census Tracts can  
7 cover many square miles. For example, Mono County has only three (3) Census Tracts.

8

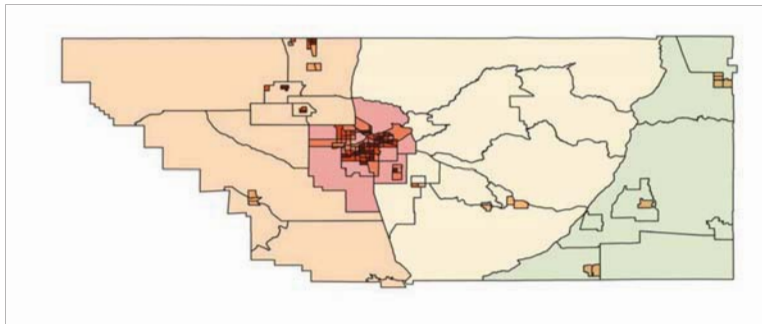
9 45. In densely populated areas, service availability always extends well beyond the area  
10 covered by any single census block or even census tract. However, in rural areas, census blocks  
11 may cover large areas, and census tracts even larger expanses of territory. Thus, even within a  
12 single county – especially in some of the more geographically extensive and diverse counties  
13 that exist in California – there can be wide variation in the extent of competitive presence. To  
14 test this, I selected three large and geographically diverse counties in Southern California –  
15 Kern, San Bernardino and Riverside – and divided each into several segments such that, within  
16 each segment, density and other geographic attributes are more homogeneous than for the county  
17 as a whole. Using the same methodology that I had used for the county-level HHI calculations, I  
18 calculated HHIs separately for each of the sub-county segments. Figure 6 shows the segment-  
19 ation that I examined for these three counties, and Table 7 provides the individual HHI results  
20 for each of the segments.

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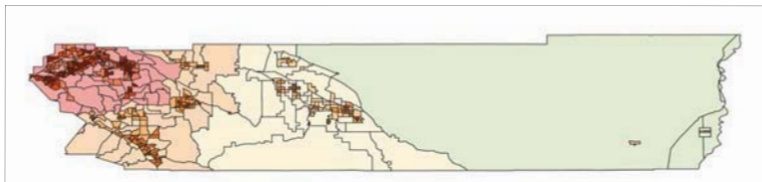
43. [https://www.census.gov/geo/reference/gtc/gtc\\_ct.html](https://www.census.gov/geo/reference/gtc/gtc_ct.html) (accessed 12/27/18)



San Bernardino County



Kern County



Riverside County

- 1 **Figure 6.** Counties segmented into density
- 2 quartiles.
- 3

County Subgroups  
1  
2  
3  
4

Population Density  
Quartile 1  
Quartile 2  
Quartile 3  
Quartile 4

**Table 7**

**CHANGES IN HHI THAT WOULD RESULT FROM SPRINT/T-MOBILE MERGER  
 BASED UPON FCC WIRELESS CARRIER AVAILABILITY DATA  
 FOR AREAS OF DIFFERENT DENSITIES WITHIN SELECTED COUNTIES**

County	Area	Technology Type					
		All			4G LTE		
		Current	Combined	Change	Current	Combined	Change
Kern	1	2830	3338	508	2840	3342	501
Kern	2	2887	3379	492	2969	3437	468
Kern	3	3052	3445	393	3557	3910	354
Kern	4	2865	3351	486	2937	3379	442
Riverside	1	2789	3335	546	2797	3338	540
Riverside	2	2795	3337	542	2803	3340	536
Riverside	3	2798	3340	541	2806	3343	536
Riverside	4	2798	3337	539	3394	3540	147
San Bernardino	1	3619	4080	462	4221	4309	88
San Bernardino	2	2899	3380	481	3450	4182	731
San Bernardino	3	2804	3340	536	2858	3368	510
San Bernardino	4	2784	3334	550	2786	3335	549

1       46. The foregoing discussion and analysis demonstrates the fallacy of relying upon the kind  
2 of geographically expansive and aggregated areas that the FCC has utilized in assessing the level  
3 of competition extant in the mobile wireless markets. Economic Areas – and sometimes even  
4 individual counties – embrace areas with diverse geographies and competitive market conditions  
5 and, in so doing, conceal those local geographic markets that are already highly concentrated and  
6 would become even more concentrated if the proposed merger is allowed to go forward.

7

8       47. Of the three counties I examined at a sub-county level, Kern and San Bernardino  
9 exhibited higher HHIs in the lowest density segments, with the greatest differential occurring in  
10 San Bernardino. Riverside County segment HHIs were relatively similar. Another approach to  
11 examining this service disparity is to examine counties at the individual census block level  
12 insofar as CMRS carriers have a presence in these areas. The FCC's wireless availability data  
13 indicates, for each census block, the percentage of the total census block area where service is  
14 available from each carrier. In most urban and suburban areas, where each census block consists  
15 of a city block bounded by four streets, the percentage coverage is almost always 100% where  
16 service is available. In rural areas, however, where individual census blocks can include many  
17 square miles, smaller percentage coverages are identified. However, because these availability  
18 percentages refer to *area* rather than to population, there is no direct means of translating the  
19 area percentages into the relative proportion of the population in the census block who are able  
20 to obtain service. Because of this uncertainty, I have prepared this analysis using two different  
21 assumptions:

22

23 • In Table 8a, I have assumed that service is available in any census block with indicated

1 coverage at or greater than 50% of its total area, and not available if the coverage is less than  
2 50%.

3

4 • In Table 8b, I have assumed that service is available in any census block with indicated  
5 coverage at or greater than 10% of its total area, and not available if the coverage is less than  
6 10%.

7

8 Since population is likely clustered in only a portion of these large rural census blocks, it is

9 likely that cell towers are placed such that the populated areas are within the coverage area.

10 Thus, census blocks satisfying the 50% assumption are assumed to have wireless availability in

11 all populated areas. To err on the conservative side, however, I prepared Table 8b based on the

12 assumption that any census block with at least 10% of its area having availability should also be

13 considered as being served. Less than 10% is assumed to be a spillover from an adjacent census

14 block, so it is reasonable to consider such blocks as being unserved. Note also that, while this

15 analysis does not address the specific mobile broadband data rates (upload and download speeds)

16 that are being offered at that location, it does distinguish among the wireless technology that is

17 available in a given census block; data rates available with 4G LTE are generally faster than for

18 the older wireless technologies. The FCC data identifies the wireless technology(ies) offered in

19 each census block as 2G, 3G, 4G non-LTE and 4G LTE. Tables 4 and 5 provide spectrum

20 bandwidth allocation shares and HHIs based thereon, respectively, for “All wireless technolo-

21 gies” and for “4G LTE.” Both Tables 8a and 8b show the number of census blocks in each

22 California county where wireless service is currently being provided by 0, 1, 2, 3, 4 or 5 carriers,

23 based upon the percentage threshold assumption applicable to each table.

Table 8a

**NUMBER OF WIRELESS CARRIERS AVAILABLE BY CENSUS BLOCK**  
 (Carrier availability based upon minimum 50% area coverage)

County	Population	Total Census Blocks	All Technologies													
			Number of Carriers Available in a Census Block					4G LTE								
			5	4	3	2	1	0	5	4	3	2	1	0		
Alameda	1,663,190	23,948		23,643	101	70	127	7					224	75	156	45
Alpine	1,120	450	1	98	76	198	64	13				70	14	143	180	43
Amador	38,626	1,382		883	346	71	53	29				438	651	140	83	70
Butte	229,294	6,449		5,509	286	267	212	175				5,249	258	303	367	272
Calaveras	45,670	2,751		712	917	487	512	123				568	704	471	648	360
Colusa	21,805	2,197		1,781	86	226	80	24				1,684	172	166	102	73
Contra Costa	1,147,439	18,309		18,137	91	24	57					17,701	467	59	77	5
Del Norte	27,470	1,843	121	929	85	225	278	205			120	906	81	202	199	335
El Dorado	188,987	5,796		5,159	324	137	116	60				4,090	968	393	247	98
Fresno	989,255	22,006		20,949	566	249	148	94				18,432	2,701	435	277	161
Glenn	28,094	2,742		1,940	165	514	77	46				1,914	185	450	114	79
Humboldt	136,754	9,295	4,477	1,823	883	676	886	550			4,322	1,663	1,041	680	923	666
Imperial	182,830	8,859	6,121	2,278	408	29	13	10			3,829	2,304	2,612	83	14	17
Inyo	18,026	4,848		1,631	2,263	200	525	229				793	2,921	231	333	570
Kern	893,119	35,242		31,002	3,316	630	241	53				23,994	8,398	2,058	548	244
Kings	150,101	6,187		5,888	287	12						5,062	1,104	17	4	
Lake	64,246	4,915	1,333	2,737	414	167	78	186				3,193	499	229	136	208
Lassen	31,163	5,417	647	2,046	547	1,006	882	289			42	2,054	899	1,007	1,017	398
Los Angeles	10,163,507	109,489		107,226	1,511	273	434	45				104,495	3,891	386	511	206
Madera	156,890	4,984		4,466	339	120	37	22				3,967	665	168	123	61
Marin	260,955	4,496		3,906	366	69	124	31				3,619	594	102	139	42
Mariposa	17,569	1,902		205	1,078	303	280	36				39	822	360	416	265
Mendocino	88,018	7,823	22	3,876	878	889	1,475	683			8	3,414	1,029	863	1,669	840
Merced	272,673	7,179		6,593	540	32	13	1				6,298	733	98	36	14
Modoc	8,859	5,148	1	395	1,516	2,239	875	122			1	302	1,216	2,168	1,239	222
Mono	14,168	2,979	6	1,253	856	568	231	65				960	823	506	354	336
Monterey	437,907	10,486		8,416	939	752	285	94				7,836	1,116	690	471	373
Napa	140,973	2,770		2,309	398	51	12					2,256	306	139	58	11
Nevada	99,814	4,590		4,157	228	94	78	33				2,927	1,113	273	197	80
Orange	3,190,400	36,880		36,590	174	10	104	2				36,076	646	29	122	7
Placer	386,166	9,152		8,570	311	98	97	76				7,912	639	266	216	119
Plumas	18,742	4,496	1	2,046	586	491	899	473				1,783	654	519	935	605
Riverside	2,423,266	35,693	3	32,886	2,440	266	70	28				30,816	4,191	434	148	104
Sacramento	1,530,615	19,937		19,937								19,916	21			
San Benito	60,310	2,620		1,591	578	244	168	39				1,524	159	538	332	67
San Bernardino	2,157,404	48,144	125	41,399	5,221	850	493	56				33,978	10,617	2,433	915	201
San Diego	3,337,685	43,394	6	37,575	4,656	783	342	32				36,248	4,850	1,422	689	185

County	Population	Total Census Blocks	All Technologies										4G LTE						
			Number of Carriers Available in a Census Block										Number of Carriers Available in a Census Block						
			5	4	3	2	1	0	5	4	3	2	1	0					
			Number of Census Blocks served										Number of Census Blocks served						
San Francisco	884,363	7,386		7,302	9	5	69	1							7,301	9	6	67	3
San Joaquin	745,424	13,233		13,201	9	19	4								13,173	35	7	8	10
San Luis Obispo	283,405	11,408		7,951	2,255	802	365	35							6,408	2,369	1,073	1,100	458
San Mateo	771,410	9,247		8,740	124	200	141	42							8,612	140	170	258	67
Santa Barbara	448,150	10,249		8,786	790	329	230	114							7,278	1,793	633	309	236
Santa Clara	1,938,153	22,366		21,754	218	234	153	7							21,553	347	159	274	33
Santa Cruz	275,897	5,077		4,504	386	92	79	16							4,260	398	158	175	86
Shasta	179,921	10,316		5,149	2,278	1,826	730	333							4,818	2,015	1,555	1,236	692
Sierra	2,999	1,663		277	447	243	406	290							193	376	223	456	415
Siskiyou	43,853	9,096	2,553	2,828	700	724	1,632	659				2,198			1,371	1,826	938	1,803	960
Solano	445,458	10,282		10,157	112	7	4	2							9,733	502	35	9	3
Sonoma	504,217	10,354		8,825	768	346	332	83							8,297	1,029	484	398	146
Stanislaus	547,899	8,549		8,195	327	14	6	7							8,036	457	31	16	9
Sutter	96,648	2,736		2,727	9										2,727	8	1		
Tehama	63,926	5,295		2,869	383	1,466	384	193							2,776	338	1,173	643	365
Trinity	12,709	2,665		337	170	519	1,203	436							63	316	437	1,244	605
Tulare	464,493	13,629		12,241	437	578	239	134							11,211	1,312	423	454	229
Tuolumne	54,248	4,399		89	2,042	1,367	658	243							16	1,986	1,060	607	730
Ventura	854,223	14,812		14,069	404	139	160	40							13,342	1,018	133	228	91
Yolo	219,116	3,601		3,470	113	2	13	3							3,394	184	5	13	5
Yuba	77,031	2,926		2,505	302	57	48	14							2,309	332	182	58	45



Table 8b

**NUMBER OF WIRELESS CARRIERS AVAILABLE BY CENSUS BLOCK**  
 (Carrier availability based upon minimum 10% area coverage)

County	Population	Total Census Blocks	All Technologies										4G LTE						
			Number of Carriers Available in a Census Block					Number of Carriers Available in a Census Block					Number of Carriers Available in a Census Block						
			5	4	3	2	1	0	5	4	3	2	1	0	5	4	3	2	1
Number of Census Blocks served																			
Alameda	1,663,190	23,948	4	23,722	76	48	102	8	23,558	200	49	117	24						
Alpine	1,120	450		138	74	191	35	83	25	142	181	19							
Amador	38,626	1,382		951	325	60	33	530	640	111	64	37							
Butte	229,294	6,449		5,657	302	243	181	66	5,406	275	313	138							
Calaveras	45,670	2,751		839	967	538	368	39	680	797	444	162							
Colusa	21,805	2,197		1,815	97	229	51	5	1,735	155	191	81	35						
Contra Costa	1,147,439	18,309	167	18,183	67	8	51	162	17,928	294	29	56	2						
Del Norte	27,470	1,843		965	119	260	252	80	945	99	259	204	174						
El Dorado	188,987	5,796		5,366	258	84	72	16	4,428	858	308	154	48						
Fresno	989,255	22,006		21,169	481	168	152	36	18,857	2,466	375	222	86						
Glenn	28,094	2,742		1,972	251	446	58	15	1,936	277	418	79	32						
Humboldt	136,754	9,295	4,658	2,140	931	678	723	165	1,909	1,178	696	759	244						
Imperial	182,830	8,859	6,355	2,086	386	17	11	4	2,283	2,486	57	10	13						
Inyo	18,026	4,848		1,780	2,230	228	542	68	910	2,892	259	367	420						
Kern	893,119	35,242		31,633	2,993	448	151	17	24,784	8,064	1,862	406	126						
Kings	150,101	6,187		5,957	227	3			5,125	1,052	8	2							
Lake	64,246	4,915	1,537	2,732	340	140	74	92	808	3,266	413	203	125	100					
Lassen	31,163	5,417	713	2,189	719	983	723	90	56	2,161	1,100	1,079	848	173					
Los Angeles	10,163,507	109,489		107,612	1,318	197	354	8	105,323	3,322	328	411	105						
Madera	156,890	4,984		4,611	238	103	31	1	4,187	550	124	102	21						
Marin	260,955	4,496		4,033	318	30	98	17	3,800	515	58	96	27						
Mariposa	17,569	1,902		261	1,196	238	193	14	118	977	330	343	134						
Mendocino	88,018	7,823	46	4,533	981	799	1,234	230	15	4,113	1,157	816	321						
Merced	272,673	7,179		6,733	426	15	4	1	6,460	625	70	21	3						
Modoc	8,859	5,148	2	557	1,771	2,169	612	37	2	425	1,384	2,343	90						
Mono	14,168	2,979	9	1,351	918	508	169	24	1,047	887	472	331	242						
Monterey	437,907	10,486		8,648	980	593	231	34	8,124	1,237	494	398	233						
Napa	140,973	2,770		2,343	397	24	6		2,285	352	98	32	3						
Nevada	99,814	4,590		4,301	167	75	41	6	3,112	1,118	210	121	29						
Orange	3,190,400	36,880		36,680	101	7	92		36,284	473	19	102	2						
Placer	386,166	9,152		8,760	242	70	58	22	8,088	638	256	133	37						
Plumas	18,742	4,496	6	2,421	633	579	705	152	3	2,161	688	880	200						
Riverside	2,423,266	35,693	6	33,347	2,093	185	51	11	31,430	3,760	352	90	61						
Sacramento	1,530,615	19,937		19,937					19,930	7									
San Benito	60,310	2,620		1,652	673	157	130	8	1,571	231	567	227	24						
San Bernardino	2,157,404	48,144	154	42,260	4,667	690	355	18	35,237	9,992	2,131	692	92						
San Diego	3,337,685	43,394	10	38,278	4,339	537	223	7	37,083	4,586	1,193	443	89						

County	Population	Total Census Blocks	All Technologies										4G LTE								
			Number of Carriers Available in a Census Block					Number of Carriers Available in a Census Block					Number of Carriers Available in a Census Block								
			5	4	3	2	1	0	5	4	3	2	1	0	5	4	3	2	1	0	
			Number of Census Blocks served										Number of Census Blocks served								
San Francisco	884,363	7,386	7,317	6	7	55	1	7,317	5	7	56	1	7,317	5	7	56	1	7,317	5	7	56
San Joaquin	745,424	13,233	13,206	17	8	2	2	13,198	20	5	7	3	13,198	20	5	7	3	13,198	20	5	7
San Luis Obispo	283,405	11,408	8,404	2,178	594	221	11	8,812	2,399	1,007	888	233	8,812	2,399	1,007	888	233	8,812	2,399	1,007	888
San Mateo	771,410	9,247	8,812	129	168	130	8	8,969	134	151	234	24	8,969	134	151	234	24	8,969	134	151	234
Santa Barbara	448,150	10,249	778	778	270	197	35	21,867	1,727	580	270	112	21,867	1,727	580	270	112	21,867	1,727	580	270
Santa Clara	1,938,153	22,366	227	227	173	98	1	4,649	349	124	202	6	4,649	349	124	202	6	4,649	349	124	202
Santa Cruz	275,897	5,077	303	303	56	69	1	5,567	333	135	141	27	5,567	333	135	141	27	5,567	333	135	141
Shasta	179,921	10,316	3	2,561	1,515	583	87	332	2	1,524	950	330	332	2	1,524	950	330	332	2	1,524	950
Sierra	2,999	1,663	332	577	300	359	95	3,170	521	255	449	209	3,170	521	255	449	209	3,170	521	255	449
Siskiyou	43,853	9,096	2,768	708	655	1,546	249	10,206	2	2,388	466	466	10,206	2	2,388	466	466	10,206	2	2,388	466
Solano	445,458	10,282	71	71	3	2	2	8,980	404	13	5	5	8,980	404	13	5	5	8,980	404	13	5
Sonoma	504,217	10,354	812	812	290	240	32	8,247	240	439	284	53	8,247	240	439	284	53	8,247	240	439	284
Stanislaus	547,899	8,549	286	286	9	7	7	2,732	4	22	15	15	2,732	4	22	15	15	2,732	4	22	15
Sutter	96,648	2,736	2,732	4	4	5	5	3,059	562	1,087	564	166	3,059	562	1,087	564	166	3,059	562	1,087	564
Tehama	63,926	5,295	3,059	543	1,306	329	58	495	1,192	533	1,282	277	495	1,192	533	1,282	277	495	1,192	533	1,282
Trinity	12,709	2,665	1	229	590	210	158	12,370	55	406	379	119	12,370	55	406	379	119	12,370	55	406	379
Tulare	464,493	13,629	509	509	485	210	55	158	89	887	688	459	158	89	887	688	459	158	89	887	688
Tuolumne	54,248	4,399	14,207	350	107	137	11	14,207	893	119	183	35	14,207	893	119	183	35	14,207	893	119	183
Ventura	854,223	14,812	3,483	103	2	12	1	3,415	168	3	14	1	3,415	168	3	14	1	3,415	168	3	14
Yolo	219,116	3,601	2,563	302	42	16	3	2,374	366	136	38	12	2,374	366	136	38	12	2,374	366	136	38
Yuba	77,031	2,926	77,031	302	42	16	3	2,374	366	136	38	12	2,374	366	136	38	12	2,374	366	136	38

1       48. As is readily apparent from the data in Tables 8a and 8b, wireless availability is far  
2 greater in urban and suburban counties than in counties that are predominantly rural. For  
3 example, 107,226 out of the 109,489 census blocks in Los Angeles County are served (for all  
4 wireless technologies) by all four of the carriers that have spectrum in LA. Only 45 out of the  
5 109,489 census blocks have no wireless service. In Mendocino County, by contrast, only 3,876  
6 out of the total 7,823 census blocks can choose among four carriers, and 683 census blocks have  
7 no wireless availability at all.

8

9       49. Referring back to Table 5, there are a number of rural counties where the merger would  
10 produce little or even no change in the HHI. The reason for this is that T-Mobile and Sprint  
11 basically do not overlap in very many census blocks, or in a few instances at all. As a result, the  
12 merger will not increase the already highly concentrated wireless market in these areas. But it is  
13 also highly unlikely that the merger would result in any significant improvement in wireless  
14 availability in these unserved and underserved rural communities.

15

16       50. But even the EA-level HHIs as calculated by the FCC portray a market that is already  
17 highly concentrated, and the effect of the merger upon HHIs calculated even as the FCC has  
18 done clearly exceeds the 200 point threshold set out in the *Horizontal Merger Guidelines*.

19

20

1 **Prepaid and Postpaid wireless services constitute separate and distinct relevant product**  
2 **markets.**  
3

4 51. Prepaid and postpaid wireless services are separate and distinct relevant product markets  
5 as the term is understood by antitrust economists and as expressly specified in the *Horizontal*  
6 *Merger Guidelines*: “Market definition focuses solely on demand substitution factors, i.e., on  
7 customers’ ability and willingness to substitute away from one product to another in response to  
8 a price increase or a corresponding non-price change such as a reduction in product quality or  
9 service.”<sup>44</sup> If a customer who currently purchases prepaid wireless service is *unable* to qualify  
10 for a postpaid service by virtue of not having a credit card, not able to post a required deposit, or  
11 otherwise unable to satisfy the credit requirements for postpaid service, that customer is unable  
12 “to substitute away from one product to another in response to a price increase or a correspond-  
13 ing non-price change such as a reduction in product quality or service.” And while a customer  
14 who currently buys postpaid service may be “able” to substitute away from the postpaid service,  
15 he or she may be “unwilling” to do so because prepaid services may not offer the full suite of  
16 features that are typically included with postpaid plans. For example, the T-Mobile website  
17 provides the following information about the company’s prepaid offerings:<sup>45</sup>  
18

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44. *HMG*, at §4, “Market Definition.”

45. <https://support.T-Mobile.com/docs/DOC-4826#firstheading> (accessed 12/18/18)

1  
2 Things to know about our prepaid plans  
3

- 4 • A credit check is not required, and no deposit is needed to activate service.  
5 • Whenever your account reaches \$10 or less, you'll hear your balance every time you place a call.  
6 When you have less than 1 minute of talk time remaining on your account, you'll hear warning  
7 tones on your phone. Learn how to refill your Prepaid account.  
8 • If your minutes aren't used by the expiration date, they expire and are removed from your account.  
9 Keep in mind that remaining talk time is non-refundable. If you're qualified for Data Stash, then your  
10 unused 4G LTE data is automatically rolled over into the next month. Learn about Data Stash.  
11 • When purchasing downloaded content for your prepaid device, you'll need to use a personal credit  
12 card or debit card when purchasing downloadable content. Please contact your financial institution  
13 about any billing concerns related to the specific download. If you need help with the app, please  
14 contact the third-party content provider.  
15 • Long-distance call charges:  
16 Domestic long distance calls can be made at no additional charge.  
17 International call charges vary depending on the country you're calling and the plan  
18 you're on. For example, you can save more using Stateside International Talk & Text.  
19

20 The T-Mobile website also spells out other limitations on its prepaid services:

21  
22  
23 **Additional Terms for Prepaid Customers**  
24

25 Your T-Mobile prepaid Service account balance, if sufficient, or your active prepaid plan, gives you  
26 access to our prepaid Service for a limited amount of time; you must use your prepaid Service during  
27 the designated period of availability. To use our prepaid Service you must have a T-Mobile prepaid  
28 Service account balance for pay as you go service or be on an active prepaid plan. Service will be  
29 suspended when your account balance reaches zero and/or you are at the end of the time period  
30 associated with your prepaid plan. Monthly plan features are available for 30 days, however, depending  
31 on the time of day that you activate your Service or that your Service expires, your service cycle may  
32 not equal 30 full 24 hour days. Your monthly plan will automatically renew at the end of 30 days if you  
33 have a sufficient T-Mobile prepaid Service account balance to cover your prepaid Service plan before  
34 the first day after your service cycle. If you do not have a sufficient T-Mobile prepaid Service account  
35 balance, your prepaid Service will be suspended unless you move to a pay as you go plan. If you do  
36 not reinstate prepaid Service within the required period based upon your service plan, your phone  
37 number will be reallocated. The Charges for Service and the amount of time that Service is available  
38 following activation of your prepaid Service account balance may vary; see your Rate Plan for more  
39 information. Prepaid Service is non-refundable (even if returned during the Cancellation Period), and no  
40 refunds or other compensation will be given for unused airtime balances, lost or stolen prepaid cards, or  
41 coupons. You will not have access to detailed usage records or receive monthly bills. Coverage specific  
42 to our prepaid Service may be found at <https://prepaid.T-Mobile.com/prepaid/coverage-map> and differs  
43 from coverage related to our postpaid Service.

44 Source: <https://www.T-Mobile.com/responsibility/legal/terms-and-conditions-aug-2018#UsingOurNetwork>  
45 (accessed 12/19/18)

1 Some prepaid plans do not allow domestic roaming on other carriers within the US – i.e., when  
2 the user travels to a location that is not on the host MNO’s own network or where the MNO has  
3 entered into a roaming agreement to supplement its own capacity at that location. Throttling of  
4 download speeds on so-called “unlimited” data plans may begin sooner than for corresponding  
5 postpaid plans, or provide other restrictions. For example, Sprint’s Boost Mobile describes one  
6 of its “unlimited” plans as follows:<sup>46</sup>

7

8  
9 \$50/mo. Unlimited GIGs with Unlimited data, talk & text. Includes mobile-optimized streaming videos,  
10 gaming & music (video streams at up to 480p+ resolution, music at up to 500kbps, streaming cloud  
11 gaming at up to 2mbps.), plus unlimited 4G LTE for most everything else. Enjoy unlimited talk and text,  
12 plus free mobile hotspot\*, up to 12GB.

13

14 Some prepaid plans restrict the types of handsets that may be used. Some plans prevent or limit  
15 the amount – and/or the speed – of mobile hotspot usage. For example, Boost explains its  
16 mobile hotspot policy as follows:<sup>47</sup>

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46. <https://www5.boostmobile.com/#!/support/faq/plans-services/unlimited-plans/> (accessed 12/18/18)

47. *Id.*

1  
2 What does Mobile Hotspot mean for the Boost Unlimited Plans?  
3

4 Currently, the Mobile Hotspot feature is available only for select phones. Learn more about Data Packs  
5 or visit My Account to purchase.  
6

7 You can turn on the functionality by accessing your phone Settings. You can also check your phone's  
8 User Guide for specific details and more information.  
9

- 10 • If you're on \$35/mo. Unlimited data, talk & text with 3GB of 4G LTE High-Speed Data plan your  
11 hotspot data usage is drawn from your overall data bucket including the 3GB 4GLTE high-speed  
12 data. All data usage is throttled to 2G speeds after consumption of the high-speed data allotment. If  
13 you want more high-speed data for your own consumption or mobile hotspot you can add more 4G  
14 LTE data anytime with 1GB for \$5/mo. or 3GB for \$10/mo.  
15 • If you're on \$50/mo. Unlimited GIGs plan, 12GB of hotspot usage is included in the plan but there is  
16 no option to buy more hotspot usage.  
17

18 \* Mobile Hotspot Usage: Using your smartphone to:

- 19 ○ Share your phone's hotspot with other users;  
20 ○ Connect a device (such as a laptop or tablet) to the Internet either via Wi-Fi, or a physical  
21 connection (such as a USB cable), or an app that enables mobile hotspot service without the  
22 purchase of a hotspot plan (i.e., "tethering");  
23 ○ Distribute and share media files (such as books, music and games) with others (i.e., peer-to-  
24 peer (P2P) networking technology); and/or  
25 ○ Connect to a Virtual Private Network (VPN);  
26 will draw from your plan's Mobile Hotspot allocation.  
27

28 Many prepaid plans are currently less expensive than postpaid, yet the vast majority of wireless  
29 customers select postpaid services. Clearly, such customers do not view prepaid as an accept-  
30 able "substitute," confirming that the *HMG's* specification as to when products are considered as  
31 being provided in separate relevant product markets clearly applies to the prepaid / postpaid  
32 distinction. Indeed, T-Mobile witnesses Israel, Katz and Keating have stated, in their FCC  
33 declaration, as a "fact" that, "although there is substitution between postpaid and prepaid  
34 products, postpaid products may be closer substitutes for other postpaid products and prepaid  
35 products

1 closer substitutes for other prepaid products.”<sup>48</sup>

2

3 52. Not only do postpaid and prepaid services constitute separate and distinct relevant  
4 product markets, the providers themselves have designed these two products to be attractive to  
5 two distinct customer segments. Citing a T-Mobile Response to Public Advocates Office data  
6 request, Ms. Odell notes that “[o]f the four large facilities-based wireless companies in the  
7 United States, T-Mobile and Sprint Wireless’s nation-wide post-paid customer bases have

8 **[BEGIN T-MOBILE CONFIDENTIAL]** [REDACTED]

9 [REDACTED] **[END T-MOBILE CONFIDENTIAL]** than observed in AT&T and Verizon’s  
10 customer bases; similarly, the customer bases of T-Mobile’s prepaid brand MetroPCS and one of  
11 Sprint’s prepaid brands, Boost, each have **[BEGIN SPRINT CONFIDENTIAL]** [REDACTED]

12 [REDACTED] **[END SPRINT**

13 **CONFIDENTIAL]** than their competitors.”<sup>49</sup>

14

15 53. In fact, there can be little doubt that the MNOs have successfully used the postpaid/  
16 prepaid distinction to segment the wireless market. By degrading the features and quality of  
17 prepaid services, MNOs (and their MVNO partners) are able to offer prepaid services at lower  
18 prices without materially cannibalizing the higher-priced and more profitable postpaid segment.

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48. Applications of T-Mobile US, Inc. and Sprint Corporation for Consent to Transfer Control of Licenses and Authorizations; WT Docket No. 18-197, Appendix F: Declaration of Compass Lexecon Mark Israel, Michael Katz, and Bryan Keating, September 17, 2018, at para. 33.

49. Eileen Odell (Public Advocates Office) decl., at 8, citing T-Mobile Response to Cal Public Advocates DR 2-11, CONFIDENTIAL Attachment “TMUS-CPUC-PA-11008100.pdf” at 4, 9. Ms. Odell also observes that **[BEGIN T-MOBILE CONFIDENTIAL]** [REDACTED]

**[END T-MOBILE CONFIDENTIAL]**



1       **If the merger goes forward, New T-Mobile will control roughly 59% of the prepaid**  
2       **services market, and the prepaid market HHI will jump by 1468 points – more than**  
3       **seven times the HMG’s 200-point threshold.**  
4

5       54. Because prepaid and postpaid services are in different and separate relevant product  
6 markets, it is appropriate to develop HHIs separately for each of these two markets. Ideally,  
7 prepaid and postpaid HHIs should be developed for each relevant geographic market, as I have  
8 done for a composite of the two markets on a county-by-county basis. However, county level  
9 prepaid and postpaid market data is not available. Thus, with the caveat that separate HHIs for  
10 prepaid and postpaid that also reflect different relevant geographic markets cannot be done due  
11 to data limitations, I have proceeded to calculate HHIs for these two markets at a national level.  
12

13       55. Using market data available from public sources (e.g., MNO Annual Reports and 10-  
14 Ks), Ms. Odell compiled total and prepaid subscriber counts as of December 31, 2017. Using  
15 similar data obtained from these same public sources, I have calculated the current and post-  
16 merger HHIs for the Prepaid product market, as shown in Table 9 below. As Table 9 indicates,  
17 the Prepaid HHI would increase by 1468, from 3040 to 4508. This huge jump in the HHI results  
18 from the fact that New T-Mobile would control some 58.9% of the Prepaid market, as compared  
19 with only 33.0% of the combined Postpaid and Prepaid markets. I have also calculated market  
20 shares and HHIs for the Postpaid market by subtracting the number of Prepaid subscribers from  
21 the Total subscriber counts. Postpaid shares for Verizon, AT&T, T-Mobile and Sprint are  
22 33.1%, 37.7%, 15.5% and 13.6%, respectively. Using those shares, I have calculated the current  
23 Postpaid market HHI at 2947 and the post-merger Postpaid HHI at 3370, an increase of 423.  
24 The merger would thus result in an increase in the HHI in excess of 200 points for both markets,

1 but the magnitude of the increase is far greater in the case of the Prepaid Services market.

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Table 9							
FACILITIES-BASED WIRELESS CARRIER TOTAL AND PREPAID MARKET SHARES AND HHIs AS OF DECEMBER 31, 2017							
Company	Total Subscribers	Total Subs Market Share	Branded Prepaid Subs	Branded		Prepaid HHI (present)	Prepaid HHI (merger)
				Prepaid Subs Market Share	Prepaid HHI (merger)		
Verizon	116,257,000	30.2%	5,403,000	10.7%	10.7	10.7	
AT&T	141,567,000	36.8%	15,335,000	30.4%	30.4	30.4	
T-Mobile	72,585,000	18.9%	20,668,000	41.0%	41		
Sprint	54,581,000	14.2%	8,997,000	17.9%	17.9		
<b>New T-Mobile</b>	<b>127,166,000</b>	<b>33.0%</b>	<b>29,665,000</b>	<b>58.9%</b>			<b>58.9</b>
HHI	Calculations:					$10.7^2+30.4^2$	$10.7^2+30.4^2$
	Results:					$+41.0^2+17.9^2 =$	$+58.9^2 =$
	Increase in Prepaid Services HHI that would result from merger					3040	4508
Source: Carrier subscription data used in these HHI calculations was compiled by Public Advocates Office witness Eileen Odell, at 14.							

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18 56. The huge jump in concentration in the Prepaid market – from 3040 to 4508 – portends  
 19 price increases for Prepaid services that are provided by MNOs directly to their retail customers  
 20 as well as via MVNOs. MVNOs like TracFone do compete on price both with the MNOs and  
 21 with each other, and do represent a competitive challenge to the direct retail services being  
 22 furnished by MNOs to the extent that they compete for the same customers. The merger is likely  
 23 to modify these two companies’ financial incentives with respect to affirmatively facilitating vs.  
 24 merely tolerating MVNO resale. And if the outcome is closer to the latter than to the former,  
 25 MVNO retail prices are likely to rise, an outcome that will disproportionately impact the most  
 26 vulnerable consumers – specifically those that the facilities-based carriers have generally  
 27 ignored.

28

1 **The CPUC has previously adopted a series of tests for the presence of effective competition**  
2 **in the mobile wireless telecommunications market.**  
3

4 57. In their Application, Public Interest Statement, and supporting testimony, the Joint  
5 Applicants point to substantial efficiency gains that will be available to New T-Mobile (but that  
6 are not available to the two companies standing alone) due to the increased scale of their merged  
7 operation.<sup>50</sup> However, such efficiency gains as may arise will only be flowed through as  
8 “economic benefits” to consumers if New T-Mobile is compelled by competitive marketplace  
9 forces to reduce its prices to reflect such efficiencies. Thus, customer benefits can only  
10 outweigh the detrimental effects if the post-merger wireless market in California is sufficiently  
11 competitive to compel New T-Mobile to share with its customers some portion of the economic  
12 benefits that New T-Mobile will realize from the increased scale of its operations rather than  
13 retain most or all of these economic benefits for its shareholders.

14  
15 58. Advancing various claims of “efficiency gains” has become a common practice among  
16 companies seeking government approval of large-scale mergers and acquisitions. For example,  
17 in its 2015 attempt to acquire Office Depot, Staples focussed specifically upon cost savings and  
18 other synergies:

19  
20 This transaction delivers great value for our shareholders and creates a company  
21 ideally positioned to serve our customers and grow over the long term,” said  
22 Roland Smith, chairman and chief executive officer for Office Depot, Inc. “It is  
23 also an endorsement of our many accomplishments and the tremendous success  
24 we’ve had integrating Office Depot and OfficeMax over the past year. We look  
25 forward to bringing our experience and knowledge to the new organization.

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50. See, e.g., Public Interest Statement, at 15-16.

1 Staples expects to generate at least \$1 billion of annualized cost synergies by the  
2 third full fiscal year post-closing. The majority of these synergies would be  
3 realized through headcount and general and administrative expense reductions,  
4 efficiencies in purchasing, marketing, and supply chain, retail store network  
5 optimization, as well as sharing of best practices. ...<sup>51</sup>  
6

7 The FTC, however, did not view these potential efficiency gains as sufficient to overcome the  
8 potential competitive harms that would result from the transaction, precisely because of its  
9 adverse impact upon competition.<sup>52</sup> The FTC applied an HHI analysis in reaching this  
10 conclusion:

11  
12 ... Post-Merger, Staples would control more than 70% of the relevant market. The  
13 next-largest competitor would possess less than 5% of the relevant market. Under  
14 the 2010 U.S. Department of Justice and Federal Trade Commission Horizontal  
15 Merger Guidelines (“Merger Guidelines”), a post-merger market-concentration  
16 level above 2,500 points, as measured by the Herfindahl-Hirschman Index  
17 (“HHI”), and an increase in market concentration of more than 200 points renders  
18 a merger presumptively unlawful. Post-Merger market concentration would be  
19 more than 4900, and would increase HHIs in an already concentrated market by  
20 well over 200 points. Thus, the Merger is presumptively unlawful.<sup>53</sup>

21  
22 59. The CPUC’s 1993 *Investigation on the Commission’s own Motion into Mobile*  
23 *Telephone Service and Wireless Communications* (I.93-12-007) was initiated at the time that the  
24 FCC was about to open up new CMRS spectrum and license several new providers, and in so  
25 doing put an end to the cellular duopoly that had persisted for the first decade of the mobile

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51. *Staples, Inc. Announces Acquisition of Office Depot, Inc.*, Staples, Inc. Press Release, February 4, 2015.  
<http://staples.newshq.businesswire.com/press-release/corporate/staples-inc-announces-acquisition-office-depot-inc>  
(accessed 12/27/15)

52. *Id.*, paras. 11-12, at 3.

53. *FTC Staples/Office Depot Complaint*, para. 14, at 3-4.

1 wireless industry in the US. That first decade had seen little downward price movement and low  
2 penetration for this new service. By mid-1993, only about 13-million mobile wireless phones  
3 were in service,<sup>54</sup> while some 92.2-million US households had wireline telephone service.<sup>55</sup> In  
4 its decision in that Investigation, D.94-08-022, the CPUC concluded that competition had not  
5 developed to the point where rate regulation was no longer necessary to protect consumers. The  
6 Commission proposed several specific tests for wireless carrier market power, including HHI,  
7 comparable pricing by different carriers, and overall profitability levels. These were  
8 summarized in a number of Findings of Fact (“FOFs”) in D.94-08-022. And, notwithstanding  
9 that this investigation and CPUC decision occurred nearly a quarter of a century ago, the  
10 Commission’s findings in that docket remain remarkably relevant and applicable in the current  
11 context:

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FOF 21. Cellular pricing patterns are relevant as an indicator of market power of cellular carriers.

FOF 22. High cellular prices, particularly in the largest California metropolitan markets, provide additional evidence of market power.

FOF 23. A 1992 study of cellular prices by the U.S. General Accounting Office found that “A market with only two producers – a duopoly market – is unlikely to have a competitively set price that is at or near the cost of producing the good.”

FOF 24. Cellular carriers have generally developed two categories of billing options: [\*144] (1) a “Basic Service” option which offers the maximum flexibility in usage or choice of carrier; and (2) various “Discount” options which generally entail restrictions as to usage or choice of carrier in exchange for targeted price discounts.

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54. FCC Industry Analysis Division, Common Carrier Bureau, *Trends in Telephone Service*, February 1999, at Table 2.1 “Cellular Telephone Subscribers,” p. 2-3.

55. *Id.*, at Table 17.1, p. 17-3.

1 FOF 25. While an increasing share of subscribers have been migrating to discounted  
2 rate plans, a significant number continue to be billed under basic service plans.

3  
4 FOF 26. While costs of cellular equipment have declined significantly over the past  
5 decade, the nominal rate for basic service has remained unchanged in most California  
6 cellular markets.

7  
8 FOF 27. A study by the U.S. General Accounting Office found that duopolists set their  
9 best prices within 10% of each other in two-thirds of the nation's markets.

10  
11 FOF 28. In California, the rates charged by duopolists for basic service are nearly  
12 identical or vary by no more than 11% between any two comparable rate plans.

13  
14 FOF 29. A study by the National Cellular Resellers Association found that among the  
15 top 30 U.S. markets, LA. was the second highest and San Francisco was the seventh  
16 highest priced cellular market, based even upon the best rates available for 30 minutes of  
17 monthly airtime.

18  
19 FOF 30. Although various [\*145] carriers filed advice letters to reduce certain rates  
20 since adoption of pricing flexibility, most of those reductions were targeted to very  
21 specific user groups and were only temporary promotions which have since expired and  
22 provide no ongoing savings.

23  
24 FOF 31. A particular reduction in a price or charge is not necessarily evidence of  
25 competitive pricing, but can simply be a response to changes in consumer demand,  
26 technology, or marginal costs.

27  
28 FOF 32. Cellular carriers' costs in relation to prices provide another indicator of market  
29 power.

30  
31 FOF 33. To the extent carriers can raise prices to levels well in excess of costs and  
32 command above-market returns on investment over an extended time period, this can be  
33 an indicator of insufficient competition.

34  
35 FOF 34. As a general class of investments, cellular licensees offer returns among the  
36 highest available in the investment securities market, based upon 1991 data from the  
37 National Telecommunications Information Administration.

38  
39 FOF 35. In a competitive market, excessively high returns would be expected to only be  
40 temporary as new competitors looking to maximize wealth discovered the high returns

1 and entered the market, bidding down prices to garner [\*146] a share of the high returns.

2  
3 FOF 36. In the case of cellular carriers in major California markets, returns have  
4 remained at high levels over an extended period, compared with returns realized by other  
5 entities regulated by the CPUC.

6  
7 FOF 37. In I.88-11-040, the DRA demonstrated that cellular carriers' returns exceeded  
8 returns of industries with comparable risks.

9  
10 FOF 38. D.90-06-025 provided a guideline for detecting the profits which exceeded  
11 acceptable levels for cellular duopolists, by distinguishing profits explained by the  
12 scarcity of spectrum from profits due solely to a failure to compete.

13  
14 FOF 39. Evidence of profits due to a failure to compete would be pricing of services so  
15 high as to discourage full system utilization or failure to invest in system expansion when  
16 it is economically justified.<sup>56</sup>

17  
18 It is instructive to examine how these findings apply to the current state of the wireless market.

19  
20 60. *Pricing*. "Cellular pricing patterns are relevant as an indicator of market power of  
21 cellular carriers" (FOF 21). Although wireless prices (generally expressed in terms of Average  
22 Revenue Per Unit<sup>57</sup> ("ARPU")) have been steadily decreasing for several years, AT&T and  
23 Verizon prices remain in excess of the industry average, both as to absolute amount as well as  
24 relative price movements. Although T-Mobile price levels (ARPU) have decreased propor-  
25 tionately less than the other three carriers, T-Mobile's prices have been consistently lower than

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56. D.94-08-22, 55 CPUC2d 538, 581-582, 1994 Cal. PUC LEXIS 487 \*43-\*46.

57. ARPU has long been the industry-standard measure of a carrier's average price. It is calculated by dividing total service revenue (excluding handset installment payments) by the number of wireless phones in service. Some carriers have started using a different metric for reporting their average revenue. Instead of dividing by the number of service units, they divide by the number of wireless accounts. Thus, a family plan with four (4) handsets would be considered as four (4) "units" for ARPU purposes, or one (1) account for Average Revenue Per Account ("ARPA") purposes.

1 those being charged by AT&T and Verizon for many years. “High cellular prices ... provide  
2 additional evidence of market power” (FOF 22). That AT&T and Verizon have not felt com-  
3 pelled to match either the absolute level of, or percentage reductions in, Sprint and T-Mobile  
4 prices provides further demonstration of the “big two’s” inherent market power despite the  
5 presence of the two smaller rivals.

6

7 61. *Profits.* “In a competitive market, excessively high returns would be expected to only be  
8 temporary as new competitors looking to maximize wealth discovered the high returns and  
9 entered the market, bidding down prices to garner a share of the high returns” (FOF 35). “In the  
10 case of cellular carriers in major California markets, returns have remained at high levels over an  
11 extended period, compared with returns realized by other entities regulated by the CPUC” (FOF  
12 36). Despite large industry-wide price reductions, both AT&T and Verizon have largely  
13 succeeded in maintaining relatively constant EBITDA per subscriber levels, which are also well  
14 above those of their two smaller rivals. The Joint Applicants have, of course, argued that a New  
15 T-Mobile will be an even stronger rival to AT&T and Verizon, pushing prices down even more.  
16 An alternative view is that a New T-Mobile would have far more to gain simply by maintaining  
17 prices that are comparable to those of AT&T and Verizon rather than to forgo profit  
18 opportunities by engaging in a price war with its two then-similarly sized rivals. In fact, in  
19 addressing the 2011 AT&T/T-Mobile merger, the FCC staff had specifically noted that larger  
20 firms have more to gain by engaging in coordinated conduct with similarly-sized counterparts  
21 than they would by trying to capture additional market share by lowering prices.<sup>58</sup>

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58. *WT Docket No. 11-65, FCC Staff Report*, at para. 81.



1       62. In considering the public interest aspects of the proposed merger, the Commission will  
2 need to balance the purported benefits of the transaction against the significant increase in  
3 overall market concentration, market power, and the potential for further diminution of compe-  
4 tition in what is already a largely monopolistic market. The benefits that the Joint Applicants  
5 seek to ascribe to the merger easily pale when compared with the significant risks that the  
6 merger will create for California consumers, competitors, and state and local economies.

7  
8 **ISSUE 9. Would the merger increase the market power of the incumbent local  
exchange carriers and their wireless affiliates?**

9  
10 **The merger of Sprint and T-Mobile will enhance the market power of New T-Mobile as**  
11 **well as that of all of the large national CMRS providers.**  
12

13       63. Except for a small presence by US Cellular in a few California markets, there will be no  
14 further entry into the California wireless market, for at least two reasons:

15  
16 (1) At this point, there is not likely to be any significant amount of additional wireless spectrum  
17 to be offered at auction by the FCC except in the millimeter band, and even if some modest  
18 amount of additional low- or mid-band spectrum did become available, it would be useful  
19 only as an adjunct to existing carriers' existing holdings, not as a basis for any additional  
20 entry into the market;

21  
22 (2) By the Joint Applicants' own claims as to the necessity of increasing their own scale of  
23 operations to one that rivals that of AT&T and Verizon – each of which controls roughly

1 one-third of the licensed capacity and one-third of the total wireless market – there will  
2 simply be no opportunity for any other entrant to challenge the three incumbents even if  
3 additional spectrum were to become available.

4  
5 The mobile wireless telecommunications market in the United States is decidedly *not* a  
6 “contestable market” in the sense that incumbents’ conduct might be influenced by the threat of  
7 additional entry. The theory of contestable markets suggests that the threat of market entry by  
8 *potential* competitors can provide the same competitive pressures as *actual* competition, and  
9 conversely, where there is no threat of future competition, existing firms may behave in such a  
10 way that the marketplace arrives at supracompetitive prices. In order to be contestable, a market  
11 must have relatively low barriers to entry, must involve a relatively short ramp-up period for  
12 potential entrants to become actual entrants, and must be able to viably support additional  
13 competition (i.e., must not be a natural monopoly). The wireless industry, characterized by its  
14 high barriers to entry and the long lead times required to build a network, almost certainly  
15 qualifies as a non-contestable market.<sup>59</sup> Although the wireless industry is rife with entry  
16 barriers, several in particular – Spectrum, High Fixed and Sunk Costs, Time to Entry, and  
17 Incumbent Advantages (Brand Loyalty and Network Effects) – virtually preclude any real  
18 possibility of further entry, thus eliminating the threat of entry as having any role in constraining  
19 market prices to competitive levels. Entirely insulated from any threat of entry, there is simply  
20 no reason why any of the three post-merger roughly equal sized incumbents would perceive any  
21 long-term economic benefit in aggressively seeking to capture rivals’ market shares rather than

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59. See, e.g., Joe Bain, *Barriers to New Competition*, Harvard University Press, 1956; Baumol, Panzar and Willig, *Contestable Markets and the Theory of Industry Structure*, Harcourt Brace Jovanovich, 1982.

1 tacitly agree to a roughly one-third for each market allocation.

2

3 **The Joint Applicants’ already engage in some parallel conduct *vis-à-vis* their larger rivals,**  
4 **and the merger will create additional incentives and opportunities for the post-merger New**  
5 **T-Mobile to expand into new areas of parallel conduct going forward.**

6

7 64. Indeed, it is clear that the “big two” have been extremely successful in maintaining  
8 prices above the industry average and certainly above those of their smaller rivals by *not*  
9 responding to their smaller rivals’ pricing initiatives. They have maintained and, in Verizon’s  
10 case, even increased their market shares. They have maintained their profitability (in terms of  
11 EBITDA per unit) at around twice that of Sprint and T-Mobile without any need to match the  
12 pricing and marketing tactics being employed by the two smaller firms. From a financial and  
13 profitability standpoint, a post-merger New T-Mobile would have far more to gain by accepting  
14 a *de facto* market structure consisting of three roughly equal sized incumbents than it would by  
15 engaging in aggressive price competition against AT&T and Verizon.

16

17 65. It is apparent that AT&T and Verizon are engaging in parallel, if not overtly  
18 coordinated, conduct insofar as maintaining price and earnings levels. Even T-Mobile’s  
19 Executive Vice President and Chief Technology Officer, Neville R. Ray, has described AT&T  
20 and Verizon as “the Duopoly.”<sup>60</sup> And in its analysis of the 2011 proposed T-Mobile/AT&T  
21 merger, the FCC Staff observed that

22

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60. “Setting the 5G Record Straight: Announcing Plans for Nationwide 5G from T-Mobile,” Neville Ray, T-Mobile blog, May 01, 2017, available at <https://www.T-Mobile.com/news/nationwide-5g-blog> (accessed 12/10/18).

1 AT&T and Verizon Wireless, the largest nationwide providers, have substantially  
2 more to gain from coordination, because of their higher market shares  
3 (nationwide shares in excess of 30 percent compared with T-Mobile's 11  
4 percent). In addition, their similar structures and positions in the market suggest  
5 they would have similar preferences regarding how the market evolves. For  
6 example, AT&T and Verizon have the two most extensive wireless networks, and  
7 affiliated wireline operations that they use to offer wireline voice, data, and video  
8 services. They have a similar mix of spectrum holdings, and are the two largest  
9 holders of spectrum below 1 GHz. They are also the first two providers to roll  
10 out (or with plans to roll out) nationwide LTE networks. They also offer the  
11 largest variety of handsets, are the largest providers of roaming services and are  
12 the providers of backhaul services to wireless firms.<sup>61</sup>  
13

14 The potential for coordinated conduct among industry members becomes more feasible as the  
15 total number of firms in a market decreases. As the FCC Staff report explains:

16 Reaching a consensus would be facilitated by the small number of firms and the  
17 use of national prices and service plan offerings by most providers across most  
18 geographic markets. The transparency of prices (firms post and publicize them to  
19 market their plans), small size of individual retail transactions relative to the size  
20 of the market, *and the common use of contracts by postpaid customers*, make it  
21 likely that cheating on a coordinated consensus would be detected rapidly and  
22 matched (or otherwise punished). Indeed, the nationwide providers pay close  
23 attention to each other's prices and quickly detect, evaluate, and, if they choose,  
24 respond to pricing moves by rivals. Cheating would be deterred because a firm  
25 that expects its rivals to respond quickly to a price cut, as by matching, is unlikely  
26 to find it profitable to undercut a high coordinated price. Finally, new competi-  
27 tion that would undermine or deter coordinated price is unlikely for reasons  
28 discussed in connection with analyzing the possibility that entry or expansion  
29 would preclude or counteract unilateral effects.<sup>62</sup>  
30  
31

32 If the current T-Mobile/Sprint merger is consummated, New T-Mobile would achieve roughly

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61. *WT Docket No. 11-65, FCC Staff Report*, at para. 81, citations omitted.

62. *Id.*, at para. 77, citations omitted.

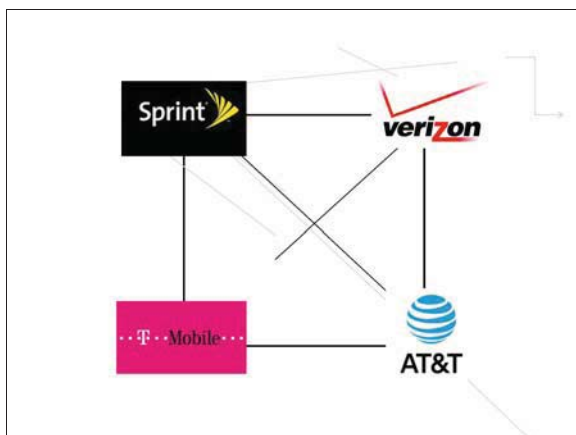
1 the same 30% market share that the FCC Staff had identified as sufficient to provide AT&T and  
2 Verizon with incentives to engage in coordinated conduct. New T-Mobile would have far more  
3 to gain by maintaining prices that are comparable to those of AT&T and Verizon rather than to  
4 forgo profit opportunities by engaging in a price war with its two then-similarly sized rivals.

5

6 66. There is additional evidence of such parallel conduct that I will address below. The  
7 Joint Applicants portray New T-Mobile as maintaining its “Un-carrier” disruptive competitive  
8 initiatives following the merger, but there is, in fact, far more reason to expect New T-Mobile to  
9 “join the club” rather than continue to maintain its (and Sprint’s) current “outsider” posture.

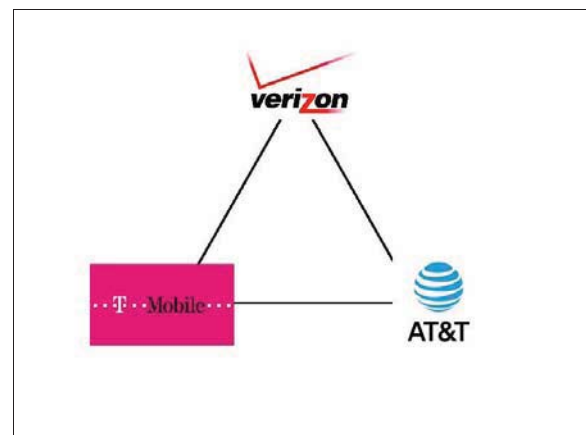
10

11 67. The presence of four principal facilities-based incumbents – even if one assumes them  
12 all to be equal in their ability to compete – at least in theory results in six (6) bilateral rivalries:  
13 A replacement of the existing Sprint/T-Mobile rivalry with a single New T-Mobile cuts the



14

**Figure 7.** A market with four firms can have as many as six bilateral competitive interactions.



**Figure 8.** In a three-firm market, the number of competitive interactions is reduced to only three.

1 number of theoretical bilateral rivalries in half – from six to just three – making it considerably  
 2 easier for the industry to tacitly, if not overtly, enforce coordinated conduct among all industry  
 3 participants. AT&T and Verizon ARPU generally and price levels for specific services have  
 4 been and remain considerably higher than those offered by T-Mobile and Sprint.

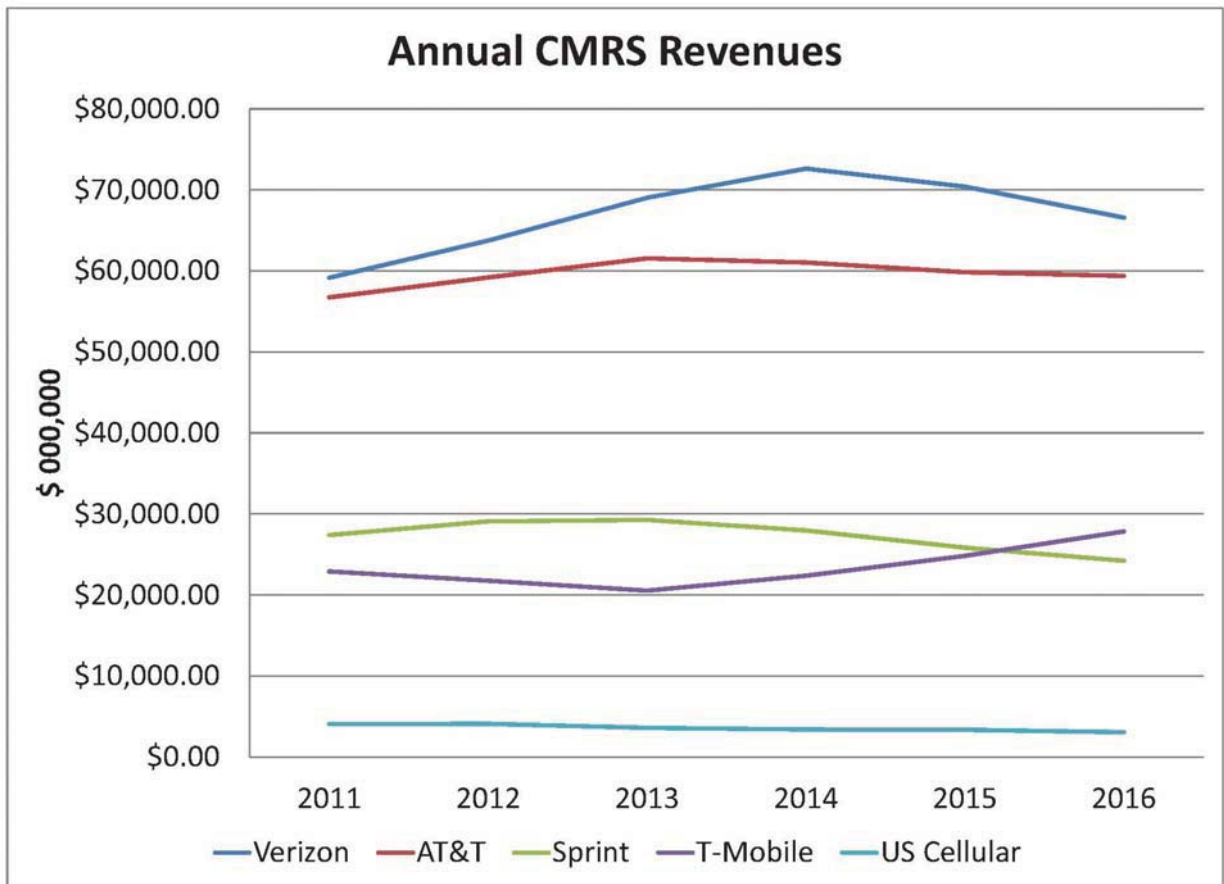
5  
 6 68. The Joint Applicants currently operate in a market dominated by AT&T and Verizon,  
 7 but upon closer examination it is apparent that Sprint and T-Mobile primarily compete against  
 8 each other rather than against the two currently dominant carriers. In fact, a substantial  
 9 component of T-Mobile’s growth in recent years was primarily at the expense of Sprint, less so  
 10 for AT&T and Verizon. Table 10 below presents the total revenues of the five largest CMRS  
 11 carriers as compiled from data provided in the *Seventeenth* and *Nineteenth CMRS Reports*:

12  
 13 **Table 10**  
 14  
 15 **WIRELESS CARRIER REVENUES 2010-2016**  
 16 **(\$000,000)**

Carrier	2010	2011	2012	2013	2014	2015	2016
Verizon	55,629	59,157	63,733	69,033	72,630	70,396	66,580
AT&T	53,510	56,726	59,186	61,552	61,032	59,837	59,386
Sprint	25,894	27,390	29,086	29,263	27,959	25,845	24,215
T-Mobile	22,379	22,909	21,753	20,535	22,375	24,821	27,844
US Cellular	3,913	4,054	4,099	3,595	3,398	3,350	3,051
TOTAL	161,325	170,236	177,857	183,978	187,394	184,249	181,076

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 20  
 21  
 22  
 23  
 24 Source: Seventeenth CMRS Report, at p. 15, Table II.C.1, Nineteenth CMRS Report, at p. 15, Table II.C.1.  
 25

26 Between 2010 and 2016, while total industry revenues saw an increase of just under \$20-billion  
 27 (12.2%), Sprint’s revenues *decreased* by nearly \$1.7-billion. T-Mobile revenues, on the other  
 28 hand, increased by nearly \$5.5-billion – a 24.4% jump. Verizon’s revenues went up by \$11-



**Figure 9.** AT&T and Verizon have successfully maintained their revenue-based market shares, while T-Mobile and Sprint have been competing mainly with each other, such that T-Mobile’s revenue gain has been Sprint’s revenue loss.

1 billion, while AT&T saw just under \$6-billion in 2016 revenues vs. 2010. T-Mobile’s new  
2 marketing thrust following the demise of its 2011 attempt to merge with AT&T took revenues  
3 away from Sprint, not from AT&T or Verizon. This is presented graphically in Figure 7 below:  
4

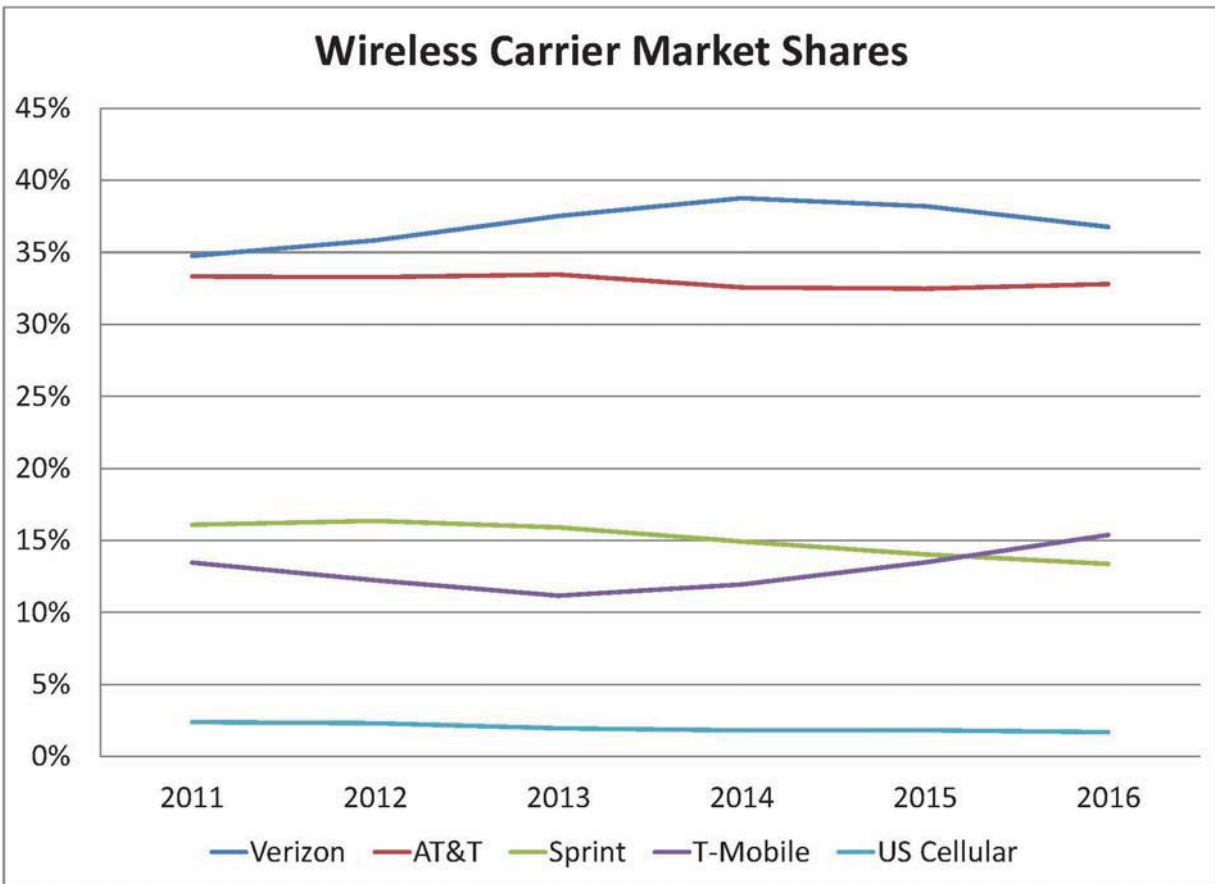
1           69. Table 11 below provides the revenue-based market shares calculated from the revenue  
 2 data in Table 10. T-Mobile saw a 1.5 percentage point jump in its market share, from 13.87% to  
 3 15.38%, while Sprint’s market share dropped from 16.05% in 2010 to 13.37% in 2016.  
 4 Verizon’s share increased and AT&T’s decreased only slightly over the same period. As with  
 5 the revenue effects of T-Mobile’s new “Un-carrier” marketing, the company took share mainly  
 6 from Sprint.

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<b>Table 11</b>							
<b>WIRELESS CARRIER REVENUE MARKET SHARES 2010-2016</b>							
<b>Carrier</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
Verizon	34.48%	34.75%	35.83%	37.52%	38.76%	38.21%	36.77%
AT&T	33.17%	33.32%	33.28%	33.46%	32.57%	32.48%	32.80%
Sprint	16.05%	16.09%	16.35%	15.91%	14.92%	14.03%	13.37%
T-Mobile	13.87%	13.46%	12.23%	11.16%	11.94%	13.47%	15.38%
US Cellular	2.43%	2.38%	2.30%	1.95%	1.81%	1.82%	1.68%
Source: Calculated using revenue data from Seventeenth CMRS Report, at p. 15, Table II.C.1, Nineteenth CMRS Report, at p. 15, Table II.C.1.							

20 These market share changes are presented graphically in Figure 8 below: Another useful basis for  
 21 assessing the extent to which the individual carriers are engaging in competitive responses to  
 22 rivals’ initiatives or avoiding such responses is to look at the four firms’ overall price levels and  
 23 earnings over time. Even in monopolistic or oligopolistic markets, prices can decrease over time  
 24 if the *market demand is relatively price-elastic* – i.e., if it exceeds (in absolute value) 1.0. If  
 25 demand is price-elastic, a drop in price will result in an overall increase in revenues as the  
 26 percentage increase in demand exceeds the percentage decrease in price. If the marginal cost of  
 27 providing the service is also falling, the combined effect of a relatively price-elastic demand and





**Figure 10.** Sprint and T-Mobile have been competing with each other for market share, while having minimal impact upon share held by AT&T and Verizon.

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1        70. The industry standard pricing metric that is used for comparison purposes among  
 2 carriers is Average Revenue per Unit (“ARPU”). ARPU is regularly reported in the carriers’ 10-  
 3 K and 10-Q filings with the Securities and Exchange Commission (“SEC”) and is summarized in  
 4 the FCC’s *CMRS Reports*. Table 12 and Figure 9 below provide 4th quarter ARPU for 2011  
 5 through 2016 for each carrier. It also provides an industry average for 2013-2016 (the 2011 and  
 6 2012 figures are not consistently reported by the FCC).

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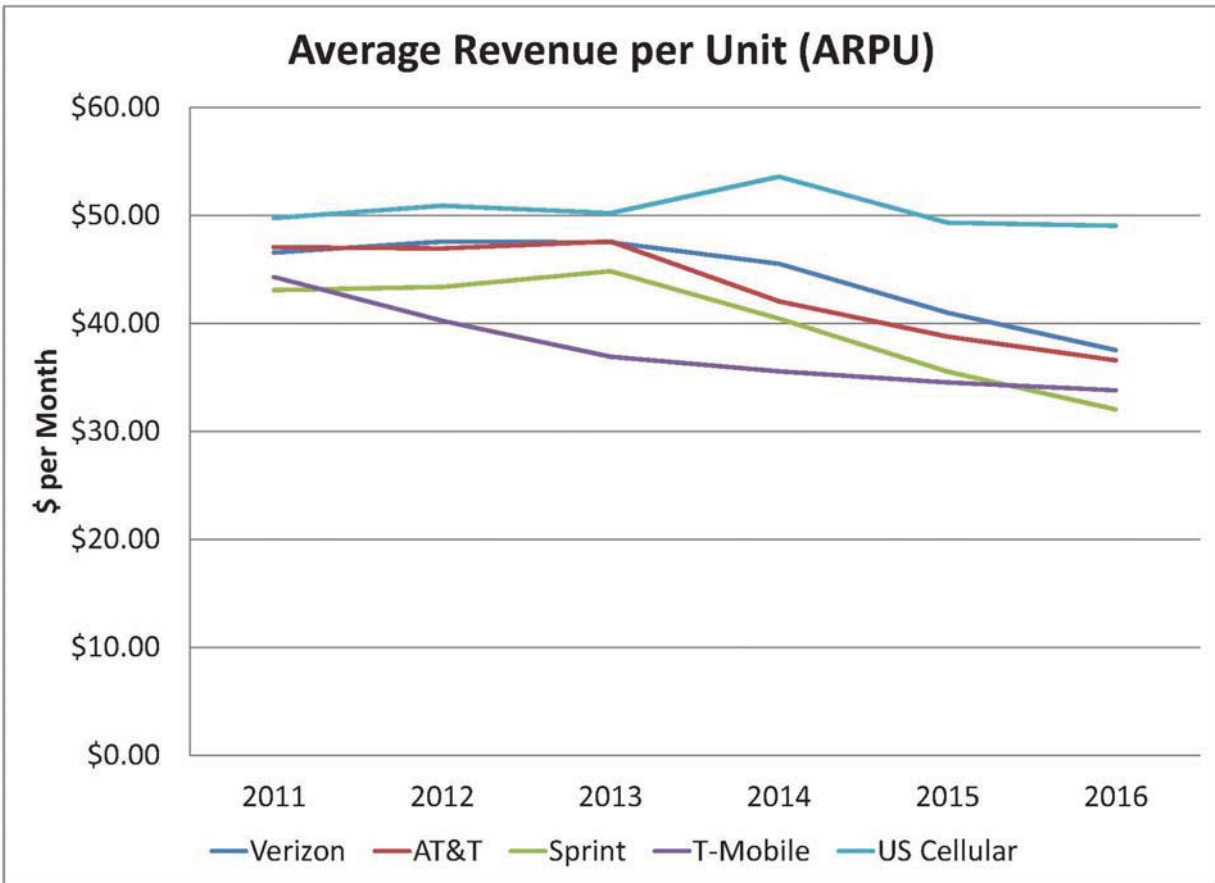
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<b>Table 12</b>						
<b>AVERAGE REVENUE PER UNIT</b>						
<b>(\$ per month)</b>						
	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>4Q14</b>	<b>4Q15</b>	<b>4Q16</b>
Verizon	\$46.55	\$47.57	\$47.50	\$45.52	\$40.99	\$37.52
AT&T	\$47.04	\$46.94	\$47.58	\$42.04	\$38.78	\$36.58
Sprint	\$43.08	\$43.37	\$44.83	\$40.44	\$35.54	\$32.03
T-Mobile	\$44.29	\$40.24	\$36.91	\$35.56	\$34.53	\$33.80
US Cellular	\$49.74	\$50.89	\$50.21	\$53.58	\$49.32	\$49.03
Industry			\$45.63	\$42.27	\$38.54	\$35.93
Source: FCC Seventeenth CMRS Report, p. 20, Table II.D.1; Nineteenth CMRS Report, p. 24, Table II.E.1.						



**Figure 11.** AT&T and Verizon have been able to maintain price levels (in terms of ARPUs) in excess of those offered by T-Mobile and Sprint.

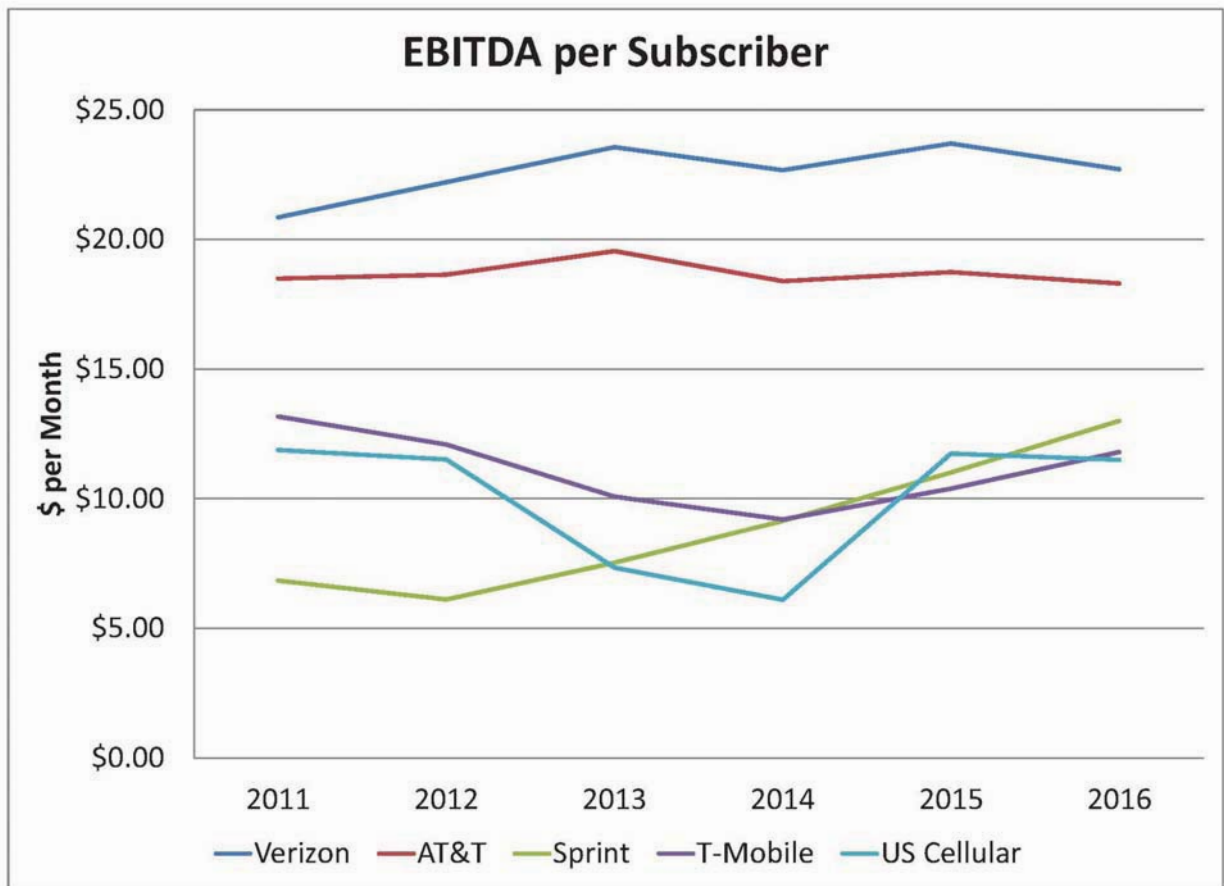
1 Notably, there was a large drop in ARPU after 2013. However, while all of the carriers' ARPU  
2 decreased along with the industry average, AT&T and Verizon maintained theirs *above* the  
3 industry average while Sprint and T-Mobile ARPU dropped below the industry average. Sprint  
4 and T-Mobile were forced to lower their prices in order to maintain and, in the case of T-Mobile,  
5 expand its customer base. However, AT&T and Verizon did not respond with comparable  
6 reductions.

1           71. But one should not look at price reductions in isolation from earnings. The FCC has also  
2 compiled each carrier's Earnings Before Interest, Taxes, Depreciation and Amortization  
3 ("EBITDA") on a per unit basis, as summarized in Table 13 below:  
4

<b>Table 13</b>						
<b>AVERAGE EBITDA PER UNIT</b>						
<b>(\$ per month)</b>						
	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>4Q14</b>	<b>4Q15</b>	<b>4Q16</b>
Verizon	20.85	22.21	23.56	22.67	23.70	22.71
AT&T	18.49	18.64	19.55	18.39	18.74	18.30
Sprint	6.84	6.11	7.53	9.14	11.01	13.00
T-Mobile	13.17	12.09	10.08	9.2	10.39	11.8
US Cellular	11.88	11.51	7.34	6.1	11.74	11.5

15 Source: FCC Seventeenth CMRS Report, p. 21, Table II.D.2; Nineteenth CMRS Report, p. 25, Table II.E.2.

16  
17 Thus, not only were Verizon and AT&T able to maintain prices well in excess of both their  
18 rivals Sprint and T-Mobile as well as above the industry average, they were also able to maintain  
19 very stable earnings despite the drop in industry prices. Figure 10 presents these EBITDA  
20 movements graphically.  
21



**Figure 12.** AT&T and Verizon have been able to maintain highly stable EBITDA per unit well in excess of that for Sprint and T-Mobile by refraining from responding to price drops initiated by the two smaller carriers.

1

2 72. Sprint and T-Mobile have been primarily competing against each other, not against the  
3 “big two” carriers, who have clearly not felt compelled to respond to the lower prices and  
4 aggressive marketing initiated by the two firms that now seek to merge.

5

6

1 **A post-merger New T-Mobile will have overwhelming dominance of the prepaid services**  
2 **market, which may diminish its interest in supporting MVNOs and enable it to raise prices**  
3 **for prepaid services that, for many low-income consumers, are the only type of wireless**  
4 **service for which they are qualified.**  
5

6 73. In order to qualify for post-paid wireless service, a consumer needs to establish some  
7 sort of credit with the service provider. A credit card or an established credit rating will  
8 typically satisfy this requirement, but in some cases an up-front deposit may also suffice. For  
9 many low-income consumers, however, these are insurmountable barriers, leaving prepaid  
10 service the only option for them. Prepaid services are sold directly by the facilities-based  
11 carriers as well as by “Mobile Virtual Network Operators” (“MVNOs”) who purchase capacity  
12 on a wholesale basis from an MNO and resell it to retail customers. In this section, I will  
13 address several aspects of the MNO/MVNO relationship, the change in an MNO’s incentive to  
14 suppose resellers as its market power grows, and the fact that, by the standards set out in the  
15 *Horizontal Merger Guidelines*, postpaid and prepaid services exist in separate and distinct  
16 relevant product markets. If the merger is allowed to go forward, New T-Mobile will acquire a  
17 position of overwhelming dominance of the prepaid market, an outcome that could well have its  
18 greater adverse impact upon the most captive low-income customers.

19  
20 **A facilities-based carrier’s incentives to allow and to affirmatively support resale of**  
21 **their services diminishes as its market power increases.**  
22

23 74. For most of the first century of the US telecommunications industry, carriers were  
24 treated as “natural monopolies” and were subject to a regulatory regime that, among other  
25 things, protected them from competitive encroachments in return for the carriers’ acceptance of

1 limitations on their prices and earnings. Carriers filed tariffs that were subject to regulatory  
2 review and approval. Those tariffs typically included provision that expressly prohibited the  
3 resale of services purchased from the carrier or the shared use by multiple customers of such  
4 services. In 1961, in response to an FCC ruling authorizing the construction and use of private  
5 microwave systems in the “Above 890 MHZ band,” AT&T Corp. introduced a bulk private line  
6 service known as *Telpak* that offered multiple voice channels at per-channel prices substantially  
7 below those being charged for individual voice-grade private lines. *Telpak* largely achieved its  
8 intended goal of discouraging corporate use of private microwave, but the deep discounts  
9 relative to the pricing of single channel services stimulated an interest in resale, which was  
10 strictly prohibited in the *Telpak* tariffs.

11

12 75. In 1974, the FCC issued a *Notice of Inquiry and Proposed Rulemaking regarding*  
13 *Regulatory Policies Concerning Resale and Shared Use of Common Carrier Services and*  
14 *Facilities*.<sup>63</sup> In 1976, the FCC issued its *Report and Order* in that docket,<sup>64</sup> in which it concluded  
15 that restrictions on the resale and sharing of *Telpak* services to be discriminatory and stated that  
16 it “find[s] this discrimination to be unjust and unreasonable, and thus unlawful. Accordingly, the  
17 benefits available to *Telpak* customers now should be made available through resale to all  
18 customers, regardless of the size of their communications requirements.”<sup>65</sup> Although the lifting  
19 of resale/sharing restrictions was initially confined specifically to *Telpak*, in subsequent rulings  
20 the FCC broadly eliminated most such restrictions.

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63. FCC Docket 20097, 47 FCC 2d 644 (1974),

64. 60 FCC 2d 261 (1976).

65. *Id.*, at para. 6, 60 FCC 2d 261, 265.

1       76. In its 1981 800 MHz cellular order, the FCC rejected proposals calling for multiple  
2 spectrum awards in each market area, concluding that “this approach affords the public the  
3 benefits of some facilities-based competition in cellular service, while also taking into account  
4 the convincing record evidence before the Commission that, from a technical standpoint, cellular  
5 systems should be allocated no less than [n] 20 MHz each.”<sup>66</sup> But in justifying this two-firms-  
6 per-market approach, the Commission stated: “We believe that the public interest would be  
7 better served by going forward with the licensing of two facilities-based competitors in each  
8 market *with the potential for further competition in cellular services through resale.*”<sup>67</sup>  
9

10       77. Unfortunately, it soon became clear that merely eliminating tariff or other restrictions on  
11 the resale of facilities-based carrier services was not in and of itself sufficient to create  
12 competition at the retail level. Resale entry will not occur if the spread between a carrier’s  
13 wholesale price and its own retail prices is too small to permit recover of a competing resellers  
14 costs. This concern was expressly addressed in the *Telecommunications Act of 1996*, at section  
15 251(c)(4)(A), which imposed upon Incumbent Local Exchange Carriers “[t]he duty to offer for  
16 resale at wholesale rates any telecommunications service that the carrier provides at retail to  
17 subscribers who are not telecommunications carriers” and at section 252(d)(3) (“Wholesale  
18 Prices for Telecommunications Services”), required that, “[f]or the purposes of section  
19 251(c)(4), a State commission shall determine wholesale rates on the basis of retail rates charged

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66. *I/M/O An Inquiry Into the Use of the Bands 825-845 MHz and 870- 890 MHz for Cellular Communications Systems; and Amendment of Parts 2 and 22 of the Commission’s Rules Relative to Cellular Communications Systems*, CC Docket No. 79-318, FCC 81-161, 86 F.C.C.2d 469 \*; 1981 FCC LEXIS 522; 49 Rad. Reg. 2d (P & F) 809 (1981), at para. 15.

67. *Id.*, at para. 16, emphasis supplied.



1 to subscribers for the telecommunications service requested, *excluding the portion thereof*  
2 *attributable to any marketing, billing, collection, and other costs that will be avoided by the*  
3 *local exchange carrier.”* Emphasis supplied. But even with this legislation, ILECs continued to  
4 resist providing wholesale services at prices sufficiently below their own retail prices to make  
5 non-facilities-based resale entry economically feasible. Unable to develop a viable business  
6 model based upon Sec. 251(c)(4)(A) “total service resale,” competitive carriers gravitated  
7 toward the so-called “Unbundled Network Element Platform” or “UNE-P” whose rates were  
8 required to set on the basis of long run incremental cost rather than retail price minus retailing  
9 costs. UNE-P competition for ILEC retail services grew, until the ILECs ultimately succeeded  
10 in shutting it down in Federal Court, in the *USTA II* decision.<sup>68</sup>

11

12 78. A firm that controls a key market, such as the production of a particular product or  
13 service, possesses the ability to leverage that control into adjacent upstream and downstream  
14 markets, even if those other markets could support multiple competing firms. For example, a  
15 large purchaser of a particular category of products or services may be in a position to dictate  
16 terms to suppliers of those services, or simply to enter those markets and in so doing capture for  
17 itself whatever profits might otherwise have been available to the upstream providers.<sup>69</sup> In fact,  
18 the same potential exists with respect to downstream markets. Resellers of telecommunications  
19 services divert potential revenue away from the facilities-based carrier by virtue of their ability

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68. *United States Telecom Ass’n v. FCC*, 359 F.3d 554 (D.C. Cir. 2004) (“*USTA IP*”) cert. denied, 125 S.Ct. 313, 316, 345 (2004).

69. Although I am not addressing it in this testimony, I would note that Issue 4 in the Scoping Memo addresses precisely this possibility – “Would the merger give the merged company monopsony power or increase the tendency to exercise monopsony power, including market power over equipment suppliers?”

1 to purchase the underlying service at wholesale, at a price below the facilities-based carrier's  
2 own retail price. In competitive markets, the presence of resellers has the effect of creating  
3 additional retail channels for the facilities-based provider, thereby expanding the scope of its  
4 market beyond what it might otherwise be able to accomplish on its own. In the pre-competition  
5 era of both the wireline and wireless telecom markets, facilities-based carriers strenuously  
6 resisted the presence of resellers, at first by prohibiting such resale outright in their tariffs, and  
7 later on by refusing to set wholesale prices at levels that would make resale a viable business.

8

9 **Resellers such as MVNOs offer nondominant service providers the ability to expand**  
10 **their retail distribution channels and, in particular, to address customers that might**  
11 **otherwise fall outside of their own marketing efforts.**

12

13 79. Facilities-based wireless carriers similarly resisted requirements to permit or to facilitate  
14 resale because, with the two facilities-based carriers acting in concert on this issue, there was no  
15 *economic* reason for them to forgo retail revenues to a reseller. However, as the number of  
16 competing facilities-based provider increased, at least some of these carriers saw resale as a  
17 means to expand their customer base, and supported and facilitated the creation of so-called  
18 "Mobile Virtual Network Operators" ("MVNOs") that purchase wireless capacity from one or  
19 more facilities-based carrier and resell it in any of several forms to retail customers.

20

21 80. Providing wholesale services to MVNOs is particularly beneficial to smaller facilities-  
22 based carriers such as Sprint and T-Mobile because it broadens their distribution channel reach  
23 and in so doing enhances their ability to compete with the "big two." This is not necessarily the  
24 case for the "big two," and in fact even now the Sprint and T-Mobile networks together serve

1 54.4% of all MVNO customers, roughly double the two carriers' combined 27.3% share of  
2 directly-served retail subscribers, as summarized in Table 14 below:

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<b>Carrier</b>	<b>Total Subs</b>	<b>Retail Subs</b>	<b>MVNO Subs</b>	<b>Total Share</b>	<b>Retail share</b>	<b>MVNO Share</b>	<b>MVNO % of Total Subs</b>
Verizon	150.2	136.2 (est)	14.0 est	35.7 %	36.8 %	27.7 %	9.3 %
AT&T	141.6	132.6	9.0	33.7 %	35.9 %	17.8 %	36.0 %
Sprint	54.6	41.1	13.5	13.0 %	11.1 %	26.7 %	24.8 %
T-Mobile	74.0	60.0	14.0	17.6 %	16.2 %	27.7 %	18.9 %
Total	420.4	369.9	50.5	100.0 %	100.0 %	100.0 %	12.0 %

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Source: Prepaid Phone News, First Quarter, 2018 Prepaid Mobile Subscriber Numbers By Operator, <https://www.prepaidphonenews.com/2018/05/first-quarter-2018-prepaid-mobile.html> (accessed 1/4/19)

19 81. How is it that Sprint and T-Mobile are devoting so much more attention to the MVNO  
20 channel than AT&T and Verizon? After all, all four have the very same *legal* obligations with  
21 respect to wholesale services. But the *legal* obligation is only that these firms do not act to  
22 prohibit or restrict resale; there is no requirement that they affirmatively facilitate and encourage  
23 resale.

24  
25 82. In most competitive markets, the producer of a product or service is utterly dependent  
26 upon non-affiliated distribution channels – wholesale distributors and retail outlets – to bring its  
27 product to the ultimate consumer. Such firms do more than *allow* resale of their products – the  
28 nurture, support and encourage the creation and financial success of retail channels. They  
29 engage in cooperative advertising, extend credit, assist in resolving problems, encourage

1 distributor/retailer dialog regarding their products, and in any event view their distribution  
2 channels as a strategic asset that is to be carefully managed and protected. Such producers  
3 would never perceive resellers of their products as rivals that are there solely to take money off  
4 of the producer's table.

5

6 83. As I have noted earlier, a substantial element of the competition that prevails in the US  
7 wireless market is between Sprint and T-Mobile, and the two firms' respective MVNO strategies  
8 reflect that condition. There is a strong potential for that to change if the merger goes forward  
9 and the industry re-forms itself into an oligopoly with three nearly equal size members. Acting  
10 in concert while not necessarily overt, all three firms will acquire an increased incentive to retain  
11 the potential revenues available in the retail channel rather than cede that revenue to resellers.  
12 There is a serious concern that as concentration in the underlying facilities-based segment  
13 increases, the incumbents will see a diminishing benefit in facilitating resale, electing instead to  
14 capture reseller retail mark-ups for themselves.

15

16 84. All four carriers rely heavily upon multiple distribution channels for their services:

17

- 18 • Company-owned retail stores.
- 19 • Affiliate single-brand retail stores – not company owned, but often indistinguishable  
20 from company-owned stores in terms of signage and other attributes.
- 21 • “Big Box” and other multi-product retail outlets, such as Best Buy, Costco, Target
- 22 • MVNOs

1 Affiliate and other non-carrier retail outlets are typically compensated for the customers they  
2 acquire via commissions or one-time bounty-type payments per acquisition, subject to claw-back  
3 if the customer cancels service within a specified, and typically relatively short, period of time.  
4 MVNOs purchase capacity at wholesale prices and earn revenue via retail markups. Because  
5 affiliates and other retail outlets act as agents for the carrier, customers may purchase postpaid  
6 services with the carrier being responsible for billing and collection. In most instances, the  
7 relationship between the customer and the third-party retail agent ends once the sale has been  
8 completed. MVNOs develop their own retail customer base and retain an ongoing relationship  
9 with the customer. Although virtually all MVNO services are prepaid (thereby avoiding the  
10 necessity for billing), customers who are able to set up recurring payment arrangements such as  
11 via billing to a credit or debit card are encouraged to do so. Of course, many consumers who  
12 purchase prepaid services do not have credit cards or the ability to establish credit sufficient to  
13 allow them to subscribe to postpaid services, effectively limiting their choice of wireless service  
14 to prepaid only. Unlike retail “agents” like big box stores who receive a one-time bounty for  
15 each customer acquired, MVNOs continue to earn revenues from their customers as long as the  
16 customers retain their service.

17

18 85. The principal retail channel used by all four carriers consists of networks of company-  
19 owned retail stores. Nationwide, the “big four” carriers together maintain somewhere around  
20 10,000 carrier-owned retail outlets. With this retail infrastructure in place, the incremental cost  
21 of additional customer acquisitions via existing carrier-owned stores is almost certainly lower  
22 than the per-acquisition commissions/bounty payments that are required for sales generated by

1 affiliate and other retail stores as well as the amount of the ongoing retail markup that is retained  
2 by MVNOs. The trade-off here is driven by the extent to which non-carrier retail channels can  
3 capture business that would not otherwise be available to the carrier itself. Given that the  
4 combined Sprint/T-Mobile share of MVNO retail customers is double their combined share of  
5 direct retail customers, it is clear that the MVNO channel is likely helping both carriers to reach  
6 customers that might be unavailable otherwise.

7

8 86. To be fair, several other MVNOs, including the largest, TracFone, have submitted  
9 comments supporting the merger, advising that “TracFone has enjoyed a long-standing, strong  
10 and mutually-beneficial relationship with T-Mobile as an MNO partner and fully anticipates that  
11 the New T-Mobile entity will continue to support MVNOs as it has historically,”<sup>70</sup> and  
12 concluding that “TracFone expects that the New T-Mobile will increase the MNO wholesale  
13 competition for TracFone’s business and thus reduce wholesale costs.”<sup>71</sup> Wishful thinking?  
14 Perhaps, but it’s difficult to square TracFone’s assessment as to how wholesale relationships will  
15 function post-merger with the experience being reported by Charter.

16

17 87. What is far less clear, however, is whether this condition will persist post-merger. With  
18 New T-Mobile controlling more than 30% of the US wireless market, more than 50% of the  
19 *prepaid* market, and holding a third of all licensed spectrum, the potential for it to increase  
20 profits by degrading its relationships with MVNOs will certainly be a concern. It is noteworthy

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70. Comments of TracFone Wireless, Inc., FCC WT Docket No. 18-197, September 13, 2018, at 1-2.

71. *Id.*, at 3, footnote reference omitted.

1 that, even now, we see some evidence of carriers looking beyond merely expanding their retail  
2 distribution channels when they perceive an MVNO to be a potential competitor. A case in point  
3 is Charter, which (like Comcast) has designs on entering the wireless market through a  
4 combination of wholesale purchases from existing MNOs linked with a network of wi-fi  
5 “hotspots” created from its own broadband customers’ wireless routers. Charter’s comments to  
6 the FCC, discussed above, make this clear:

7  
8 Although Charter’s MVNO reseller arrangement with Verizon offers Spectrum  
9 Mobile customers access to Verizon’s network, one of the largest, most reliable  
10 4G-LTE networks in the country, Charter faces certain limitations in its ability to  
11 compete in the mobile market on the same terms as Verizon or other facilities-  
12 based carriers. There are significant limitations to its MVNO agreement, which  
13 are confidential but limit Charter’s ability to fully manage the mobile network and  
14 sell the product, thereby hindering the competitiveness of Charter’s mobile  
15 service.  
16

17 88. A 2014 paper by the management consulting firm McKinsey & Company that was  
18 targeted at potential MVNO clients offered the following advice:

19  
20 ... the MVNO needs to develop a detailed understanding of the impact any  
21 wholesale-level variables could have on its business plans. What’s more, any  
22 wholesale rate agreement should have built-in protections against price-cutting  
23 actions by the host network. For instance, MVNOs need to develop agreements  
24 that guarantee that the effective wholesale rate will be lower than the agreed-on  
25 rate or the host’s retail rate minus a given percentage. Doing so will prevent the  
26 host network from reducing its own customer-facing prices below those it  
27 negotiated with the MVNO.  
28

29 One MVNO made sure its target segments were not on its MNO partner’s radar  
30 screen as future opportunities and ensured that any cannibalization risk between  
31 the offerings of the two operators was low. It also confirmed that the profit pools  
32 associated with targeted segments were sizable enough to accommodate strong

1 MVNO growth while also benefitting the [host network], which could not capture  
2 these customers by itself.<sup>72</sup>  
3  
4 The authors warn MVNOs about the potential for the host carrier to engage in price squeeze  
5 tactics by collapsing – or even eliminating – the spread between its own retail prices and the  
6 wholesale prices it offers to MVNOs. One approach suggested here is that the MVNO develop a  
7 business model that targets customers that MNOs frequently shun – such as low-income  
8 consumers who are unable to quality for postpaid services – and that does not simply cannibalize  
9 the host carrier’s own customer base. An MVNO exists as a successful business venture at the  
10 sufferance of the host facilities-based carrier. And that carrier’s own business incentives change,  
11 so too could its relationships with MVNO resellers.

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72. Jukka Lehtikoinen, Pierre Pont and Yannick Sent, “Virtually mobile: What drives MVNO success,” McKinsey & Company, Inc., June 2014, available at: [https://www.mckinsey.com/~media/McKinsey/dotcom/client\\_service/Telecoms/PDFs/February%202015%20-%20Recall%20papers/Virtually\\_Mobile\\_2014-06.ashes#page=2&zoom=auto,-128,769](https://www.mckinsey.com/~media/McKinsey/dotcom/client_service/Telecoms/PDFs/February%202015%20-%20Recall%20papers/Virtually_Mobile_2014-06.ashes#page=2&zoom=auto,-128,769)



1 **The presence of mandatory arbitration/class action waiver provisions in the Joint**  
2 **Applicants’ existing consumer contracts is yet another indication of parallel conducts in the**  
3 **market for mobile wireless services.**  
4

5 89. Another example of parallel and anticompetitive conduct that will only intensify post-  
6 merger is the inclusion of mandatory arbitration clauses and class action waivers in consumer  
7 adhesion contracts, where such terms and conditions are non-negotiable. These clauses, in the  
8 absence of affirmative regulation, effectively exempt companies such as T-Mobile and Sprint,  
9 and the proposed New T-Mobile, from any legal oversight, and prevent reasonable consumers  
10 from seeking recourse against illegal or anticompetitive actions.

11  
12 90. Arbitration clauses stem from the 1925 *Federal Arbitration Act* (“FAA”),<sup>73</sup> which  
13 provides for judicial facilitation of private dispute resolution through arbitration. It applies in  
14 both state courts and federal courts. The Federal Arbitration Act provides for contractually-  
15 based compulsory and binding arbitration, resulting in an arbitration award entered by an  
16 arbitrator or arbitration panel as opposed to a judgment entered by a court of law. In an  
17 arbitration, the parties give up the right to appeal to a court on substantive grounds. The *Federal*  
18 *Arbitration Act* requires that where the parties have agreed to arbitrate, they must do so in lieu of  
19 going to court.

20  
21 91. Prior to the 1993 federal legislation transferring regulatory authority over wireless rates  
22 to the FCC and the subsequent 1994 FCC decision rejecting CPUC and other state PUC petitions

---

73. Pub. L. 68-401, 43 Stat. 883, enacted February 12, 1925, codified at 9 U.S.C. § 1 *et seq.*

1 to retain wireless ratesetting authority, and to forbear from regulating wireless rates,<sup>74</sup> wireless  
2 services in California were provided subject to tariffs filed with and approved by the CPUC.  
3 The tariff would contain all of the relevant rates, terms and conditions of service, and those  
4 tariffs would be reviewed and approved by the applicable state or federal regulatory agency.  
5 Post-deregulation, but before widespread use of arbitration clauses, consumers could at least seek  
6 redress from the courts. For most disputes involving residential consumers, the dollar amounts  
7 involved were typically small, making it impractical for any individual consumer to bring an  
8 action in court against a wireless provider. Such disputes were commonly pursued through class  
9 action lawsuits such that, in aggregate, the dollar amounts at issue were sufficiently large to  
10 justify the legal and expert fees that would be required.

11

12 92. Arbitration clauses are particularly onerous because consumers cannot negotiate the  
13 terms of their contract, and in combination these clauses have the practical effect of preventing  
14 consumers from seeking legal redress in the courts and joining together with other similarly-  
15 situated consumers to litigate similar claims that could not, as a practical matter, be pursued  
16 individually. These contract provisions are typically buried in lengthy consumer agreements that  
17 consumers are unlikely to read, review, or even understand, if they are even given the  
18 opportunity to do so prior to agreeing to its terms. Also, even if a consumer reviews the  
19 arbitration clause language prior to signing an agreement, with the lack of competition in the  
20 wireless market, the only choices a consumer has are to sign the agreement or not get service.

---

74. *I/M/O Implementation of Sections 3(n) and 332 of the Communications Act Regulatory Treatment of Mobile Services*, FCC GN Docket No. 93-252, FCC 94-31, 9 FCC Rcd 1411; 1994 FCC LEXIS 1444; 74 Rad. Reg. 2d (P & F) 835, Rel. March 7, 1994, Corrected March 30, 1994; Corrected May 12, 1994 (“*FCC Regulatory Treatment of Mobile Services Order*”), at paras. 240=257, 124-213.

1 The consumer has zero negotiating power with the carrier with respect to these arbitration  
2 clauses. And despite referring to itself as an “Un-carrier,” T-Mobile retains these arbitration  
3 provisions in its consumer contracts.

4

5 93. A multi-part feature appearing several years ago in *The New York Times*, “Arbitration  
6 Everywhere, Stacking the Deck of Justice”<sup>75</sup> addressed the problem of forcing consumers to  
7 enter into binding arbitration agreements:

8

9 By inserting individual arbitration clauses into a soaring number of consumer and  
10 employment contracts, companies like American Express devised a way to  
11 circumvent the courts and bar people from joining together in class-action  
12 lawsuits, realistically the only tool citizens have to fight illegal or deceitful  
13 business practices.

14

15 Over the last few years, it has become increasingly difficult to apply for a credit  
16 card, use a cellphone, get cable or Internet service, or shop online without  
17 agreeing to private arbitration. The same applies to getting a job, renting a car or  
18 placing a relative in a nursing home.

19

20 Among the class actions thrown out because of the clauses was one brought by  
21 Time Warner customers over charges they said mysteriously appeared on their  
22 bills and another against a travel booking website accused of conspiring to fix  
23 hotel prices. A top executive at Goldman Sachs who sued on behalf of bankers  
24 claiming sex discrimination was also blocked, as were African-American  
25 employees at Taco Bell restaurants who said they were denied promotions, forced  
26 to work the worst shifts and subjected to degrading comments.

27

28 Some state judges have called the class-action bans a “get out of jail free” card,  
29 because it is nearly impossible for one individual to take on a corporation with  
30 vast resources.

31

---

75. “Arbitration Everywhere, Stacking the Deck of Justice,” October 31, 2015; and “In Arbitration, a Privatization of the Justice System,” *The New York Times*, November 1, 2015.

1 I have provided two of the *New York Times* articles in the series on arbitration clauses in  
2 Attachment 2 hereto.

3

4 94. As a matter of optics, T-Mobile allows consumers to “opt out” of arbitration at the time  
5 that they initiate service. But these opt-out provisions are nearly as invisible and impenetrable as  
6 the arbitration clauses themselves, and contain restrictions such that a very small number of  
7 consumers, if any, will be able to take action and opt out of arbitration.

8

9 **The Joint Applicants’ econometric models purporting to empirically assess the likely**  
10 **competitive effects of the proposed merger are driven by numerous unsupported and**  
11 **patently incorrect assumptions, and if anything confirm that the merger’s effect upon**  
12 **competition will be negative.**

13

14 95. On November 6, 2018, counsel for T-Mobile provided the FCC with [BEGIN

15 **T-MOBILE HIGHLY CONFIDENTIAL]** “

[REDACTED]

21 **T-MOBILE HIGHLY CONFIDENTIAL]** The Public Advocates Office did not receive a  
22 copy of this material until December 19, 2018, and counsel for T-Mobile did not provide it to me  
23 until December 21, 2018. Due to the late arrival of this material, I have not been given sufficient

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76. November 6, 2018 letter from Nancy Victory to Marlene H. Dortch, Secretary, Federal Communications Commission, for filing in WT Docket No. 18-197.

1 time prior to the January 7, 2019 filing date of this testimony to undertake a detailed analysis and  
2 replication of the Cornerstone model. I have reviewed the supporting documentation<sup>77</sup> and on  
3 that basis can offer certain observations as to the authors' overall approach and, most  
4 importantly, the various assumptions and data upon which their model has been based.

5

6 96. From my review of the declaration provided in support of the model, it is clear that the  
7 model contains numerous errors, omissions, and shortcomings that render its various conclusions  
8 meritless in providing support for the Joint Applicants' claims as to the pro-competition and  
9 efficiency gains that the merger purports to create. The wireless consumer dataset upon which  
10 the model is based is limited only to customers with Android handsets,<sup>78</sup> and thus excludes from  
11 the "sample" the 39% of all wireless smartphone consumers who utilize iPhones. The dataset  
12 provides no information whatsoever on the service plan that the customer has chosen, the price  
13 being paid, [BEGIN T-MOBILE CONFIDENTIAL] [REDACTED]

[REDACTED] [END T-MOBILE CONFIDENTIAL] whether the data speed being measured for  
15 each user activity has been degraded due to the customer's choice of plan or the accumulated  
16 amount of usage during the billing cycle, or the fact that prepaid services typically receive lower  
17 priority from the carrier with respect to network speed. The model inappropriately compares  
18 *current* pre-merger Sprint and T-Mobile costs and network quality with *future* post-merger New  
19 T-Mobile costs and quality, implicitly assuming that if the merger fails to go forward the two  
20 separate companies will make no network improvements on their own. The model also assumes

---

77. John Asker, Timothy F. Bresnahan, and Kostis Hatzitaskos, "Economic Analysis of the Proposed T-Mobile/sprint Merger," provided as attachment to November 6, 2018 Nancy Victory letter ("Cornerstone decl.").

78. *Id.*, at fn. 6.

1 that neither AT&T nor Verizon will make any network improvements or experience any cost  
2 reductions at all between now and the future time frame when New T-Mobile's gains are being  
3 projected to materialize. The model also assumes that any decrease in post-merger New  
4 T-Mobile's marginal cost relative to that of the two separate pre-merger companies will be  
5 flowed through, dollar-for-dollar, in lower prices to consumers, that *none* of the efficiency gains  
6 that are projected to result from the merger will be retained by the post-merger company or its  
7 shareholders. These gross oversimplifications of complex wireless industry conditions strip the  
8 Cornerstone model of any relevance or value in assessing the economic merit of the proposed  
9 merger.

10

11 97. The authors explain that they “use detailed industry data on consumer behavior, network  
12 performance, and brand choice to determine (a) how consumers select a wireless brand given  
13 where, when, and how they use their phone (‘demand model’), (b) how firms set prices given the  
14 prices and offerings of their competitors (‘supply model’), and (c) how demand and supply  
15 interact to determine market outcomes, namely prices and subscriber shares (‘market equilib-  
16 rium’). [The authors] combine the above with a range of estimates of marginal cost efficiencies  
17 and network quality improvements to estimate how market outcomes are likely to change as a  
18 result of the proposed merger.”<sup>79</sup> The authors explain that their model uses “the Nielsen Mobile  
19 Performance (“NMP”) dataset,,” that provides data “about individual consumers who use  
20 different cellular service brands ...”<sup>80</sup> According to the Nielsen website, “[t]he [NMP] product

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79. *Id.*, at para. 6.

80. *Id.*, at para 7.

1 employs proprietary metering technology to passively measure a geographically representative  
2 opt-in panel of Android U.S. smartphone owners that captures over 400 million data points each  
3 month. The passive meter runs 24/7 in the background of the device, continuously capturing  
4 data speeds and hundreds of other metrics across different file sizes and applications. With a  
5 sample of 45,000 devices at the national level across the top 41 cities in the U.S., NMP measures  
6 the key metrics related to consumers' mobile experience. <sup>81</sup>

7

8 98. The Nielsen panel is limited to users of Android phones because the passive metering  
9 software only runs on Android devices. As a result, the NMP dataset excludes all customers  
10 with iPhones. While the total elimination of all iPhone users from the Nielsen panel may be  
11 acceptable for some uses of this dataset, it is highly problematic for the specific use to which this  
12 data is being put by the Cornerstone modelers. The NMP dataset contains an inherent systematic  
13 bias that precludes its extrapolation to the full universe of smartphone users *precisely because*  
14 *Android and iPhone users exhibit distinctly different attributes with respect to income levels and*  
15 *the mix of wireless services that each group tends to purchase.* In fact, the authors themselves  
16 concede that iPhone users differ from Android users in several material respects, but neverthe-  
17 less attempt to justify their use of the NMP data with some extraordinarily weak rationalizations,  
18 seeking to explain their way past this obvious *and fatal* shortcoming in the underlying data:

19

20

**[BEGIN T-MOBILE HIGHLY CONFIDENTIAL]**



---

81. <https://www.nielsen.com/us/en/solutions/capabilities/nielsen-mobile-performance.html> (accessed 12/29/18); see also, Cornerstone decl., at fn. 6..

1

[REDACTED]

[END T-MOBILE HIGHLY CONFIDENTIAL]<sup>82</sup>

15

16 The authors' attempt to justify their use of a dataset that excludes all iPhone users cannot  
17 withstand scrutiny:

18

19 • First, the authors' own rationale concedes that there is a significant income gap between  
20 Android and iPhone users. They try to overcome this by offering the explanation that this  
21 omission actually makes their use of an Android-only dataset "conservative" in that [BEGIN  
22 T-MOBILE HIGHLY CONFIDENTIAL]

[REDACTED] " [END T-MOBILE

24 HIGHLY CONFIDENTIAL] Actually, their model is *not* conservative at all: It overstates  
25 consumer responses to changes in price by ignoring the [BEGIN T-MOBILE HIGHLY  
26 CONFIDENTIAL]

82. Cornerstone decl., at fn. 87, citations omitted.



1 [REDACTED] [END T-MOBILE HIGHLY CONFIDENTIAL] As a result, the model  
2 exaggerates the gain in market share in response to those lower prices by including only  
3 those customers with above-average price sensitivity (price elasticity).

4  
5 • Second, iPhones are considerably more expensive than most Android devices.

6  
7 • Third, the elimination of all iPhone users likely leaves AT&T subscribers underrepresented  
8 in the Nielsen dataset. When Apple first introduced the iPhone in 2007, it initially partnered  
9 with AT&T as its principal distribution channel and, while all MNOs now offer iPhones, the  
10 AT&T/Apple relationship likely results in a relatively larger share of all AT&T customers  
11 using iPhones than for any other MNO.

12  
13 • Fourth, most providers of prepaid services tend to link them with loss costly Android  
14 handsets. For example, T-Mobile’s MetroPCS prepaid brand is currently offering “4 free  
15 Samsung and LG phones when you switch 4 lines” to MetroPCS service.<sup>83</sup> MetroPCS is also  
16 offering a free iPhone 6S – a 2015 model that is fully five (5) generations behind the latest  
17 iPhone XR and XS models that were introduced in the Fall of 2018. The MetroPCS free  
18 iPhone 6S offer is subject to the following provisions:

19       Restrictions apply. 32GB variant only. If congested, the fraction of users >35 GB/mo. may  
20       notice reduced speeds and Metro customers may notice reduced speeds vs. T-Mobile  
21       due to prioritization. Video streams at 480p. No tethering<sup>84</sup>

22 iPhone users are thus far less likely than Android users to purchase prepaid services; as such,

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83. <https://www.metropcs.com/> (accessed 12/30/18)

84. *Id.*

1 the NMP dataset likely contains an unrepresentatively large proportion of prepaid customers.

2

- 3 • Fifth, studies (some of which were cited by the Cornerstone authors) have shown that iPhone  
4 users are also far more likely to have higher incomes than Android users. If, as the authors’  
5 rationalization suggests, iPhone users tend to be less price sensitive than Android users, it’s  
6 not at all clear that any narrowing of the network quality gap between the Joint Applicants  
7 and AT&T/Verizon that is predicted by the NMP data could be extrapolated to the entire  
8 universe of wireless customers, particularly where those that have been systematically  
9 excluded from the dataset are likely to be, on average, less price-sensitive than those that are  
10 in the NMP panel.

11

12 In any event, making any meaningful extrapolations from a dataset that, by its own design,  
13 excludes some 39% of all potential consumers whom the authors readily admit possess substan-  
14 tively different relevant demographic and other attributes is highly problematic and certainly  
15 cannot support its use in determining the efficacy of the proposed merger.

16

17 99. The model is premised upon “the merging parties expect[ation] that the New T-Mobile  
18 network will provide better performance for more consumers than the T-Mobile and Sprint  
19 standalones, with higher network quality and lower marginal costs.”<sup>85</sup> “Network quality” is  
20 defined in terms of two measures – speed (measured in megabits per second) and coverage

---

85. Cornerstone decl., at para. 1.

1 (measured as the percentage of time a customer is on LTE or 4G).<sup>86</sup> Accepting as an input to the  
2 model the merger-specific network quality improvements that the Joint Applicants claim will  
3 result, the model projects the extent of “diversion” of customers to New T-Mobile and away  
4 from AT&T and Verizon in response to the two network quality metrics – speed and coverage.  
5 The analysis is individualized to each consumer included in the NMP dataset, with the results  
6 then aggregated across the entire NMP dataset membership. From this, the authors state their  
7 “ultimate conclusion – that the proposed merger is likely to increase competition for wireless  
8 plans.”<sup>87</sup>

9  
10 100. This core conclusion of the Cornerstone model is premised upon a series of specific  
11 *and critically important* assumptions. To the extent that even some of these are unsupported,  
12 unrealistic, or simply incorrect, the model’s results and the authors’ conclusions based thereon  
13 are similarly flawed and cannot offer the assurance of the net competitive improvement and  
14 welfare gain that these authors – and the Joint Applicants – seek to ascribe to the proposed  
15 merger. Following are several key assumptions and, for each, an assessment as to its overall  
16 validity:

17  
18 (1) The authors have *assumed* that the merger is necessary to bring the *existing* Sprint and  
19 T-Mobile network quality (speed and coverage) up to the *current* levels offered by AT&T  
20 and Verizon. The simulation examines the effects of achieving – and of failing to achieve –

---

86. *Id.*, at para. 8.

87. *Id.*, at para. 13.

1 this outcome. Thus, 100% of the Sprint and T-Mobile improvements are credited to the  
2 merger, *implicitly assuming that, absent the merger, neither Sprint nor T-Mobile would*  
3 *make any improvements at all to their own networks.* The authors thus are, in essence,  
4 assuming that, should the merger be disallowed, the management and shareholders of both  
5 Sprint and T-Mobile will simply cease all further investments in their existing networks,  
6 effectively freezing them at 2018 levels. But common sense – as well as history – clearly  
7 belies this key assumption: Following the demise of the 2011 T-Mobile/AT&T merger,  
8 both companies – and T-Mobile in particular – made massive investments in network  
9 upgrades, expanding 4G LTE coverage and increasing data rates (speeds) overall. Prior to  
10 this proposed merger, both T-Mobile and Sprint had independently announced aggressive  
11 plans for their own (standalone) deployment of 5G. What the Cornerstone group has done  
12 is to compare *present day* standalone Sprint and T-Mobile network quality with *future* New  
13 T-Mobile network quality; what they *should have done* is to compare *future* standalone  
14 Sprint and T-Mobile network quality with *future* incremental New T-Mobile network  
15 quality at a corresponding future point in time, assuming that, if the merger is denied, both  
16 companies would continue to invest in their networks, *as both had stated, before they*  
17 *announced plans to merge, that they intended to do.*

18  
19 (2) As noted in (1) above, the simulation purports to examine the effects of bringing the  
20 *existing* Sprint and T-Mobile network quality (speed and coverage) up to the levels  
21 *currently* being offered by AT&T and Verizon, effectively eliminating any network quality  
22 differential among what would (post-merger) be the three national CMRS providers. The

1 model projects that, by bringing its network quality up to the same level as AT&T and  
2 Verizon, New T-Mobile would attract additional customers and grow its market share  
3 overall. But again, that assumes that neither AT&T nor Verizon will make any further  
4 improvements in their own network quality from this point forward, that they will simply  
5 sit back and allow the merged Sprint/T-Mobile entity to just catch up.<sup>88</sup> AT&T and  
6 Verizon have each announced extensive plans for 5G deployment throughout their  
7 respective networks. And, while the Joint Applicants claim that New T-Mobile's 5G  
8 network will be superior to those of AT&T and Verizon<sup>89</sup> and that New T-Mobile will take  
9 share away from these two rival MNOs,<sup>90</sup> it's a rather extreme stretch to *assume*, as the  
10 Cornerstone modelers have done here, that AT&T and Verizon would simply sit on their  
11 hands and allow this to happen. In fact, while the Cornerstone group has structured its  
12 model on precisely that assumption, the Joint Applicants themselves have posited that  
13 "New T-Mobile Will Cause Verizon, AT&T, and Others to Accelerate and Increase  
14 Investment in Their 5G Networks."<sup>91</sup>

15  
16 (3) Compounding the systematic bias in the NMP dataset resulting from its exclusion of all  
17 iPhone users, **[BEGIN T-MOBILE CONFIDENTIAL]** [REDACTED]

---

88. See, e.g., *Id.*, at Exhibit 36. **[BEGIN T-MOBILE HIGHLY CONFIDENTIAL]** [REDACTED]

**[END T-MOBILE HIGHLY CONFIDENTIAL]**

89. Several Joint Applicant declarants have opined that New T-Mobile's 5G network will be superior to those of both AT&T and Verizon. See, e.g., Ewens, at para. 13; Salop/Sarafidis at para. 42.

90. Sievert decl., at para. 21.

91. *Public Interest Statement*, at 47.

1 [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]”<sup>92</sup> [END

5 **T-MOBILE CONFIDENTIAL]** As discussed above, prepaid plans provide inferior  
6 coverage and speeds – i.e., poorer network quality – than postpaid plans. Prepaid plans  
7 tend to be more attractive to lower income consumers who do not have a credit card and  
8 who cannot satisfy the carriers’ credit requirements for a postpaid service. Additionally,  
9 and as shown in Table 9 above, Sprint and T-Mobile together control 58.9% of the retail  
10 prepaid market. Compounding this distortion is the fact that most prepaid services are  
11 provided with Android handsets; only a small minority of prepaid customers use iPhones.  
12 As a result, the inferior speed and coverage that prepaid services represent constitute a  
13 disproportionately larger share of all Android phones and of both Sprint’s and T-Mobile’s  
14 total customer base. **[BEGIN T-MOBILE CONFIDENTIAL]** [REDACTED]

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED] **[END T-MOBILE CONFIDENTIAL]** for corresponding prepaid or postpaid  
19 services. To see the effects of this distortion, consider the following incorrect conclusion  
20 that the authors present:

21  
22 **[BEGIN T-MOBILE CONFIDENTIAL]** [REDACTED]

---

92. Cornerstone decl., at fn. 19.

1

[REDACTED]

[END

11

**T-MOBILE CONFIDENTIAL]**<sup>93</sup>

12

13

However, because of this understatement of Sprint and T-Mobile speeds due to the

14

**[BEGIN T-MOBILE CONFIDENTIAL]** [REDACTED]

15

[REDACTED] **[END T-MOBILE**

16

**CONFIDENTIAL]** the authors' conclusion that as many as **[BEGIN T-MOBILE**

17

**CONFIDENTIAL]** [REDACTED]

18

[REDACTED] **[END**

19

**T-MOBILE CONFIDENTIAL]** is a gross exaggeration.

20

21

(4) The NMP dataset does not contain any information regarding the *price* that each panel

22

member actually pays for the wireless service being purchased. **[BEGIN T-MOBILE**

23

**CONFIDENTIAL]** [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

---

93. *Id.*, at para. 21.

1 [REDACTED] .[END T-MOBILE  
2 **CONFIDENTIAL]**<sup>94</sup> As a result, the authors have constructed a single, uniform “price”  
3 for each wireless brand that is applied to all panel members subscribing to that brand,  
4 *irrespective of each individual panel member’s actual plan, actual price being paid,*  
5 *whether measured or unlimited, number of phones included in the plan, or any other highly*  
6 *relevant elements of the carriers’ pricing structures.* The authors explain: “Note that  
7 because we only have one national price for each carrier, the price coefficient cannot be  
8 separately identified from brand fixed effects in the conditional logit regression.”<sup>95</sup> Like a  
9 broken clock that provides the correct time twice each day, the one-price-per-brand value  
10 that the authors have constructed may coincidentally be correct for an infinitesimally small  
11 fraction of the total NMP panel members, but is likely way off the mark for the vast  
12 majority of them. In this regard, the authors make the following remarkable admission:

13  
14 Demand models can often be used to directly estimate consumer responsive-  
15 ness to price. *We cannot do this as part of our demand model.* Ideally, we  
16 would have data where different consumers faced different prices either across  
17 locations or over time. This would allow us to estimate how choices vary with  
18 prices. However, *in this case each brand sets prices nationally and we lack*  
19 *sufficient intertemporal variation in prices to directly estimate price sensitivity*  
20 *within our demand model.*<sup>96</sup>  
21

22 But it’s actually even worse than that. Not only do the authors lack information on prices  
23 being charged at different locations and at different times, they also lack information on

---

94. *Id.*, at fn. 9.

95. *Id.*, at fn. 45.

96. *Id.*, at para. 74, emphasis supplied.



1 prices being charged for different *products* (i.e., *plans*) being offered by the same provider.  
2 The model thus assumes, in all cases, that customer responses to price changes involve  
3 migration (diversion) from one *brand* to another *brand* rather than an equally, if not far  
4 more, likely scenario wherein the migration is *between different products (plans) offered by*  
5 *the same service provider*. If speed is as important to customers as the authors posit, then  
6 intra-brand shifts provide a simple solution that does not involve purchasing a new handset.  
7 For example, Verizon currently offers three (3) different plans offering “unlimited” 4G  
8 LTE data – *go unlimited* for \$40, which is subject to speed limitations from the start,  
9 *beyond unlimited* for \$50, which is subject to speed restriction after 22 GB, and *above*  
10 *unlimited* for \$60, which is subject to speed restriction after 75 GB.<sup>97</sup>

11

12 (5) In their description of the NMP data, the authors explain that **[BEGIN T-MOBILE**

13 **CONFIDENTIAL]** 







 **[END T-MOBILE CONFIDENTIAL]** is inextricably linked to the particular

19 service plan to which each customer subscribes, a critically important element of data that

20 is entirely missing from the NMP dataset. Consider the example of the three Verizon

---

97. <https://www.verizonwireless.com/plans/> (accessed 12/30/18)

98. Cornerstone decl., at fn. 7, emphasis supplied.

1 postpaid service plans just described. At \$40 per month, speed throttling can commence  
2 immediately; at \$50 per month, throttling cannot begin until after the user has run through  
3 the first 22 GB of usage, and at \$60 per month, throttling can commence after 75 GB of  
4 usage. Once throttling begins, [BEGIN T-MOBILE CONFIDENTIAL] [REDACTED]  
5 [REDACTED]” [END T-MOBILE CONFIDENTIAL] can be materially reduced, not due to the  
6 carrier’s network quality, but due to the specific pricing plan than the customer has selected  
7 and the customer’s aggregate volume of usage. Many prepaid plans can be degraded even  
8 more than postpaid plans, yet again, the NMP dataset does not identify customers [BEGIN  
9 T-MOBILE CONFIDENTIAL] [REDACTED] [END T-MOBILE  
10 CONFIDENTIAL] What the NMP data does not permit – and what the Cornerstone model  
11 does not provide – is an apples-to-apples comparison of the [BEGIN T-MOBILE  
12 CONFIDENTIAL]“ [REDACTED]” [END T-MOBILE CONFIDENTIAL] as  
13 between the Joint Applicants’ services and roughly equivalent offerings of its rivals, pre-  
14 and post-merger. It is entirely possible, perhaps even likely, that the average [BEGIN T-  
15 MOBILE CONFIDENTIAL] [REDACTED]” [END T-MOBILE CONFIDENTIAL]  
16 of T-Mobile’s “T-Mobile ONE” plan offering 4G LTE with a prioritization point of 50 GB  
17 is *faster* than Verizon’s \$50 “*beyond unlimited*” plan in which throttling can begin after 22  
18 GB. No “demand shift” conclusions of the type being drawn by the Cornerstone group  
19 based solely upon comparisons limited to average [BEGIN T-MOBILE  
20 CONFIDENTIAL] “ [REDACTED]” [END T-MOBILE CONFIDENTIAL] that  
21 entirely ignore the complex pricing structures that bear directly on this specific metric can  
22 be afforded any merit whatsoever.

1 (6) And, because the underlying Nielsen data does not identify the specific service plan, its  
2 price, or features to which each individual customer in the dataset subscribes, the effects of  
3 promotions, of pricing structures favoring some usage pattern over others, and of non-price  
4 service features that are expressly intended to influence purchase decisions, all of these  
5 critically important service attributes are effectively swept under the rug by the creators of  
6 this model. For example, there are important differences in the treatment of roaming both  
7 as between prepaid and postpaid plans as well as among the various MNOs. An important  
8 feature of many Sprint and T-Mobile postpaid plans is *international data roaming*. Some  
9 prepaid plans do not even offer any *domestic* voice or data roaming, let alone international;  
10 others offer voice but not data roaming. Yet, the authors admit that **BEGIN T-MOBILE**  
11 **HIGHLY CONFIDENTIAL]** “ [REDACTED]  
[REDACTED]  
[REDACTED] ”<sup>99</sup> **[END T-MOBILE HIGHLY**  
14 **CONFIDENTIAL]** The Cornerstone model’s failure to consider the effects of service  
15 features such as roaming *and others* that directly affect a customer’s choice of service and  
16 service provider is a fundamental error that effectively distorts the price and network  
17 quality relationships that the model purports to be examining.  
18  
19 (7) There is no indication that the model had considered the demand effects of any features  
20 *other than speed and coverage* that may be included within a service plan. For example,  
21 some current T-Mobile plans include features such as “Netflix at no extra charge,” “Stream

---

99. *Id.*, at fn. 117.

1 unlimited entertainment” (i.e., does not count toward aggregate data usage), “In-flight  
2 texting + 1 hour of data,” and “Unlimited in Mexico & Canada – Talk, text, and up to 5GB  
3 of 4G LTE data.”<sup>100</sup> The inclusion of such features are obviously intended to attract  
4 customers and potentially overcome the speed and coverage deficiencies of Sprint and  
5 T-Mobile relative to AT&T and Verizon. Yet the Cornerstone modelers have apparently  
6 chosen to ignore such additional features altogether.

7  
8 (8) One such feature is of particular relevance to a key objective of the Cornerstone model.  
9 During the time period covered by the model (**[BEGIN T-MOBILE HIGHLY**  
10 **CONFIDENTIAL]** [REDACTED] **[END T-MOBILE HIGHLY CONFIDENTIAL]**),  
11 both Sprint and T-Mobile were offering “zero rating” video downloads on selected  
12 streaming apps (e.g., Netflix, hulu), whereas both AT&T and Verizon count such usage  
13 against the customer’s data cap for the billing period. These “zero rating” plans were  
14 designed to be particularly attractive to heavy users of streaming video services, whose  
15 total bill would typically be much higher were they to subscribe to a carrier that counted  
16 such usage against the customer’s data cap either for billing or for throttling purposes.  
17 While such users would clearly prefer faster download speeds, they would also prefer a  
18 service that did not charge for such downloads. By failing to include this and other features  
19 in the analysis, the model likely misattributed the factors influencing the consumer’s choice  
20 of service provider.

21  

---

<sup>100</sup> [https://www.T-Mobile.com/cell-phone-plans?icid=WMM\\_TM\\_18HOL\\_5IPCD18Z27V15702](https://www.T-Mobile.com/cell-phone-plans?icid=WMM_TM_18HOL_5IPCD18Z27V15702) (accessed 12/28/18).

1 (9) Also apparently ignored by the model is anything relating to the number of handsets (lines)  
2 that are included in a given customer's service. In fact, it is not even apparent that the  
3 Nielsen data includes *all*, or only certain individual, line(s) in an account, or that it has  
4 identified the number of lines included in each panel member's account. These "family"  
5 type pricing plans typically offer deep discounts for second and additional lines. For  
6 example, T-Mobile is currently offering a promotion it calls "T-Mobile ONE":  
7 "LIMITED-TIME OFFER – Get 2 lines. Add a 3rd line free. Bring the whole family  
8 together with T-Mobile ONE™. Get 2 lines of unlimited talk, text, and data on your  
9 smartphone, and your 3rd line is on us."<sup>101</sup> Sprint is currently offering an even more  
10 aggressively priced multi-line plan: "Our Best Offer: 3 Unlimited Lines FREE! Switch to  
11 Sprint and get your 3rd, 4th and 5th lines FREE! That means Unlimited for just  
12 \$20/mo./line for 5 lines and a \$1000 savings over Verizon and AT&T."<sup>102</sup> Although all  
13 MNOs and MVNOs offer "family" type multiple handset plans, the nature of the pricing  
14 taper varies significantly from carrier to carrier. Price comparisons that fail to account for  
15 the number of lines in a plan and the applicable pricing structure will materially distort the  
16 inter-carrier comparisons.

17

18 (10) Another pricing-related issue that the Cornerstone authors appear to have ignored is the  
19 manner in which "price" is presented to the customer. AT&T, Verizon and Sprint all add  
20 various taxes and fees onto the "base price" of their services. T-Mobile offers "all-in"

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101. *Id.*

102. <https://www.sprint.com/> (accessed 12/29/18).

1 prices that include all taxes and fees. If the single nationwide “price” for each brand that is  
2 captured in the MNO dataset is the carrier’s base price only, then the differential between  
3 T-Mobile’s “all-in” price and the other carrier’s effective price (when taxes and fees are  
4 added) is significantly understated. The differential between “base price” and the total bill  
5 (including all taxes and fees) can be substantial. For example, the base price on my own  
6 most recent AT&T wireless bill for a 2-line service plan was \$86.80, but the total bill  
7 including all taxes and fees was \$102.94, i.e., 18.6% more than the stated “base price.”  
8 Additionally, even though carriers provide uniform “national” prices for their services,  
9 taxes and fees typically vary by jurisdiction.<sup>103</sup> They may include local sales taxes, state  
10 “regulatory fees,” E911 charges, and the like. Even if Nielsen accounts for some *average*  
11 tax and fee surcharge for carriers other than T-Mobile,<sup>104</sup> the local variations will distort the  
12 inter-carrier price relationships for individual customers and, to the extent that price  
13 influences demand, will create unaccounted-for demand effects on the underlying data and  
14 any results derived therefrom.

15  
16 (11) A central premise of the model design is that download speed is a key factor in influencing

---

103. For example, added to the total \$86.80 base price for my wireless service are the following taxes and fees: Administrative Fee, \$1.99; Federal Universal Service Charge, \$1.95; Regulatory Cost Recovery Charge, \$1.25; Local government taxes & fees: 9-1-1 Service Fee, \$1.00; and Massachusetts State Sales Tax - Telecom, \$1.88, for a total of \$8.07 *per line*, or \$16.14 for the entire bill. The total Local government taxes and fees of \$5.76 for the two lines thus represents 35.7% of the total surcharge and, just by itself, represents a 6.64% add-on to the base price. This “Local” component is higher in some places, lower in others. If Nielsen had failed to capture any or all of these additional taxes and fees, or if the Cornerstone authors had ignored them, the price comparisons with the “all-in” T-Mobile price are quite substantial and far in excess of the “SSNIP” threshold as set out in the *Horizontal Merger Guidelines*.

104. This is probably unlikely. Although certain surcharge type revenue, such as a “regulatory fee,” is revenue to the carrier and thus would probably be included in ARPU, pass-through items such as taxes and E911 fees are likely excluded from ARPU.

1 consumer choice among carriers. However, the underlying NMP data clearly includes  
2 measurements taken while the consumer was commuting or driving as well as when he or  
3 she was stationary.<sup>105</sup> While these are reasonable data points, it does not appear that the  
4 model had controlled for the consequences of using a phone while in transit. For example,  
5 how much does a person care if the phone speed is slow while downloading an e-mail while  
6 driving? Coverage, rather than speed, may be the more important concern while driving.

7  
8 (12) The NMP dataset upon which the model relies is limited solely to Android devices. Within  
9 that category, the model (and perhaps the NMP data itself) appear to ignore details as to the  
10 specific type of handset that a given customer is using (e.g., new vs. old device, brand (e.g.,  
11 Google, Samsung, LG, Motorola, Nokia) and model, price paid for the handset (which may  
12 vary from as low as \$200 to as high as \$799 for a Google Pixel 3), the operating system  
13 vintage, type of app being used, whether the app was data limited or filled with ads, or  
14 other factors affecting the overall customer experience. All of these handset attributes will  
15 have a direct bearing upon the nature and extent of a customer's use of the wireless service,  
16 the importance of download speed, and the overall customer experience, yet the model  
17 simply ignores all of these considerations.

18  
19 101. The Cornerstone model does not prove that a post-merger New T-Mobile will not  
20 engage in coordinated conduct *vis-a-vis* AT&T and Verizon; rather, it *assumes* that such  
21 coordination will not take place. Indeed, this assumption is key to its conclusions regarding the

---

105. *Id.*, Exhibit 2.

1 merger’s effect upon price and competition overall. The authors base their “market equilibrium”  
2 analysis and conclusions upon a “Pricing Model with Bertrand price competition.”<sup>106</sup> *Bertrand*  
3 is one of several principal economic theories put forward to explain firms’ conduct in  
4 oligopolistic markets. The premise of *Bertrand price competition* is that firms – even in markets  
5 with a small number of firms – will always set their price without any consideration of  
6 competitive responses, and continue to produce whatever quantity of output the market will  
7 absorb to the point where price is ultimately driven to marginal cost and where economic profit  
8 is driven to zero.<sup>107</sup> *Bertrand* inherently assumes what amounts to a competitive market outcome  
9 in an oligopolistic market, and like firms operating under conditions of perfect competition,  
10 assumes that no tacit or other coordinated conduct or outright collusion is present.

11

12 102. But the authors’ adherence to this “price equals marginal cost” construct is particularly  
13 remarkable in that data provided *within their own declaration* confirms that neither Sprint,  
14 T-Mobile, nor any other wireless service provider, currently sets its prices even remotely close  
15 to, let alone *at*, marginal cost. Table 15 below reproduces price and marginal cost figures  
16 presented at Exhibit 36 in the Cornerstone declaration:

17

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106. *Id.*, at para. 11, fn. 10; discussed in detail at Appendix 5.3.2.

107. In *Bertrand*, “the oligopolistic (Nash) equilibrium attained when two or more *price-setting* firms have constant marginal costs involves price equal to marginal cost.” *Baumol, Panzar and Willig, Contestable Markets and the Theory of Industry Structure, Harcourt Brace Jovanovich, 1982*, at 44. Note that the Cornerstone authors are expressly modeling a scenario that does **not** involve fixed marginal costs, or where price is equal to marginal cost.



1 **[BEGIN T-MOBILE HIGHLY CONFIDENTIAL]**

2

3 **Table 15**

4 **CORNERSTONE ESTIMATES OF**

5 **WIRELESS CARRIER PRICES AND MARGINAL COSTS**

6

	AT&T	Verizon	Sprint	T-Mobile	Boost/ Virgin	MetroPCS	Cricket
7 Pre-merger price							
8 Pre-merger marginal cost							
9 Percent markup over							
10 marginal cost							
11							
12 Source: Cornerstone decl., at Exhibit 36.							

13

14 **[END T-MOBILE HIGHLY CONFIDENTIAL]**

15

16 The authors' own report belies their assumption that any decrease in post-merger marginal cost

17 experienced by Sprint and T-Mobile will be flowed through dollar-for-dollar as a reduction in

18 New T-Mobile's price. Yet without that critical – and obviously invalid – assumption, the

19 Cornerstone model teaches nothing about the effect of the merger upon prices or competition.

20

21 103. Other widely accepted and understood economic models assume that some degree of

22 coordinated conduct – tacit or overt – is present in such markets. These theories assume that

23 firms in oligopolistic markets do consider competitor responses to their own pricing initiatives.

24 The *Cournot* model demonstrates that far greater profits are available to each of the firms

25 through coordinated conduct than by aggressively competing on price. *Cournot* posits that all

26 firms in an oligopolistic market are aware of this, and make pricing and output decisions on the

27 basis that their competitors understand this as well and will behave accordingly without the need

1 for any overt coordination. More recent work by the late mathematician John Forbes Nash Jr.  
2 applied game theory to explain a type of market equilibrium (known as “Nash equilibrium”)  
3 involving two or more non-cooperating players where each player is assumed to know the  
4 equilibrium strategies of the others, and no one of them can improve their condition by  
5 modifying only their own gaming strategy.<sup>108</sup>

6

7 104. Unless one accepts *Bertrand* as the basis for the authors’ conclusions, there is simply  
8 no merit to the notion that, even if New T-Mobile were able to achieve a lower marginal cost  
9 than the two firms could standing alone, this would be flowed through to consumers. Indeed,  
10 there is a far more compelling basis to believe just the opposite.

11

12 105. Even if one were to accept the *Bertrand* expectation of aggressive price competition  
13 among the three post-merger MNOs, the Cornerstone model itself actually goes even further into  
14 unreality. The analysis seeks to estimate the extent to which customers of one carrier will  
15 migrate (divert) to another based on differentials in speed and price. Changes in “price,” for this  
16 purpose, are equated to changes in marginal cost of the post-merger New T-Mobile entity *vis-a-*  
17 *vis* the existing pre-merger companies. Starting with the “present” uniform national price  
18 (ARPU) for each brand – which is uniform across all service plans (prepaid and postpaid,  
19 measured and unlimited) offered by each company – the model simulates the extent of diversion  
20 from or to Sprint and T-Mobile relative to assumed post-merger changes in speed and in  
21 marginal cost – again, without reference to the type of service or pricing plan to which individual

---

108. Case & Fair, *Principles of Microeconomics*, 7th Edition, at 294-295.

1 customers may subscribe. “All of our merger simulation scenarios start from the same pre-  
2 merger price and share baseline, as observed in current data. We then allow for a range of post-  
3 merger scenarios that assume different quality improvements and marginal cost reductions.”<sup>109</sup>  
4 Translating this statement into plain English, what the authors are saying is that they apply the  
5 projected change in New T-Mobile’s post-merger marginal cost relative to the pre-merger levels  
6 for each of the two separate firms as representing the change in the *price* of the service. That is,  
7 *for each dollar decrease in marginal cost, the model assumes that price will be decreased by*  
8 *exactly the same amount.*

9  
10 106. This “change in price equals change in marginal cost” construct is unrealistic on  
11 several levels, is not supported by the authors’ own data, nor is it even supported by economic  
12 theory. The Joint Applicants have stated that “New T-Mobile will invest nearly \$40 billion to  
13 combine the complementary spectrum, sites, and assets of T-Mobile and Sprint to deliver a  
14 robust, nationwide world-class 5G network and services sooner than otherwise possible.”<sup>110</sup>  
15 Under the pricing theory inherent in the Cornerstone model, all of the efficiency gains resulting  
16 from that \$40-billion investment would be handed over to New T-Mobile’s customers; its  
17 shareholders would get no return on that outlay. There is simply no basis for the Cornerstone  
18 group’s assumption that a post-merger New T-Mobile, not compelled by any regulatory  
19 requirement or competitive marketplace forces to do so, would voluntarily choose to flow-  
20 through to its customers 100% of any cost savings it is able to achieve as a result of having

---

109. Cornerstone decl., at para. 85, citations and footnotes omitted.

110. *Public Interest Statement*, at p. I.

1 invested nearly \$40-billion in network enhancements. Additionally, basic economic theory  
2 holds that only in perfectly competitive markets will changes in marginal cost be reflected  
3 dollar-for-dollar in price. In oligopolistic markets, the profit-maximizing price is set at the point  
4 where marginal revenue equals marginal cost. But “marginal revenue” is *not* price. “Price” is  
5 *average revenue*, which (for normal downward-sloping demand functions) is always *above*  
6 price. A \$1 decrease in marginal cost will potentially result in a price drop, but by well short of  
7 the full \$1.

8

9 107. Yet even accepting all of the model’s various shortcomings and fatal flaws, upon closer  
10 examination of the results of the simulations that are being reported, it is apparent that the model  
11 does not even support the core contention that the merger will produce a net benefit, except  
12 under the most extreme sets of assumptions:

13

- 14 • [BEGIN T-MOBILE CONFIDENTIAL] [REDACTED]  
[REDACTED]  
16 [BEGIN T-MOBILE HIGHLY CONFIDENTIAL] [REDACTED] [END T-MOBILE HIGHLY  
17 CONFIDENTIAL] [REDACTED]  
[REDACTED] [BEGIN T-MOBILE HIGHLY CONFIDENTIAL] \$6.00 [END  
19 T-MOBILE HIGHLY CONFIDENTIAL] [REDACTED]  
[REDACTED]  
[REDACTED] [END T-MOBILE CONFIDENTIAL]<sup>111</sup>

---

111. Cornerstone decl., at para. 94, T-MOBILE HIGHLY CONFIDENTIAL Exhibit 13.

1 • [BEGIN T-MOBILE CONFIDENTIAL] [REDACTED]  
[REDACTED] [BEGIN T-MOBILE  
3 HIGHLY CONFIDENTIAL] [REDACTED] [END T-MOBILE HIGHLY CONFIDENTIAL] [REDACTED]  
[REDACTED] [BEGIN T-MOBILE  
5 HIGHLY CONFIDENTIAL] [REDACTED] [END T-MOBILE HIGHLY CONFIDENTIAL] [REDACTED]  
[REDACTED]  
[REDACTED] [END T-MOBILE  
8 CONFIDENTIAL]<sup>112</sup>

9

10 The model examined a number of other combinations of [BEGIN T-MOBILE  
11 CONFIDENTIAL] [REDACTED] [END T-MOBILE  
12 CONFIDENTIAL]. Only in the most extreme of each of these did the model project a net  
13 improvement in market share for the post-merger New T-Mobile.

14

15 108. And in that regard, it is worth repeating that the model used reductions in marginal cost  
16 as representing the reduction in price that New T-Mobile would be expected to adopt, dollar-for-  
17 dollar, without retaining any portion of the efficiency gain for itself or its shareholders. And, as  
18 I have also noted, *any* reduction in price in response to a decrease in marginal cost implicitly  
19 *assumes* that the post-merger New T-Mobile will not engage in *any* sort of coordinated conduct  
20 vis-a-vis AT&T and Verizon. Other than the opinions of a few academic economists engaged by  
21 the Joint Applicants, the evidence of ongoing parallel conduct on the part of AT&T and Verizon

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112. *Id.*, at para. 128, T-MOBILE HIGHLY CONFIDENTIAL Exhibit 29.

1 – and, indeed, T-Mobile’s Chief Technology Officer’s own characterization of these two firms  
2 as “the duopoly” – at the very least suggest that this possibility cannot be summarily discounted.  
3 The entirety of the conclusions advanced by the Cornerstone group *require* that no coordinated  
4 conduct occur post-merger. Without that core assumption, the model teaches nothing  
5 whatsoever about post-merger conditions, and must be entirely discounted.

6

7 **Claims that New T-Mobile and the other two mobile wireless service providers confront**  
8 **competition from cable MSOs is highly speculative, certainly premature, and cannot**  
9 **provide a basis for viewing the mobile wireless service market as contestable.**

10

11 109. In their Public Interest Statement, Joint Applicants cite declarants Salop and Sarafidis  
12 as dismissing concerns regarding coordinated behavior post-merger.<sup>113</sup> Salop and Sarafidis  
13 argue that (1) “network investment cannot be easily or rapidly monitored;” (2) “as a result of  
14 substantial merger-induced efficiencies, Newco will have increased capacity, improved network  
15 quality, and reduced network and non-network marginal cost;” and (3) “unlike price changes that  
16 can be rescinded relatively quickly, network investments are essentially irreversible decisions  
17 because the investments do not depreciate very quickly” and “[t]here also is a long-lead time for  
18 retaliatory investments by rivals, once defections are finally detected, which provides the  
19 defector with a significant first-mover advantage.”<sup>114</sup> These and similar arguments are based  
20 entirely upon representations made to these witnesses by Joint Applicant officials (see, e.g.,  
21 multiple repetitions of the phrase “we understand that ...” in the Salop declaration).

---

113. *Public Interest Statement*, at 105. The PIS cites Salop/Sarafidis at paras. 84-87 as support for this contention. However, the subject of the cited text is the Joint Applicants’ relationship with MVNOs, not the potential for coordinated behavior vis-a-vis AT&T and Verizon.

114. Salop and Sarafidis decl., at para. 12.

1 Technologically-driven price reductions have been occurring regularly, and will continue. The  
2 relevant question is whether New T-Mobile will simply accept AT&T/Verizon price levels or  
3 continue to operate as a disrupter. Will prices, which are headed downward in any event,  
4 decrease more, less or the same as they would if Sprint and T-Mobile continued to operate on a  
5 standalone basis?

6  
7 110. The fatal flaw underlying these claims is that, if valid, they would also govern the  
8 conduct of AT&T and Verizon. (1) AT&T and Verizon have made extensive “network  
9 investment[s that] cannot be easily or rapidly monitored;” (2) AT&T and Verizon already enjoy  
10 the same overall scale of operations as would New T-Mobile, and thus are already realizing the  
11 same types of “efficiencies, ... increased capacity, improved network quality, and reduced  
12 network and non-network marginal cost” as New T-Mobile would have; and (3) AT&T’s and  
13 Verizon’s “network investments are essentially irreversible decisions because the investments do  
14 not depreciate very quickly” and “[t]here also is a long-lead time for retaliatory investments by  
15 rivals, once defections are finally detected, which provides the defector with a significant first-  
16 mover advantage.” Yet AT&T and Verizon persist in maintaining price levels well in excess of  
17 those being offered by Sprint and T-Mobile. Clearly, AT&T’s and Verizon’s coordinated  
18 conduct does not square with Salop’s assessment of the conditions that the Joint Applicants’  
19 claim will somehow apply to New T-Mobile.

20  
21 111. Joint Applicants’ claims that the facilities-based CMRS carriers will be confronting  
22 competition from cable MSOs such as Comcast and Charter for wireless voice and data services

1 are grossly overblown and certainly do not rise to a level that would render the mobile wireless  
2 market “contestable” in any meaningful sense. Comcast’s wireless business model relies upon a  
3 combination of (1) millions of low-power “hot spots” that have been created using Comcast-  
4 owned customer wi-fi routers, often without the customers’ knowledge and certainly without  
5 their affirmative consent, and (2) use of existing cellular services obtained (at wholesale) from  
6 one or more of the four (or perhaps three) facilities-based CMRS carriers. Comcast’s and  
7 similar hybrid wi-fi/cellular service offerings are more like MVNO services than actual  
8 facilities-based services. These hybrid arrangement cannot exist without the ability to obtain  
9 bandwidth on a wholesale basis from a facilities-based CMRS carrier, which places them in the  
10 same condition of dependency as “pure” MVNO retail providers. Additionally, the bandwidth  
11 and geographic coverage of these pseudo-public wi-fi hotspots can barely compete with existing  
12 LTE and 4G services, let alone 5G. If 5G is the future of wireless as the Joint Applicants claim,  
13 then Comcast or its counterparts have no chance of competing in this segment.

14

15 112. In Comments submitted in the FCC’s Sprint/T-Mobile docket, WT 18-197, Charter  
16 explains why it cannot be considered a viable competitor in the mobile wireless market:

17

18 Although Charter’s MVNO reseller arrangement with Verizon offers Spectrum  
19 Mobile customers access to Verizon’s network, one of the largest, most reliable  
20 4G-LTE networks in the country, Charter faces certain limitations in its ability to  
21 compete in the mobile market on the same terms as Verizon or other facilities-  
22 based carriers. There are significant limitations to its MVNO agreement, which  
23 are confidential but limit Charter’s ability to fully manage the mobile network  
24 and sell the product, thereby hindering the competitiveness of Charter’s mobile  
25 service.

26

27 Providing mobile service through Charter’s MVNO resale arrangement is



1 materially different than providing mobile service as a facilities-based nationwide  
2 or even regional mobile carrier. At the same time, substantial barriers exist to  
3 entering the mobile services market as a facilities-based carrier. The combination  
4 of very high spectrum license acquisition costs, significant network deployment  
5 costs, tower site acquisition or leasing and construction costs, costs of purchasing  
6 network equipment, back haul costs, and the costs of interconnection and  
7 roaming, all combine to create an extremely high barrier to entry for new mobile  
8 facilities-based participants. Given these substantial barriers to entry, Charter  
9 believes that under the existing MVNO agreement, Spectrum Mobile is not and  
10 cannot reasonably be viewed as having the ability to counteract price increases or  
11 other anticompetitive effects, if any, arising from a merged T-Mobile/Sprint.<sup>115</sup>  
12

13 Any cable MSO seeking to provide a geographically ubiquitous wireless service that is not  
14 limited solely to areas falling within the extremely limited range of consumer wireless router  
15 hotspots will be utterly dependent upon at least one of the existing national CMRS carriers. The  
16 Joint Applicants' suggestion that Comcast, Charter, or any other MSO actually constitutes a  
17 competitive challenge simply ignores this fundamental reality.

18

19 113. The inverse of the "cable will compete with us" contention is that, following the  
20 merger and the accelerated deployment of 5G, the Joint Applicants will be in a position to  
21 compete with cable in the provision of consumer broadband Internet access, particularly in rural  
22 areas, by offering fiber-like speeds and at lower prices than those currently being charged for  
23 wireline broadband.<sup>116</sup> It is claimed that 5G will support data rates roughly comparable to those  
24 currently available with wired broadband services. But wireless data rates have consistently  
25 lagged behind those available with wired services, and nowhere have the Joint Applicants

---

115. Comments of Charter Communications, Inc., FCC WT Docket No. 18-197, August 27, 2018, at 5-6.

116. *Public Interest Statement*, at 57-69.

1 suggested that wired data rates have already reached their maximum. Fiber-to-the-Premises  
2 (“FTTP”) services such as Verizon’s *FiOS* are already offering 1 Gb data rates as compared with  
3 the 100 MB rates that the Joint Applicants claim that 5G will ultimately support.

4  
5 114. Consumer demand for broadband is also growing. Average bandwidth utilization by  
6 consumer broadband customers is currently in the range of 190 MB per month.<sup>117</sup> A Deloitte  
7 report notes that “US consumers clearly love watching video. In fact, they spend nearly as much  
8 time watching video as they do on their jobs. Our survey reveals that on average, US consumers  
9 spend 38 hours watching video content each week, 15 hours (or 39 percent) of which is  
10 streamed.”<sup>118</sup> Several trends are driving this demand growth, including (as Deloitte has  
11 observed) a shift away from over-the-air and linear video and over to streaming video services  
12 (e.g., Netflix, Amazon Prime Video, YouTube, etc.), increased penetration of high-bandwidth  
13 devices, such as 4K TVs, home monitoring cameras and various other “Internet of Things”  
14 (“IoT”) devices, etc. Although (and contrary to the Joint Applicants’ contention) many of these  
15 services do not directly influence the demand for *mobile* wireless broadband, it is likely that  
16 usage of wired broadband will continue to escalate.

17

18 115. The ability of a wireless carrier to support the potential demand for in-home wireless  
19 broadband stems from a combination of the potential speed (data rate) of the service *and* the

---

117. Report: Average Home's Broadband Usage is 190 GB, Karl Bode, June 19, 2018 (available online at <http://www.dsreports.com/shownews/Report-Average-Homes-Broadband-Usage-is-190-GB-142026> (accessed 1/2/19)).

118. Deloitte Insights, 2018, Digital media trends survey, 12th edition, available at [https://www2.deloitte.com/content/dam/insights/us/articles/4479\\_Digital-media-trends/4479\\_Digital\\_media%20trends\\_Exec%20Sum\\_vFINAL.pdf](https://www2.deloitte.com/content/dam/insights/us/articles/4479_Digital-media-trends/4479_Digital_media%20trends_Exec%20Sum_vFINAL.pdf) (accessed 1/4/19).

1 aggregate data capacity of the transmission media. Wired broadband utilizes shared “last mile”  
2 facilities that also have finite data-carrying capacities. A cable operator will provision a city  
3 street with coaxial cable that serves multiple households, but the maximum number of homes  
4 that can be served is limited by the aggregate demand and the total bandwidth capacity of the  
5 cable. A typical DOCSIS 3.0 coaxial cable segment has a maximum downstream capacity of  
6 roughly 2.5 Gbps, and that must be shared by all subscribers on that cable. Since only a fraction  
7 of those subscribers may be actively downloading some content at any point in time, the number  
8 of subscribers that can be served depends upon the average download speed and the number of  
9 active subscribers in the busy hour. One estimate puts that number at roughly 250 subscribers.<sup>119</sup>  
10 However, as the demand for higher download speeds increases (e.g., as more subscribers stream  
11 4K TV content) and as the busy hour demand grows (e.g., as more subscribers shift their evening  
12 TV viewing from linear cable TV to streaming video), the number of subscribers that can be  
13 served on a single cable segment will decrease, perhaps significantly. When the capacity of a  
14 single cable segment has reached the point of exhaust, the cable operator can split the segment,  
15 or simply deploy an additional parallel cable segment. Verizon’s FTTP *FiOS* architecture also  
16 shares a single pair of fiber optic cables among up to 32 homes, usually located in close  
17 proximity to one another.<sup>120</sup> When the demand exceeds capacity, an additional (coax or fiber)  
18 cable can be deployed. Wireless broadband faces similar capacity constraints but, unlike cable  
19 and FTTP, it is more difficult to simply replicate a transmission facility when the demand  
20 exceeds capacity.

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119. “Comparing Cable and Fiber Networks,” BROADBAND COMMUNITIES, JANUARY/FEBRUARY 2015, at 62. Available at [http://www.bbcmag.com/2015mags/Jan\\_Feb/BBC\\_Jan15\\_ComparingCable.pdf](http://www.bbcmag.com/2015mags/Jan_Feb/BBC_Jan15_ComparingCable.pdf) (accessed 12/31/18).

120. *Id.*

1        116. Licenses for millimeter wave (24 GHz and above) spectrum are being offered in large  
2 blocks of bandwidth, making these frequencies a better choice from home wireless broadband  
3 with bandwidth demand expected to rival that for wired services. Because millimeter wave  
4 signals extend over very short distances (less than one-half mile), cells can easily be split and  
5 frequencies reused so as to increase capacity as needed. However, these high-band signals are  
6 far less viable for use in low-density rural areas *precisely because of their extremely short*  
7 *propagation distances*. Low- and mid-band spectrum, which offers much greater distance  
8 coverage, lacks the bandwidth capacity to handle the potential aggregate traffic load presented  
9 by customers in the area falling within the range of a single cell tower. For example, a cell tower  
10 with a propagation range of five miles would serve an area of more than 30 square miles.<sup>121</sup> Cell  
11 splitting and reducing power can increase the potential for frequency reuse and thereby increase  
12 capacity somewhat, but even in rural areas with an average of, for example, 100 homes per  
13 square mile, a single cell tower could be called upon to serve thousands of individual customers.  
14 It seems highly unlikely that a carrier could actually offer “fiber-like speeds” to such customers  
15 even with full 5G deployment, using mid-band spectrum.

16

17        117. Finally, other than the Joint Applicants’ say-so, there is simply no *a priori* basis to  
18 conclude that their home wireless broadband service could, or more importantly, *would* actually  
19 carry a lower price than cable or FTTP broadband. In fact, such evidence as actually exists  
20 indicates precisely the opposite: According to the FCC’s 2016 *Broadband Progress Report*,  
21 approximately 90% of Americans have access to at least one provider of 25 Mbps/3 Mbps

---

121. Area of a circle  $A=2\pi r$  i.e.,  $2 \times 3.14159 \times 5 = 31.4$  square miles.

1 fixed wired broadband service, but 38% have a choice among two or more providers.<sup>122</sup> In  
2 markets such as Boston, individual communities have access to one, two or in some cases three  
3 broadband providers (Comcast, RCN, and Verizon *FiOS*), there is no price variation on the part  
4 of Comcast (the dominant provider) among communities where it faces no, one or two  
5 competitors. There is simply no basis to accept the Joint Applicants' assertion that *they* will  
6 somehow be able and expected to charge less for wireless home broadband than the providers of  
7 fixed wired broadband services.

8

9 **ISSUE 5. What merger-specific and verifiable efficiencies would be realized by**  
10 **the merger?**

10

11 **The Joint Applicants' "economic benefits" theory**

12

13 118. The Joint Applicants' "benefits" theory is premised upon the notion that the increased  
14 scale of New T-Mobile's operations relative to those of the two companies standing alone will  
15 benefit from increased economies of scale, and in so doing will produce significant efficiency  
16 gains, lower marginal costs of inputs, and additional incentives both for New T-Mobile and for  
17 its customers. But this "bigger is better" theory could be applied to virtually any corporate  
18 merger or acquisition: The prospect of economic gains due to increased scale is not and must  
19 not be the sole consideration in addressing the public interest concerns surrounding a transaction

---

122. *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act*, GN Docket No. 15-191, 2016 Broadband Progress Report, Rel. January 29, 2016, at para. 86, Table 6. Available at <https://www.fcc.gov/reports-research/reports/broadband-progress-reports/2016-broadband-progress-report> (accessed 12/27/18). Notably, the FCC appears to have discontinued publishing data on multiple providers of fixed wired broadband service after its 2016 Report.

1 of this magnitude. Moreover, in order for any public benefits to result from such efficiency  
2 gains (if, in fact, any would actually materialize), some significant portion of these gains would  
3 need to flow through to customers, or to the broader state and/or local economies.

4

5 **The efficiency benefits being claimed by the Joint Applicants are largely speculative and, in**  
6 **any event, they have failed to demonstrate that, in the context of a three-firm oligopoly, any**  
7 **significant portion of such efficiencies that do arise will be flowed through to consumers.**

8

9 119. Even if one were to accept the Joint Applicants' claims as to the extent to which the  
10 merger will bring about efficiency gains resulting directly from the increased scale of their (post-  
11 merger) joint operations, they have failed to show that such gains will actually flow through to  
12 consumers. Offsetting any such efficiency gains will be a significant diminution of competition  
13 in the US mobile wireless market, reducing the likelihood that a New T-Mobile will confront  
14 any marketplace pressure to reduce prices to reflect these efficiency gains.

15

16 120. In its analysis of the 2011 T-Mobile/AT&T merger, the FCC staff explained that “[i]n  
17 considering the evidence provided by the Applicants in a proposed transaction, the Commission  
18 typically applies several criteria in deciding whether a claimed benefit should be considered.”

19 Four specific criteria were enumerated:

20

- 21 • First, the claimed benefit must be transaction specific: It must not only be likely to occur as  
22 a result of the proposed transaction but it must be unlikely to be realized by other practical  
23 means having fewer anticompetitive effects. “Efficiencies that can be achieved through  
24 means less harmful to competition than the proposed merger ... cannot be considered to be  
25 true pro-competitive benefits of the merger ...”
- 26 • Second, the claimed benefit must be verifiable: The Applicants, who possess much of the  
27

1 information relating to the potential benefits of a transaction, are required to provide suffi-  
2 cient supporting evidence to permit verification of the likelihood, timing, and magnitude of  
3 each claimed benefit. Benefits expected to occur only in the distant future may be dis-  
4 counted or dismissed because, among other things, predictions about the distant future are  
5 inherently more speculative than predictions that are expected to occur closer to the present.  
6 Further, the magnitude of the claimed benefit must be calculated net of the cost of achieving  
7 it.

- 8
- 9 • Third, *the Commission generally counts benefits only to the extent they will flow through to*  
10 *consumers and accrue to the public interest.* In this regard, the Commission is more likely to  
11 find reductions in marginal costs cognizable as compared to reductions in fixed costs,  
12 because reductions in marginal or variable costs are more likely to result in lower prices.  
13 However, we will discount or dismiss reductions in costs that arise from an anticompetitive  
14 reduction in quality, service or variety that customers value.
  - 15
  - 16 • Finally, the Commission evaluates the claimed benefits using a “sliding-scale approach.,”  
17 As the harms to the public interest become greater and more certain, the degree and certainty  
18 of the public benefits must also increase commensurately in order for [the Commission] to  
19 find that the proposed transaction on balance serves the public interest.” Where the potential  
20 harms are “both substantial and likely, the Applicants’ demonstration of claimed benefits  
21 also must reveal a higher degree of magnitude and likelihood than we would otherwise  
22 demand;,”<sup>123</sup>  
23

24 None of these criteria have been satisfied by the Joint Applicants here.

25

26 121. The *HMG* is quite explicit as to what types of evidence regarding “merger-specific”  
27 efficiency gains will be considered:

28  
29 Efficiency claims will not be considered if they are vague, speculative, or  
30 otherwise cannot be verified by reasonable means. Projections of efficiencies  
31 may be viewed with skepticism, particularly when generated outside of the usual  
32 business planning process. By contrast, efficiency claims substantiated by

---

123. *WT Docket No. 11-65, FCC Staff Report*, at paras. 124-127, citations omitted, emphasis supplied.

1 analogous past experience are those most likely to be credited.<sup>124</sup>

2  
3 The *Guidelines* also require that claims of increased efficiencies must be demonstrated to be  
4 merger-driven, i.e., must not be capable of being achieved by the merging firms on their own:

5  
6 Cognizable efficiencies are merger-specific efficiencies that have been verified  
7 and do not arise from anticompetitive reductions in output or service. Cognizable  
8 efficiencies are assessed net of costs produced by the merger or incurred in  
9 achieving those efficiencies.<sup>125</sup>

10  
11 The “efficiency” evidence being offered by the Joint Applicants here does not come even close  
12 to satisfying these requirements. In fact, virtually all of their “public interest” or “public  
13 benefit” claims are rooted in speculations that are largely, in some instances entirely unsupported  
14 by any actual facts or evidence, are vague, speculative, and are incapable of being verified by  
15 reasonable means.

16  
17 **The Joint Applicants’ claims that the merger will dramatically increase the efficiency of**  
18 **their (joint) operation over that which exists under the two separate firms, even if true, is**  
19 **not a sufficient basis to overcome the potential anticompetitive effects that the merger will**  
20 **foster.**

21  
22 122. As I noted earlier, the *HMG* finds that “[m]ergers resulting in highly concentrated  
23 markets that involve an increase in the HHI of more than 200 points will be presumed to be  
24 likely to enhance market power” but goes on to suggest that “[t]he presumption may be rebutted  
25 by persuasive evidence showing that the merger is unlikely to enhance market power.” The Joint

---

124. *HMG*, at §10, Efficiencies.

125. *Id.*



1 Applicants here have undertaken to rebut the *HMG*'s presumption along several themes:

2

3 (1) *Scale and efficiency*. The central theme of the Joint Applicants' case in support of their  
4 merger, as addressed in testimony and in their FCC Public Interest Statement as cited in  
5 their CPUC Application,<sup>126</sup> is that the merger is necessary in order for the two firms to  
6 achieve the overall size and scale of operations necessary for them to deploy a ubiquitous  
7 5G network and, more generally, to achieve the overall operating efficiencies necessary  
8 for them to successfully compete with AT&T and Verizon. Specifically, they advance  
9 the following arguments:

10

11 (a) Sprint's current scale is insufficient and inefficient: "Because we lack the scale of our  
12 larger competitors, we do not have as many subscribers over which to spread out our  
13 network costs, particularly compared to AT&T and Verizon."<sup>127</sup> "While Sprint holds  
14 attractive spectrum assets, our current network faces significant challenges. ... At a  
15 national level, Sprint's network footprint covers less geography and fewer POPs than  
16 that of Verizon, AT&T, or T-Mobile."<sup>128</sup>

17

18 (b) In contrast, T-Mobile portrays itself as an aggressive growth-oriented company that  
19 has disrupted the wireless market with its "Un-carrier" marketing and pricing  
20 philosophy, but argues that T-Mobile's growth and its ability to compete with AT&T

---

126. Application, Section IX, at p. 30 *et seq.*

127. Saw decl., at para, 6:

128. *Id.*, at para. 12.

1 and Verizon is still limited by virtue of its relatively small scale (by comparison with  
2 AT&T and Verizon). “Our proposed merger with Sprint will provide New T-Mobile  
3 with the added scale and assets to supercharge the Un-carrier model, taking it to new  
4 levels and increasing our ability to compete with and win customers from the largest  
5 wireless players: AT&T, Verizon, and the large well-capitalized companies—like  
6 Comcast—now competing in the wireless industry.”<sup>129</sup>  
7

8 (2) *Financial and resource impairment.* Sprint is portrayed as a financially enfeebled  
9 company that currently has an inferior network across multiple dimensions and simply  
10 lacks the resources necessary to upgrade that network to the state-of-the-art level needed  
11 to compete with the other three carriers going forward.  
12

13 (a) Sprint’s network, particularly with respect to providing data services, is geograph-  
14 ically limited. “While Sprint’s 2.5 GHz spectrum can deliver high data speeds and  
15 support substantial capacity, it is limited in its propagation characteristics and ability  
16 to penetrate buildings compared to lower-band spectrum, such as T-Mobile’s 600 and  
17 700 MHZ bands. Sprint also holds an average of 40 MHZ of 1.9 GHz PCS spectrum  
18 nationwide. ...”<sup>130</sup>  
19

20 (b) Sprint lacks sufficient bandwidth capacity at the lower frequencies (e.g., 600 MHZ)

---

129. Legere decl., at para. 8:

130. Saw decl., at para. 7:

1 to offer high data-rate 5G. “While Sprint’s 4G LTE network covers about 302  
2 million POPs, only about 208 million POPs are covered by Sprint’s 2.5 GHz  
3 spectrum, which is the spectrum that provides Sprint’s best data speeds. However,  
4 2.5 GHz in-building coverage on our macro cell sites is lower and covers only about  
5 133 million POPs because the 2.5 GHz spectrum does not penetrate buildings as well  
6 as lower-band spectrum.”<sup>131</sup>

7  
8 (c) Sprint has been losing customers and has the highest outward churn rate in the  
9 industry: “This lack of coverage and lack of a consistent, high-speed user experience  
10 in many places where Sprint does offer coverage leads to Sprint having the highest  
11 network-related churn among major carriers.”<sup>132</sup>

12  
13 (d) Sprint is impaired financially – and lacks the investment capital necessary to upgrade  
14 and expand its network: “Just a few years ago, Sprint was in dire financial straits. It  
15 lagged behind other carriers in deploying 4G LTE and was forced to invest many  
16 billions of dollars on its network just to try to catch up with competitors who were  
17 well ahead in the next generation wireless network capabilities. Sprint was losing  
18 subscribers and not generating the cash needed to support vital capital investments  
19 without incurring billions in new debt. In short, Sprint’s path was unsustainable. ... In

---

131. *Id.*, at para. 13:

132. Draper decl., at para. 14:

1           2017, we became net income positive for the first time in 11 years ...”<sup>133</sup> “In recent  
2           years, Sprint has faced financial challenges and has pursued efforts to substantially  
3           reduce its costs, including network-related costs. The company also faces higher  
4           levels of subscriber churn, lower subscriber scale, and lower share of wireless  
5           industry EBITDA compared to other carriers, particularly AT&T and Verizon.  
6           Because of these factors, among others, Sprint has been unable to invest in its  
7           network at the same level of its competitors, resulting in a smaller footprint and lower  
8           site density, thereby impacting customer experience.”<sup>134</sup>

9  
10       (3) *Maximum deployment of 5G depends upon the merger going forward.* T-Mobile has  
11       ambitious plans to deploy 5G on a standalone basis: “On a standalone basis, we will  
12       deploy a nationwide 5G network, but will lack the bandwidth to deliver upon the full data  
13       rate and capacity gains possible for 5G. Our lack of access to significant amounts of  
14       available mid-band spectrum that is not encumbered with LTE subscribers (as well as a  
15       lack of large amounts of high-band spectrum nationally) will significantly limit our  
16       ability to provide a nationwide 5G system that can handle the most demanding high  
17       capacity 5G applications.”<sup>135</sup> However, a merger with Sprint will provide additional  
18       scale and assets that will have a multiplicative effect upon the overall capacity and  
19       capability of the “New T-Mobile” network: “New T-Mobile, using the combination of  
20       the complementary spectrum and network assets of T-Mobile and Sprint will unlock the

---

133. *Id.*, at paras. 3-4.

134. Saw decl., at para. 16.

135. Ray decl., at para. 18.

1 potential in both the existing and future use cases envisioned for 5G and provide the  
2 capacity needed to carry the oncoming wave of data consumption and user engagement  
3 that will be unleashed. T-Mobile alone, given its network assets and capacity, will not  
4 otherwise be able to keep up with the explosive growth in new use cases and associated  
5 data requirements”<sup>136</sup>

6  
7 123. The “efficiency” evidence being offered by the Joint Applicants here does not come  
8 even close to satisfying the *HMG* requirements. The core of the Joint Applicants’ “efficien-  
9 cies” claim relates to the deployment of 5G. The Joint Applicants state that the merger will  
10 enable them to roll-out 5G more rapidly, with greater geographic coverage, and with greater total  
11 capacity, than the two firms could accomplish on their own.<sup>137</sup> However, and as I shall discuss  
12 in more detail below, such claims are belied by statements made by both companies well before  
13 their merger was announced as to the individual plans and capabilities for deployment of 5G. As  
14 Public Advocates Office witness Cameron Reed explains, upon closer examination, it becomes  
15 clear that such 5G efficiency gains as are being promised relate almost entirely to the *transition*  
16 to 5G rather than to a permanent post-transition condition.<sup>138</sup> Moreover, even the kind of more  
17 rapid deployment of 5G that the Joint Applicants seek to ascribe to the merger will produce little  
18 or no actual public benefit inasmuch as the roll-out of 5G-capable handsets and other devices is  
19 expected to be far more gradual than the aggressive deployment that the merger will purportedly  
20 permit. In any event, the type of transitory efficiency gains that the Joint Applicants describe

---

136. *Id.*, at para. 15.

137. *Public Interest Statement*, at p. I.

138. Reed (Public Advocates Office), at 13-14.

1 can hardly overcome the anticompetitive losses that the *permanent* state of increased market  
2 concentration will produce.

3

4 124. In fact, virtually all of the Joint Applicants’ “public interest” or “public benefit” claims  
5 are rooted in speculations that are largely, in some instances entirely unsupported by any actual  
6 facts or evidence, are vague, speculative, and are incapable of being verified by reasonable  
7 means. Most importantly, T-Mobile has offered no substantive support for its contention that it  
8 could not achieve corresponding efficiency gains while continuing to operate on a stand-alone  
9 basis, i.e., without a merger with Sprint.

10

11

1 **ISSUE2. What new services, if any, that are not currently provided by T-Mobile**  
**or Sprint, are contemplated to be provided by the merged entity? How**  
**would the merger impact competition for such services in any**  
**metropolitan area or other geographically distinct market?**

2  
3 **Nationwide or even California statewide availability of 5G is in no sense dependent upon**  
4 **the merger of T-Mobile and Sprint and, since this merger is likely to diminish competition**  
5 **in the US mobile wireless market, it is more likely to retard, rather than facilitate, 5G**  
6 **deployment.**  
7

8 125. A second central theme of the Joint Applicants’ case in support of the proposed merger  
9 is their claim that a post-merger New T-Mobile will be able to construct and deploy a far more  
10 extensive 5G wireless network with a total capacity many times as great as the sum of the  
11 capacities of the standalone 5G networks that each of the two companies could accomplish on  
12 their own.<sup>139</sup> However, the Joint Applicants’ current portrayal of their separate and combined  
13 5G capabilities bears little resemblance to what they had been saying to Wall Street shortly  
14 before they accounted their plans to merge in the sprint of 2018.  
15

16 126. Neville R. Ray, T-Mobile’s Executive Vice President and Chief Technology Officer,  
17 characterizes 5G as bringing about “transformational changes” that will enable a “tsunami of  
18 new data-intensive use cases” that “promise[] to bring myriad benefits to users and provide for a  
19 multitude of new applications and use cases beyond what can be supported by today’s most  
20 advanced 4G networks and provide a richer user experience, increased engagement time, and

---

139. Application, at 13-14; see also, *Public Interest Statement*, at p. I..

1 new and innovative methods of consumption.”<sup>140</sup> Mr. Ray explains that:

2  
3 The improvements inherent in 5G will usher in a new wave of applications and  
4 spawn new business opportunities and customer benefits. It will not only be an  
5 evolution of mobile broadband networks, it is also envisioned to enable new  
6 unique network and service capabilities. The connectivity increase supported by  
7 5G networks will be essential to support fiber-like data speeds, low latency for  
8 real-time interactivity, more consistent performance and user experience, and  
9 massive capacity for unlimited data (for things like 4K video streaming, online  
10 gaming and other capacity hungry applications) that cannot be served across a  
11 substantial number of users by 4G. The new 5G ecosystem will enable new  
12 forms of mobile media and entertainment – no longer will consumers be required  
13 to subscribe to multiple network providers to watch television and movie content  
14 wherever and whenever they want. Subscribers will be able to develop and share  
15 rich user-generated content, regardless of file size or location. Congested  
16 environments, such as sporting events, concerts, and large enterprises, will no  
17 longer be constrained. Commuters will have high-speed data available—allowing  
18 video streaming of state-of-the-art 4K content and the ability to download any file  
19 nearly instantaneously while traveling on public transit. And novel and innova-  
20 tive new applications such as virtual and augmented reality, connected vehicles  
21 and highways, real-time translation, and drone control/monitoring could  
22 dramatically reshape the way consumers engage and enjoy new content and  
23 experiences.<sup>141</sup>

24

25 127. Public Advocates Office witness Cameron Reed reviews 5G’s effects upon spectrum  
26 efficiency and area capacity efficiency, thus producing a substantial gain in overall network  
27 capacity: “5G services are expected to be three times more spectrally efficient than 4G LTE  
28 services. This means 5G provide more capacity per Hz of spectrum than 4G. ... Area traffic  
29 capacity refers to the total traffic throughput available per geographic area, measured in Mbit per  
30 second (Mbps) per square meter. Area traffic capacity is expected to increase by 100 times, to

---

140. Ray decl., at para. 11.

141. *Id.*, at para. 13.



1 10 Mbps per square meter ...”<sup>142</sup> Importantly, these efficiency gains are inherent in 5G  
2 technology, and do not require the merger in order to be realized. Indeed, the potential 5G  
3 capacity gains may well reduce some of the scale advantages currently being enjoyed by the two  
4 larger carriers vis-a-vis those of Sprint and T-Mobile standing alone.

5  
6 128. The Joint Applicants devote many pages to extolling the virtues of 5G. However, that  
7 is something that is actually not in dispute, notwithstanding certain exaggerations<sup>143</sup> and  
8 uncertainties as to the actual timing of 5G device availability and adoption. Importantly, the  
9 same motivation for the Joint Applicants’ efforts to implement 5G also apply to AT&T and  
10 Verizon. If the benefits of 5G over existing wireless technology are as substantial as the Joint  
11 Applicants claim – and I have no reason to dispute this assessment – it is simply inconceivable  
12 that the two largest and best capitalized MNOs in the United States would pursue 5G only in  
13 response to the Joint Applicants’ combined (i.e., merged) initiative rather than on its own merits.  
14 The Joint Applicants’ contention that AT&T and Verizon would forgo 5G but for Sprint and  
15 T-Mobile’s plan to go forward with it stretches credulity to the breaking point.

16  
17 129. What is in dispute is the connection between the proposed merger and the type of 5G  
18 capability that the two companies could deliver absent the merger. Most concisely, the Joint

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142. Reed (Public Advocates) decl., at 25-26.

143. 4K TV provides a maximum resolution of 4096 x 2160 pixels, which is four times the maximum pixel resolution of HDTV 1080p (1920 x 1080 pixels). Streaming a 4K program requires approximately four times the bandwidth of HDTV, which cable DOCSIS 3.1 and FTTP services like *FiOS* are capable of supporting. 4K images are noticeably better than HDTV images when viewed on a large flat screen TV, but for a typical 5" to 7" handheld device, such as an iPhone or an Android phone, there is no discernable benefit to 4K vs. 1080p or even 720p. In fact, the smallest size that 4K TV sets come in is 40".

1 Applicants have sought to portray a critical linkage between bringing the benefits of 5G to the  
2 public and approval of their merger, in effect claiming that the public will be denied the  
3 enormous benefits of 5G if the merger does not take place. These claims are grossly overblown.  
4

5 130. First, both T-Mobile and Sprint are perfectly capable of implementing 5G on their own,  
6 without a merger. In fact, both companies had individually announced plans for aggressive 5G  
7 deployment, and had released specific details of their respective 5G plans – i.e., their plans to  
8 deploy 5G on a standalone basis – long before they announced plans to merge: At Sprint’s 3rd  
9 Quarter 2017 Earnings Call held on February 2, 2018, Sprint CEO Raul Marcelo Claure advised  
10 securities analysts:

11  
12 I am very confident in Sprint’s future based on the competitive advantage that we  
13 will have with the deployment of 5G on our 2.5 GHz spectrum. We’re working  
14 with Qualcomm and network and device manufacturers in order to launch the first  
15 truly mobile network in the United States by the first half of 2019. This latest  
16 development will put Sprint at the forefront of technology and innovation on par  
17 with other leading carriers around the world. This is where the power of 2.5 GHz  
18 comes to life to provide a unified 5G platform to enable innovative products and  
19 services and to partner with our sister companies under the SoftBank Group. The  
20 Sprint is a strategic asset for SoftBank, along with leading technology companies  
21 like ARM, OneWeb, Alibaba, along with rights sharing robotic and artificial  
22 intelligence companies. Our strategy is predicated on creating an amazing  
23 customer experience, offering customers the best products and services while  
24 delivering superior financial results. First, we recognize that to be a truly a great  
25 company, we have to have a great product which for us is our network. While our  
26 network is much improved, we believe our Next-Gen Network will truly  
27 differentiate Sprint over the next couple of years due to our strong spectrum  
28 assets that enable Sprint to be the leader in the true mobile 5G.  
29

30 This is the biggest network capital program in many years, and I will share more  
31 details about our network strategy in a few moments. I cannot wait to once and  
32 for all be able to sell the product that is best in the industry with competitive

1 coverage, the fastest speed, and the highest capacity.<sup>144</sup>

2  
3 And in a May 1, 2017 blog, “Setting the 5G Record Straight: Announcing Plans for Nationwide  
4 5G from T-Mobile,” Neville Ray wrote:

5  
6 Listen, 5G is going to be AMAZING – maybe the most transformative  
7 technology of our lifetime. It’s a LOT more than #Fake5G and Fixed 5G.

8  
9 So, I can’t let all this stand! Time to bust some 5G myths!

10  
11 MYTH: There is “5G Spectrum” and “NOT 5G Spectrum”

12  
13 FACT: You can deploy 5G on ANY frequency, and in the future, **all spectrum**  
14 **will be 5G spectrum.** 2G, 3G and 4G are available across low, mid and high-  
15 band. Why would 5G be any different? It won’t.

16  
17 The Duopoly’s approach – focused on high-band “5G spectrum” – means they’ll  
18 build a scattershot 5G network like a series of hotspots in select cities, and your  
19 5G phone will lose 5G as soon as you leave that limited area.

20  
21 MYTH: 5G is just about really fast speeds.

22  
23 FACT: 5G means amazingly fast speeds, sure, but 5G is a whole lot more!

24  
25 5G will mean lower-latency (that means faster response-times for your appli-  
26 cations), massively increased battery life and an exponential leap in the number of  
27 connections we can handle simultaneously – and that unlocks all kinds of  
28 amazing new applications. It’s about more than just speed.

29  
30 MYTH: 5G is just another way to get home Internet.

31  
32 FACT: The carriers are focused on Fixed 5G – basically replacing your wired  
33 home Internet. And that’s just fine if you’re not focused on today’s mobile  
34 customer or 5G applications that require broad coverage, but are instead intent on  
35 developing a wireless solution to compete with big Cable in the home broadband

---

144. Sprint 3Q2017 Earnings Call, February 2, 2018, available at (accessed 12/12/18):  
<https://seekingalpha.com/article/4142755-sprints-s-ceo-marcelo-claure-q3-2017-results-earnings-call-transcript>

1 market. This approach makes total sense if you are Verizon trying to ignore your  
2 troubles in wireless. But, it breaks down the second you want to leave your  
3 home.

4  
5 Mobile 5G will cover you wherever you go. It'll unleash all those incredible use  
6 cases across the country.

7  
8 **That's why I'm so excited to announce plans for a REAL, NATIONWIDE,**  
9 **MOBILE 5G network from T-Mobile.**

10  
11 You heard that right. First, we are going to dedicate part of the new 600MHz  
12 spectrum we just won to LTE and then part to 5G nationwide. This means  
13 **T-Mobile is the first company to commit to building a nationwide 5G**  
14 **network. And yes that's real 5G, not fake 5G! And that's nationwide Mobile**  
15 **5G, not Fixed 5G!**

16  
17 In addition to the 600 MHZ band, we have 200 MHZ of spectrum in the  
18 28/39GHz bands covering nearly 100 million people in major metropolitan areas  
19 and an impressive volume of mid-band spectrum to deploy 5G in as well. This  
20 positions **T-Mobile to deliver a 5G network that offers BOTH breadth and**  
21 **depth nationwide.**

22  
23 ...

24  
25 Nationwide 5G coverage will drive endless possibilities, and yes, the future is  
26 kick-ass!

27  
28 With 5G on 600 MHZ, time lines coalesce and trends converge – it's almost like  
29 we planned it??. As 5G standards are defined, chipsets are delivered, and  
30 equipment comes to market, we expect to be 3GPP certified and be able deploy  
31 5G on clean spectrum – without any refarming dependency – which means we  
32 can light it up and roll it out quickly. We'll expect all this to begin in 2019 and  
33 target 2020 for a full nationwide rollout.

34  
35 We've built our network – and our entire network team – to advance faster than  
36 the carriers. T-Mobile is a mobile internet company, and our network advances at  
37 internet speed. Now, we're making plans to take the country's fastest, most  
38 advanced LTE network to a whole new level ... and to introduce the country's

1 first real, nationwide 5G network, leapfrogging the competition yet again.<sup>145</sup>

2  
3 Nothing in either of these two statements indicated any concerns or reticence as to each  
4 company's *standalone* capability to successfully implement 5G. Neither made any mention of  
5 spectrum limitations or on any particular spectrum band being better suited for 5G. Sprint's Mr.  
6 Claude told Wall Street that he was "very confident in Sprint's future based on the competitive  
7 advantage that we will have with the deployment of 5G on our 2.5 GHz spectrum." And  
8 T-Mobile's Mr. Ray even went so far as to admonish that "You can deploy 5G on ANY  
9 frequency, and in the future, **all spectrum will be 5G spectrum**. 2G, 3G and 4G are available  
10 across low, mid and high-band. Why would 5G be any different? It won't." Yet now he says  
11 that it will.

12  
13 131. Indeed, in his testimony in support of the merger, Mr. Ray readily concedes that  
14 "[s]ervice providers and manufacturers are developing plans and laying the groundwork for  
15 deploying this new technology."<sup>146</sup> As support for this statement, Mr. Ray cites a February 2017  
16 *RCR Wireless News* article – also published long before the merger was announced – that  
17 describes what each of the four major US wireless carriers are doing to implement 5G  
18 standalone, on their own networks:

19 US mobile carriers are getting ready for the implementation of 5G technology in  
20 the coming years and 5G trials and testbeds are part of these efforts.  
21  
22

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145. Neville Ray, blog, May 1, 2017, "Setting the 5G Record Straight: Announcing Plans for Nationwide 5G from T-Mobile," <https://www.T-Mobile.com/news/nationwide-5g-blog> (accessed 12/12/18). Emphasis in original

146. Ray decl., at para. 9.

1 Verizon Communications is one of the most active operators in terms of 5G  
2 development. The telco recently confirmed that it's currently moving on  
3 "commercial-scale pilots" in about 10 different locations across the country.  
4

5 Verizon EVP and CFO Matt Ellis recently said the operator was moving onto the  
6 next phase of its 5G plans having concluded a number of technical trials and lab  
7 tests last year. The carrier had previously stated plans to begin commercial trials  
8 of next-generation wireless technologies in 2017, which are expected to revolve  
9 around a fixed-broadband use case.

10  
11 Verizon was one of the first domestic operators to announce its 5G network plans,  
12 unveiling efforts in late 2015 towards initial trials in 2016.  
13

14 Also, AT&T recently announced plans to launch its first "5G Evolution markets"  
15 in the coming months in Indianapolis and Austin, Texas.  
16

17 The telco said initial wireless services are expected to support speeds up to 400  
18 megabits per second, with up to 1 gigabit per second expected by year-end as it  
19 folds in more support from network densification, carrier aggregation and license  
20 assisted access technologies. The test beds are said to include dedicated outdoor  
21 and indoor testing locations that will include "flexible infrastructure to allow  
22 modifications and updates as 5G standards develop," and include spectrum  
23 support below 6 GHz, and in the 28 GHz and 39 GHz bands.  
24

25 The carrier earlier this year announced plans with Ericsson and Qualcomm to  
26 conduct interoperability testing and over-the-air trials based on what they expect  
27 to be 5G technical specifications and using millimeter wave spectrum bands.  
28

29 Meanwhile, T-Mobile US is testing 5G technologies through agreements with  
30 European vendors Nokia and Ericsson. In September 2016, the carrier said it had  
31 completed trials of voice calls between 4G and 5G networks using Ericsson's 5G  
32 radio prototype system and the carrier's LTE network and devices. Network  
33 speed testing also showed that download speeds of more than 12 gigabits per  
34 second were possible with latency of less than two milliseconds.  
35

36 The tests, which were conducted at Ericsson facilities, are said to include  
37 demonstrations of two-directional beam steering and support for multiple 4K  
38 video streams.  
39

40 With Nokia, T-Mobile US said it expanded its work with the vendor using

1           prestandards test equipment and spectrum in the 28 GHz band. The trial is said to  
2           have produced “industry-leading connection speeds and throughput rates of  
3           several gigabits per second and real-time latency of 1.8 milliseconds while  
4           streaming four simultaneous 4K videos.”

5  
6           The carrier also previously announced plans to work with Samsung to demon-  
7           strate technology advances using spectrum in the 28 GHz band.

8  
9           Sprint was perhaps a bit late to the 5G party, but has since moved aggressively in  
10          terms of testing. The carrier used the recent Copa América Centenario soccer  
11          tournament to trial technology in Santa Clara, California, and Philadelphia with  
12          partners Nokia and Ericsson using spectrum in the 73 GHz and 15 GHz bands,  
13          respectively.

14  
15          The carrier noted the testing showed download speeds up to 4 Gbps and low  
16          millisecond latency.

17  
18          Also, last year, regional telco U.S. Cellular and Swedish vendor Ericsson claimed  
19          a joint network test achieved speeds of up to nine gigabits per second using  
20          technology components expected to be part of the “5G” standard.

21  
22          The companies said the testing occurred in Madison, Wisconsin, using Ericsson  
23          equipment installed on a U.S. Cellular network tower. The test achieved peak  
24          speeds of up to 1.5 Gbps at a distance of one mile from the tower and the 9 Gbps  
25          speed achieved at a distance of 787 feet.

26  
27          Technology used in the test included radio resource sharing, beamforming, beam  
28          tracking and multiple-input/multiple-output antenna technology, which are all  
29          expected to have a part to play in the evolving 5G technology standard.

30  
31          U.S. Cellular and Nokia also carried out a test of fixed wireless services in  
32          outdoor and indoor environments using spectrum in the 28 GHz band. Claimed  
33          results included network speeds of up to 5 Gbps and latency of less than two  
34          milliseconds.<sup>147</sup>

35  
36          132. But the Joint Applicants have significantly revised their 5G story *du jour*. Now,

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147. Juan Pedro Tomfis, “5G trials in the U.S.,” *RCR Wireless News*, Feb. 16, 2017, available at <https://www.rcrwireless.com/20170216/carriers/5g-trials-u-s> (accessed 12/12/18).

1 T-Mobile can apparently no longer count on what Mr. Ray had described as a “kick-ass” 5G  
2 future. Mr. Ray now advises that “[o]n a standalone basis, we will deploy a nationwide 5G  
3 network, but will lack the bandwidth to deliver upon the full data rate and capacity gains  
4 possible for 5G.” And where last year Mr. Ray insisted that “[y]ou can deploy 5G on ANY  
5 frequency, and in the future, all spectrum will be 5G spectrum,” the story that he now tells the  
6 Commission is that T-Mobile’s “lack of access to significant amounts of available mid-band  
7 spectrum that is not encumbered with LTE subscribers (as well as a lack of large amounts of  
8 high-band spectrum nationally) will significantly limit [T-Mobile’s] ability to provide a  
9 nationwide 5G system that can handle the most demanding high capacity 5G applications.”<sup>148</sup>

10

11 133. Mr. Ray’s lamentation regarding T-Mobile’s “lack of large amounts of high-band  
12 spectrum nationally” is, to be charitable, rather curious, inasmuch as just this past fall, the FCC  
13 announced two high-band spectrum auctions. Auction 101 is offering two (2) 425 MHZ blocks  
14 of spectrum in the 28 GHz band, primarily in rural counties (11 of which are in California).<sup>149</sup>  
15 Auction 102 is offering seven (7) blocks of 100 MHZ each in the 24-25 GHz band, to be  
16 licensed for Economic Areas (EAs) and Partial Economic Areas (PEAs), eight (8) of which are  
17 in California.<sup>150</sup> T-Mobile has been included in the FCC’s list of “Qualified Bidders” for

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148. Ray decl., at para. 18.

149. Auction 101: <https://www.fcc.gov/auction/101/factsheet> ; T-Mobile is identified by the FCC as a “Qualified Bidder.” <https://docs.fcc.gov/public/attachments/DA-18-1115A2.pdf> 12/26/18)

150. The California EAs and PEAs included in Auction 102 are Los Angeles, San Francisco, San Diego, Sacramento, Fresno, Merced, Redding, and Douglas City.



1 Auction 101;<sup>151</sup> the list for Auction 102 had not been released as of December 13, 2018, but it is  
2 reasonable to assume that T-Mobile will be included on that list as well. Thus, T-Mobile could,  
3 and perhaps did or plans to, participate in both of these Auctions. Most importantly, neither  
4 Sprint nor T-Mobile need to merge with each other in order to qualify for participation in these  
5 and future spectrum auctions. If more high-band spectrum is needed, it is available and can be  
6 purchased.

7

8 134. Sprint’s Chief Technology Officer, John C. Saw, asserts that the merger would  
9 “present[] the opportunity to create a world-class 5G network that will have performance  
10 characteristics that are far superior to what either Sprint or T-Mobile could offer on its own.” He  
11 goes on to assert that, standing alone, “Sprint’s network faces challenges arising from a number  
12 of factors, including: the limited number of cell sites with 2.5 GHz spectrum, the spectrum that is  
13 responsible for carrying the majority of our data traffic; a lack of sufficient low-band spectrum  
14 that prevents the company from providing ubiquitous coverage and consistency of network  
15 experience; and a lack of scale required to justify capital investment necessary to build a  
16 nationwide network.”<sup>152</sup>

17

18 135. The Joint Applicants’ claims with respect to the uniquely merger-driven gains in  
19 spectral efficiency and the more efficient and expanded implementation of 5G are shockingly  
20 similar to claims that had been advanced by T-Mobile and AT&T in support of their 2011 effort

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151. Auction 101 Qualified Bidders: <https://docs.fcc.gov/public/attachments/DA-18-1115A2.pdf>.

152. Saw decl., at para. 4.

1 to gain approval to merge. The FCC staff, in its report on the proposed merger, was not  
2 impressed by these arguments:

3  
4 One of the Applicants’ primary justifications for the necessity of this transaction  
5 is that, as standalone firms, AT&T and T-Mobile are, and will continue to be,  
6 spectrum and capacity constrained. Due to these constraints, we find it more  
7 plausible that a spectrum constrained firm would maximize deployment of more  
8 spectrally efficient LTE, rather than limit it. Transitioning to LTE is primarily a  
9 function of only two factors: (1) the extent of capable equipment deployed on the  
10 network and (2) the penetration of LTE compatible devices in the subscriber base.  
11 Although it may make it more economical, the transition does not require  
12 “spectrum headroom” as the Applicants claim. Increased deployment could be  
13 achieved by both of the Applicants on a standalone basis by adding the more  
14 spectrally efficient LTE-capable radios and equipment to the network and then  
15 providing customers with dual mode HSPA/LTE devices. As soon as the  
16 penetration reaches a predetermined level, an LTE carrier can replace an HSPA  
17 carrier and dual mode devices will use the new LTE carrier. As LTE penetration  
18 increases further, UMTS spectrum would then be transitioned to LTE as demand  
19 required. *We note that all providers face these challenges.*<sup>153</sup>  
20

21 Note that the term “carrier” as used in this paragraph refers to the “carrier frequency” at which  
22 the digital signal is transmitted within the block of licensed spectrum – i.e., not to “common  
23 carrier” as used elsewhere in this testimony.

24

25 136. The “spectral efficiency” and “5G implementation” claims that are being advanced by  
26 the Joint Applicants here so closely parallel the almost identical claims that AT&T and T-Mobile  
27 had made back in 2011 that the above paragraph from the FCC Staff report could be repeated  
28 almost *verbatim* here, with only a few textual changes (shown in **bolded underlined** text):  
29

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153. *WT Docket No. 11-65, FCC Staff Report*, at para. 211, citations omitted, emphasis supplied.

1 One of the Applicants' primary justifications for the necessity of this transaction  
2 is that, as standalone firms, **Sprint** and T-Mobile are, and will continue to be,  
3 spectrum and capacity constrained. Due to these constraints, we find it more  
4 plausible that a spectrum constrained firm would maximize deployment of more  
5 spectrally efficient **5G**, rather than limit it. Transitioning to **5G** is primarily a  
6 function of only two factors: (1) the extent of capable equipment deployed on the  
7 network and (2) the penetration of **5G** compatible devices in the subscriber base.  
8 Although it may make it more economical, the transition does not require  
9 "spectrum headroom" as the Applicants claim. Increased deployment could be  
10 achieved by both of the Applicants on a standalone basis by adding the more  
11 spectrally efficient **5G**-capable radios and equipment to the network and then  
12 providing customers with dual mode **5G/4G LTE** devices. As soon as the  
13 penetration reaches a predetermined level, a **5G** carrier can replace a **4G LTE**  
14 carrier and dual mode devices will use the new **5G** carrier. As **5G** penetration  
15 increases further, **4G LTE** spectrum would then be transitioned to **5G** as demand  
16 required. We note that all providers face these challenges.<sup>154</sup>  
17

18 The key takeaway here is that the principal benefit of combining the Sprint and T-Mobile  
19 spectrum is that it may facilitate the *transition* to 5G. That may well be true, but such claims fall  
20 into the very same policy trap as the "scale" and "efficiency" arguments that the Joint Applicants  
21 have also advanced and which I have previously discussed. But if a showing that the increased  
22 size and scale of any merged firms' operations were a sufficient basis for allowing such  
23 combinations to go forward, we'd probably end up with one bank, one insurance company, one  
24 automobile manufacturer, one airline, and certainly only one wireless telecommunications  
25 service provider. If spectral efficiency gains can be achieved by merging Sprint and T-Mobile,  
26 then surely additional spectral efficiencies can be achieved by also including AT&T and Verizon  
27 in the amalgamation. The US economy generally – and the telecommunications industry in  
28 particular – has demonstrated over and over again that forgoing whatever short run efficiency  
29 gains that might result from increased scale will be more than offset by competition and

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154. *Id.*, at para. 211, citations omitted, emphasis supplied.

1 innovation. In fact, this notion has been at the core of US telecommunications policy since at  
2 least as far back as the 1960s. And as for any transition to 5G, once completed, the increased  
3 spectral efficiency of 5G will still afford substantial benefits to both firms on a continued  
4 standalone basis.

5

6 137. At this point, it may be instructive to examine the Joint Applicants' spectrum issues in  
7 more detail. Mobile wireless spectrum falls into three categories – low band (generally in the  
8 600 MHz to 800 MHz range), mid-band (generally in the 1.8-2.5 GHz range), and high-band (in  
9 the 24-28 GHz range, so-called millimeter bandwidth frequencies). These bands have very  
10 different propagation characteristics. Generally, propagation distances decrease at successively  
11 higher frequencies. Low-band propagation ranges up to about 18 miles depending upon local  
12 conditions;<sup>155</sup> mid-band distances are in the 4-8 mile range,<sup>156</sup> and millimeter band distances are  
13 a half-mile or less.<sup>157</sup> As of now, most of the low- and mid-band frequencies have been licensed  
14 and carriers can acquire additional bandwidth in these bands mainly through purchases from  
15 other licensees in the secondary market. As I have just discussed, high-band spectrum is still  
16 available at FCC auctions.

17

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155. Ray decl., at para. 35.

156. *Id.* at para. 36.

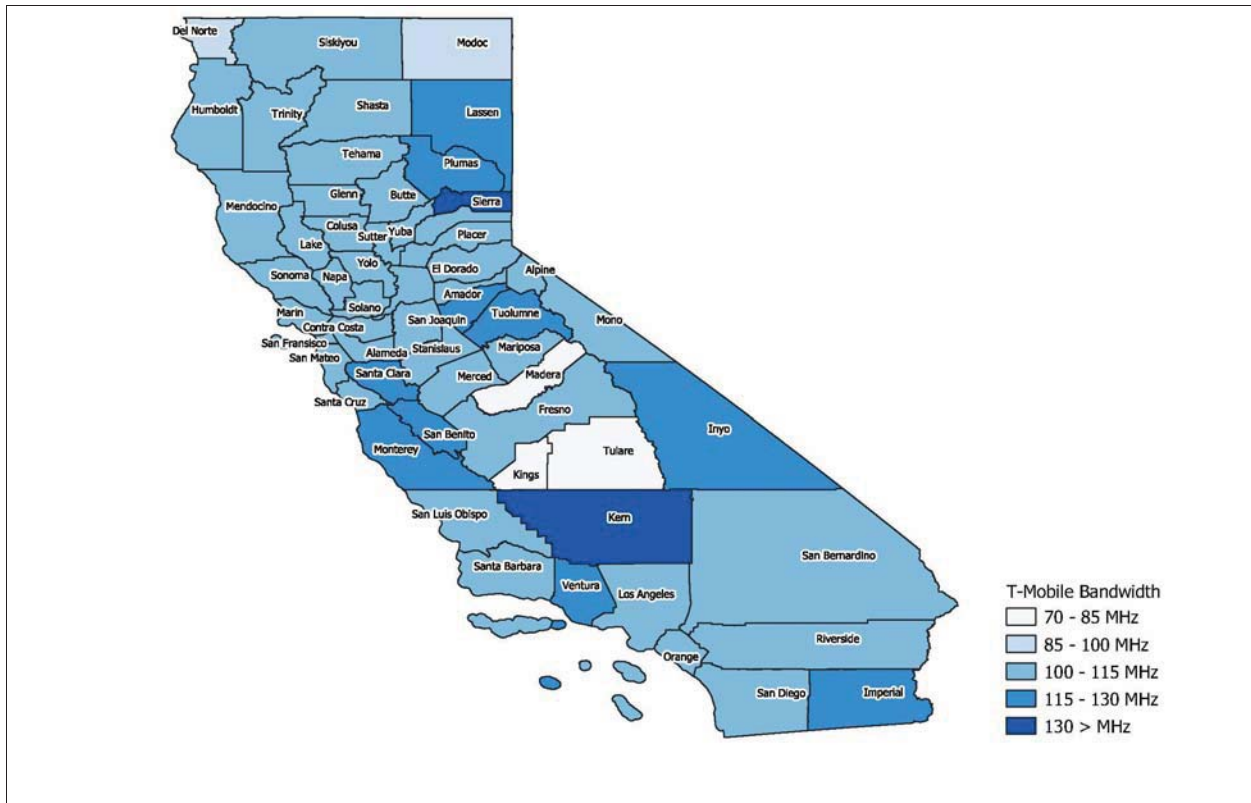
157. *Id.* at para. 37.

1 **ISSUE 10. How would the merger impact the quality of, and access to, service**  
2 **to California consumers in metropolitan areas, rural areas, or other**  
3 **geographically distinct markets? What services would be affected?**

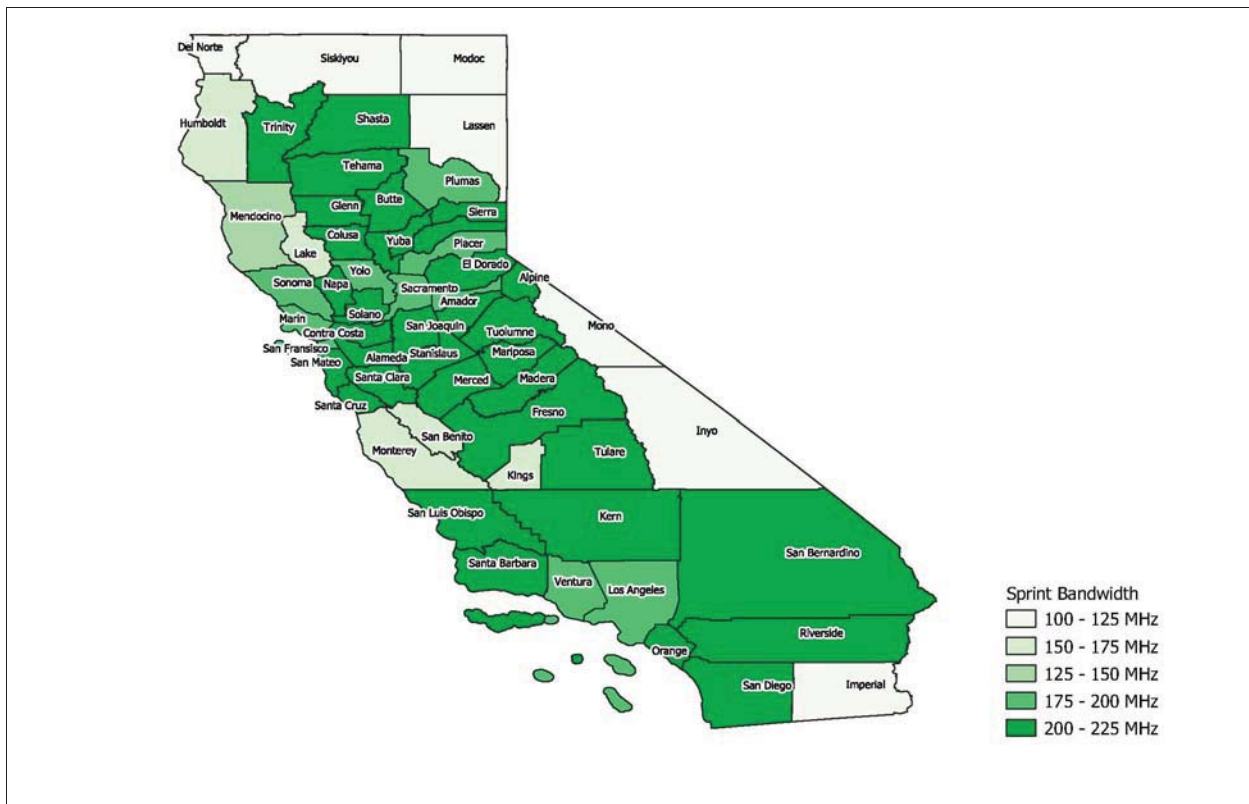
4 **Both Sprint and T-Mobile individually possess more than sufficient spectrum capacity to**  
5 **serve rural areas, and nothing in either the merger or in the characteristics of 5G**  
6 **technology can bring down the amount of capital investment required to provide service in**  
7 **rural areas.**

8 138. From bandwidth holding figures as provided by T-Mobile and Sprint as Appendix L-1  
9 to the Applications of T-Mobile US, Inc. and Sprint Corporation, FCC WT Docket No. 18-197,  
10 as revised on July 5, 2018, T-Mobile currently holds between 30 and 52 MHz of low-band  
11 bandwidth and between 40 and 90 MHz of mid-band bandwidth, and Sprint currently holds  
12 between 10 and 14 MHz of low-band bandwidth and between 97.5 and 196.5 MHz of mid-band  
13 bandwidth (which includes up to 89 MHz in various locations in the EBS block), in California as  
14 summarized on Table 3 above. However, many of these licenses cover expansive geographic  
15 areas and none covered areas smaller than a county. Carriers are not required to, and do not,  
16 provide service on a wall-to-wall basis throughout their licensed areas. Instead, service tends to  
17 be provided in the more densely population portions of the licensed area, where cell sites, radios  
18 and antennas are able to serve relatively large numbers of customers. Service in rural areas is  
19 generally confined to population centers such as town centers and principal highways. Also,  
20 because demand (in terms of volume of traffic) in rural areas is relatively low, even where  
21 service is available only a small fraction of the licensed spectrum is actually placed into service.  
22 Figures 13 and 14 provide maps showing the amount of licensed bandwidth in each California  
23 county where, according to FCC data, T-Mobile and Sprint, respectively, holds low- and mid-

- 1 band spectrum. As these maps demonstrate, both carriers currently have ample licensed
- 2 spectrum throughout all of the state – urban and rural.



**Figure 13.** T-Mobile spectrum holdings in California. This map is based upon spectrum data provided by T-Mobile and Sprint as Appendix L-1 to Applications of T-Mobile US, Inc. and Sprint Corporation, FCC WT Docket No. 18-197, as revised on July 5, 2018. This data differs from the spectrum data provided in Table 3 that had been obtained from the FCC’s Universal Licensing System. As noted in Table 3, the ULS does not provide county identification for licenses in the EBS band. In order to provide comparable data for all NMOs, Table 3 did not include EBS bandwidth. However, for purposes of this figure, the bandwidth data that was provided specifically by T-Mobile was utilized.



**Figure 15.** Sprint spectrum holdings in California. This map is based upon spectrum data provided by T-Mobile and Sprint as Appendix L-1 to Applications of T-Mobile US, Inc. and Sprint Corporation, FCC WT Docket No. 18-197, as revised on July 5, 2018. This data differs from the spectrum data provided in Table 3 that had been obtained from the FCC's Universal Licensing System. As noted in Table 3, the ULS does not provide county identification for licenses in the EBS band. In order to provide comparable data for all NMOs, Table 3 did not include EBS bandwidth. However, for purposes of this figure, the bandwidth data that was provided specifically by Sprint was utilized.

- 1 139. 5G utilizes spectrum far more efficiently than any of the current transmission protocols.
- 2 Both Sprint and T-Mobile have more than sufficient bandwidth capacity to serve rural areas
- 3 even using existing 4G LTE technology, so 5G will simply create even more excess capacity at
- 4 prevailing traffic volumes. Of course, it is expected that traffic volumes will grow over time,
- 5 although there is some debate as to precisely how soon and by how much. 5G may well be

1 beneficial to rural areas in certain circumstances, but the practical effect of integrating the two  
 2 Joint Applicants' licensed spectrum in areas that already have substantial unused licensed  
 3 spectrum will be minimal. For example, Table 16 below provides the total low-band and mid-  
 4 band spectrum holdings for each of the four large carriers in Los Angeles County – the state's  
 5 most populous – and in four rural counties each of which has a population that is less than 1% of  
 6 that of Los Angeles: Also included in this tabulation are Riverside and San Bernardino Counties,  
 7 both of which include suburban Los Angeles communities as well as vast stretches of very  
 8 sparsely population areas.

9  
10  
11  
12

<b>Table 16</b>							
<b>CARRIER SPECTRUM HOLDINGS IN SELECTED CALIFORNIA COUNTIES</b>							
<b>County</b>	<b>Los Angeles</b>	<b>Riverside</b>	<b>San Bernardino</b>	<b>Lake</b>	<b>Mono</b>	<b>Sutter</b>	<b>Sierra</b>
Population	10,163,507	2,423,266	2,157,404	64,246	14,168	96,648	2,999
<b>LOW-BAND HOLDINGS (MHZ)</b>							
Verizon	82	82	82	82	82	82	82
AT&T	80	80	80	18	74	74	74
T-Mobile	38	38	38	48	48	48	48
Sprint	10	10	10	10	10	0	10
<b>MID-BAND HOLDINGS (MHZ)</b>							
Verizon	180	180	180	200	150	180	180
AT&T	180	180	180	150	160	150	160
T-Mobile	110	110	110	150	120	110	120
Sprint	121.5	121.5	121.5	127	121.5	82	82
Source: FCC Universal Licensing System (ULS); Joint Applicants' Appendix L-1 rev. 7/5/18							

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27 What is evident from this tabulation is that each carrier's spectrum portfolio varies very little as  
 28 among these areas with vastly different populations. T-Mobile's and Sprint's total holdings in



1 Mono County, for example, are 138 and 131.5 MHz, respectively, whereas the companies' total  
2 holdings in Los Angeles County are 128 and 131.5 MHz. Yet the population of Mono County is  
3 roughly 14 one-hundredths of 1% of that for Los Angeles. The idea that Sprint and T-Mobile  
4 need to merge in order to have the capacity needed to serve rural areas – when each of them has  
5 more than ample spectrum to serve rural areas – cannot withstand scrutiny.

6

7 140. T-Mobile and AT&T advanced substantially identical claims regarding the specific  
8 benefits to rural areas that would result from their then-proposed 2011 merger: “The  
9 Transaction Also Increases the Longer-Term Incentives and Ability of AT&T and Others to  
10 Develop and Deliver Innovative Broadband Mobile Products and Services, Especially in Rural  
11 Areas” and “... the expanded scope of AT&T’s LTE network resulting from the transaction will  
12 especially promote innovations aimed at rural Americans.” But in its examination of this  
13 contention, the FCC Staff reached exactly the same conclusion as I have done here – that each of  
14 the two companies already has plenty of *unused* spectrum capacity in rural areas, and that  
15 combining or “pooling” their spectrum holdings in these low-density communities will do  
16 nothing to enhanced the availability of service in rural areas:

17

18 ... the markets with the largest potential gains in capacity tend to be the most rural  
19 and least spectrum constrained. Since capacity relief is generally needed in larger  
20 urban areas, *the cognizable benefits that may result from pooling gains in these*  
21 *rural markets are questionable.* This also sheds doubt on whether, as the  
22 Applicants claim, the pooling efficiencies would result in cognizable consumer  
23 benefits in the form of increased capacity through deployment of an additional  
24 UMTS carrier in congested markets or more rapid deployment of LTE services.<sup>158</sup>

25

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158. *WT Docket No. 11-65, FCC Staff Report*, at para. 198, emphasis supplied.

1 Providing service to rural areas requires capital investment, not spectrum. Capital investment  
2 responds to profit opportunities, which have tended to be low in rural areas due to the high costs  
3 and relatively low potential revenues that the small populations are capable of generating. The  
4 Joint Applicants have offered no evidence that their merger would materially improve profit  
5 opportunities in rural areas to the point where additional capital would flow to these  
6 communities. As such, there is simply no basis to assume that the merger will do anything to  
7 improve wireless services in currently unserved and underserved areas.

8

9 **Even if integrating the two companies' networks would facilitate the transition to 5G,**  
10 **the incremental benefits of such integration are not sufficient to overcome the potential**  
11 **competitive harms that would result from the elimination of a competitor in this**  
12 **market.**  
13

14 141. Suppose that, for purposes of discussion, we were to accept the contention that the  
15 integration of the two carriers' networks does offer some marginal benefit as to the Joint  
16 Applicants' combined *transition* to 5G. If the merger is allowed, the Joint Applicants plan to  
17 migrate existing Sprint customers off the Sprint network and onto T-Mobile's, thus freeing up  
18 Sprint's licensed spectrum for the 5G transition.<sup>159</sup> This approach will create a "clean" block of  
19 mid-band spectrum that can then be populated with 5G radios and antennas, avoiding the need  
20 for "refarming" of spectrum as customers are migrated to 5G. While spectrum integration of this  
21 type may facilitate the *transition* to 5G, it is of far less importance once a steady-state 5G  
22 deployment has been completed. Most importantly, whatever the transition-related benefits may  
23 be, these entirely transitory gains can hardly justify the *permanent* elimination of a competitor in

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159. Ray decl., at para. 4.

1 this market.

2

3 142. T-Mobile has sought to portray a transition-via-refarming as similar to rebuilding a  
4 bridge while traffic is still flowing across it. The imagery that this analogy evokes is both unfair  
5 and irrelevant to a transition to 5G. Better and more relevant analogies can be drawn from other  
6 major technology transition efforts that have taken place in recent years. In fact, there have been  
7 many very successful technology transitions that were accomplished via a phased-in process  
8 rather than through a “flash cut,” phase-ins that allowed both the old and the new technology to  
9 operate in parallel while the transition was taking place. Some of these have occurred in the  
10 mobile wireless industry; others have occurred in other telecommunications segments. One  
11 recent example of the latter took place mostly over a four-year period from 2005 through 2009  
12 and involved the transition from analog NTSC television to digital.<sup>160</sup> At the start of this  
13 transition, digital TV sets cost upwards of \$1,000, and practically nobody owned one. Broadcast  
14 TV stations were given temporary licenses to operate digital channels in parallel with their  
15 preexisting analog channels. Congress created a program to subsidize the purchase of a set-top  
16 converter for \$40 that would permit the reception of digital TV signals on an analog TV receiver.  
17 The subsidy was funded by revenues that were anticipated to come from the sale of the 700 MHz  
18 spectrum that had previously been allocated to the higher analog television channels and that  
19 would, after the transition, be reallocated to mobile wireless and sold to carriers at auction. By  
20 the time that the analog broadcast stations went dark in 2009, virtually everyone had either

---

160. The FCC began issuing parallel digital TV channel licenses to broadcast TV stations around 1998, but the transition began in earnest in 2005, when Congress passed the *Digital Television Transition and Public Safety Act of 2005*. Among other things, the *Act* established a federally-funded program that provided \$40 discount coupons to be used toward the purchase of an analog-to-digital converter box. The conversion was completed by the end of 2009, when analog TV stations went dark.

1 purchased a digital TV set or a converter box.

2

3 143. In a transition that is even more directly relevant to the current 5G discussion, when  
4 cellular services were initiated in the mid-1980s, the original 800 MHz CMRS carriers were  
5 required to utilize an analog protocol that had been developed by AT&T known as Advanced  
6 Mobile Phone Service (“AMPS”). In its *PCS Order* in 1993, the FCC backed off of its prior  
7 requirement that all carriers utilize the same compatible transmission protocol, and instead  
8 allowed carriers to adopt digital protocols of their choosing.<sup>161</sup> By the early 1990s, the 800 MHz  
9 carriers were transitioning from AMPS to one of several digital protocols – CDMA, TDMA and  
10 GSM. The new PCS licensees were also adopting one of these digital protocols. The transition  
11 from analog to digital required that customers obtain new handsets, which occurred over a  
12 several year period as normal handset upgrades and replacements took place. As the number of  
13 digital handsets grew while the remaining number of analog handsets dwindled, carriers shifted  
14 their spectrum away from analog and over to the digital protocol on a schedule that was  
15 commensurate with the handset migration. In the early 2000s, AT&T began to phase-out TDMA  
16 in favor of GSM, and followed a similar transition arrangement. T-Mobile’s acquisition of  
17 MetroPCS involved a transition of former MetroPCS users from CDMA to HSPA+ or LTE and,  
18 according to T-Mobile’s testimony in this case, was accomplished smoothly and successfully.<sup>162</sup>

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20

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161. *I/M/O Amendment of the Commission's Rules to Establish New Personal Communications Services*, FCC GEN Docket No. 90-314; RM-7140, RM-7175, RM-7618, FCC 93-451, *Second Report and Order*, 8 FCC Red 7700; 1993 FCC LEXIS 6517; 73 Rad. Reg. 2d (P & F) 1477, rel. October 22, 1993.

162. Ray decl., at para. 71.

1        144. There is no fundamental reason why the transition from 4G LTE to 5G cannot be  
2 accomplished in a similar phased-in manner. In fact, since the 5G radios being installed in cell  
3 tower sites can also support the large embedded base of existing technology handsets – which  
4 was not the case with either the analog-to-digital transition or the MetroPCS to T-Mobile  
5 transition – the 5G phase-in should be even more straightforward. The Joint Applicants are  
6 probably correct that by avoiding the need to “refarm” spectrum that is currently being used for  
7 4G or earlier protocols while that spectrum is still being used for 4G and LTE, the deployment of  
8 5G can occur more rapidly. However, they have failed to demonstrate that a more rapid  
9 deployment of 5G at the *network* level will make any real difference, since the introduction of  
10 and transition to 5G handsets and other 5G devices – including IoT devices – is not expected to  
11 begin in earnest until 2022 or later.

12  
13        145. Projections of the growth in data traffic and video streaming that have been offered by  
14 the Joint Applicants as support for the rapid deployment of 5G may also be somewhat exagger-  
15 ated. The Joint Applicants’ growth projections were based upon an extrapolation from the  
16 demand growth that has taken place in recent years, and assumes that it will continue at the same  
17 pace. It has also been based upon the traffic growth that has been experienced in *wireline*  
18 broadband, which may not translate directly into wireless. Video streaming has really come into  
19 its own just over the past three to five years. The number of US Netflix subscribers increased  
20 from about 27-million in 2012 to more than 58-million as of the 3rd quarter of 2018.<sup>163</sup> Amazon  
21 began offering pay-per-view type streaming in the mid-2000s, and in 2011 it added “Prime

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163. Netflix, Inc., 10-K Annual Report filed with the US Securities and Exchange Commission, February 1, 2013; Netflix, Inc. 10-Q Quarterly Report filed with the US Securities and Exchange Commission, October 18, 2018.

1 Video” providing a variety of movies and other programs as an included feature of its highly  
2 popular *Amazon Prime* service. *Amazon Prime* currently boasts nearly 100-million Prime  
3 members.<sup>164</sup> As noted earlier, average wireline broadband bandwidth usage has grown to 190-  
4 GB per household per month, and it is estimated that the average US household spends 15 hours  
5 per week streaming video content. But there are only so many households in the US and only so  
6 many hours in a week. At some point, the demand growth will necessarily taper off as market  
7 saturation sets in. Growth in market penetration of 4K TVs will increase bandwidth demand, but  
8 increases in resolution beyond 4K will produce visual improvements that are so small that it is  
9 difficult to imagine a “next generation” TV sets beyond 4K. The biggest source of growth is  
10 expected to occur in IoT (Internet of Things) devices, but individually such devices consume  
11 very little bandwidth by comparison with, for example, a 4K 2-hour movie. I am in no sense  
12 attempting it minimize the long-term benefits of 5G, but the urgency of 5G deployment that the  
13 Joint Applicants claim as requiring that they merge has simply not be demonstrated.

14

15 146. The Joint Applicants also claim that 5G will result in expanded service availability in  
16 rural areas,<sup>165</sup> but have not offered any valid economic basis for this conclusion. Rural areas are  
17 currently underserved because of the high cost of building out facilities and recovering those  
18 costs over relatively small populations. Simply put, costs are lower and potential profits are  
19 higher in more densely populated urban and suburban areas than in sparsely populated rural  
20 communities. As Figures 13 and 14 above amply demonstrate, each of the “big four” wireless

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164. Amazon.com, Inc. Form 8-K Press Release (and attached Letter to Shareholders) filed with the US Securities and Exchange Commission, April 18, 2018.

165. *Public Interest Statement*, at 64.

1 carriers holds substantial geographic swaths of spectrum where no facilities capable of providing  
2 wireless services have been deployed. This fundamental economic fact of life is just as valid for  
3 5G deployment as it is for existing wireless technologies.

4

5 147. For example, while millimeter band spectrum may be ideal for 5G deployment in  
6 urbanized areas where the relatively limited distances over which the signals can propagate will  
7 facilitate reuse of frequencies and thereby increased effective traffic capacity over the entire  
8 area, the extremely short distances that high-band signals can be carried serves only to increase  
9 the cost of using this spectrum in sparsely populated areas. Rural 5G can best be supported by  
10 low- and mid-band spectrum, and whatever economic barriers prevail for rural deployment for  
11 conventional wireless technologies will be no different for 5G. In short, 5G is not a magic bullet  
12 that can bring wireless service – and particularly wireless broadband – to areas that cannot be  
13 economically served today.

14

15 148. Finally, the Joint Applicants have gone so far as to suggest that their 5G roll-out will be  
16 superior to those already underway at AT&T and Verizon. Joint Applicant witnesses Drs. Salop  
17 and Sarafidis assert that “we understand that Newco expects that its 5G network will be superior,  
18 not only relative to the standalone firms, but also relative to AT&T and Verizon, based on these  
19 two carriers’ own public statements.”<sup>166</sup> But when asked to “provide all specific facts upon  
20 which Drs. Salop and Sarafidis rely to support their opinion that New T-Mobile’s “5G network  
21 will be superior ... to AT&T’s and Verizon’s,” their response was to refer to Joint Applicants’

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166. Salop-Sarafidis decl., at para. 42,

1 witnesses Ewens and Sievert, the same sources that were cited in their declaration – i.e., Drs.  
2 Salop and Sarafidis were not able to provide any *independent* facts to support their assertion.

3

4 **ISSUE 13. Would the merger preserve the jurisdiction of the Commission to**  
5 **effectively regulate those utilities and their operations in California?**

6

7 **As a technical matter, the merger does not directly affect the jurisdiction that the Commis-**  
8 **sion presently retains, but the increased concentration and diminution of competition that**  
9 **would result may warrant renewed examination of the Commission’s regulatory role with**  
10 **respect to certain wireless carrier terms and conditions.**

11 149. As I have discussed at some length above, a central theme of the Joint Applicants’  
12 support for the merger is the efficiency gain that will result from the increased scale of New  
13 T-Mobile’s operations. The presence of extreme economies of scale in industries characterized  
14 by high fixed costs and large capital requirements was the foundation of US telecommunications  
15 policy for most of the 20<sup>th</sup> century. Under this “natural monopoly” theory, the presence of  
16 multiple competing providers resulted in a loss of static efficiency due to the need to construct  
17 and operate duplicate facilities each one of which would serve only a fraction of the total  
18 demand. Instead, it was held that by limiting the market to a single provider capable of serving  
19 the entire demand, the resulting economies of scale would produce efficiency gains that only the  
20 single provider would be capable of achieving. In exchange for protection from competitive  
21 encroachment, the single provider would enter into a “social contract” under which it would  
22 agree to limit its prices and earnings to those that would be expected to arise under competitive  
23 market conditions. Pervasive economic regulation would assure this outcome.

24



1       150. But toward the end of the 20<sup>th</sup> century, economists and policymakers had come to  
2 believe that the gains in *static* efficiency from a single regulated monopoly provider were  
3 smaller than the potential *dynamic* efficiencies and innovations that could be achieved under  
4 competitive market conditions. In 1971, in its landmark *Specialized Common Carrier* ruling, the  
5 FCC posited the possibility that the salutary effects of competition could outweigh the potential  
6 losses in scale of production:

7  
8       Data and other specialized users may require not only a different application of  
9 communications technology, but also have service requirements that are heterogeneous in  
10 character. ... [These include] service features designed to meet the special requirements  
11 of data transmission users, e.g., lower costs, end-to-end compatibility, rapid connection,  
12 high reliability, simultaneous two-way transmission, a wide selection of switched speed  
13 offering, a low incidence of network busy conditions, interconnection flexibility for user-  
14 provided facilities, asymmetry, etc. ... To the extent that customers may be attracted by  
15 any or all of these or other features ... it is a reasonable conclusion that the effect of new  
16 entry would be expansion of the total communications market. Moreover, competition  
17 within the market for specialized services should motivate innovations or modifications  
18 in the service offerings and/or facilities by all carriers serving that market and thus  
19 produce even greater growth rates in total specialized traffic than the growth rates  
20 projected in the context of the existing industry structure.<sup>167</sup>  
21

22 In *Specialized Common Carriers*, the FCC authorized limited “specialized” private line  
23 competition and directed the Bell System to interconnect these services with its local and long  
24 distance network. Following a series of regulatory, judicial and legislative actions beginning  
25 around 1970, the regulated monopoly model was ultimately replaced by today’s largely  
26 nonregulated competition.

27  
28       151. The arguments as to the gains from scale to be realized from the Sprint/T-Mobile

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167. *Specialized Common Carrier Services*, 29 FCC 2d 870, 907 (1971).

1 merger harken back to the “natural monopoly” era. A logical extension of the Joint Applicants’  
2 argument is that even greater scale and greater overall efficiencies could be achieved by  
3 combining all of the existing wireless carriers into a single, regulated “natural” monopoly.

4  
5 152. The US Congress restructured wireless service regulation in 1993, but did not  
6 deregulate it. It assigned jurisdiction over rate regulation to the FCC and retained regulation of  
7 terms and conditions at the state level. The FCC formally determined that it would forbear from  
8 regulating wireless rates, finding that competition had developed to the point where rate  
9 regulation was no longer necessary.<sup>168</sup>

10  
11 153. But the premise of regulatory forbearance is that competition obviates the need for  
12 active regulation. At the time that the FCC issued its forbearance order, it was in the process of  
13 licensing multiple new wireless carriers in addition to the preexisting two 800 MHz licensees.  
14 The view at the time was that with so many competitors offering service, marketplace forces  
15 would obviate the need for regulation. But if this merger is approved, the number of competitors  
16 will drop to only three. And three is simply not large enough to assure a competitive outcome.  
17 The CPUC has in the past exercised its regulatory authority with respect to wireless carrier terms  
18 and conditions in a 2002 matter involving early termination fees imposed by Cingular  
19 Wireless.<sup>169</sup> To the best of my knowledge, the Commission has never formally adopted a policy

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168. *FCC Regulatory Treatment of Mobile Services Order*, at paras. 194, 272.

169. *Investigation on the Commission's own motion into the operations, practices, and conduct of Pacific Bell Wireless LLC dba Cingular Wireless, U-3060, U-4135 and U-4314, and related entities (collectively "Cingular") to determine whether Cingular has violated the laws, rules and regulations of this State in its sale of cellular telephone equipment and service and its collection of an Early Termination Fee and other penalties from consumers,*

(continued...)

1 of regulatory forbearance, but its active involvement in this area has been limited. At the very  
2 least, if a three-firm market is the result, it is important that the Commission revisit the need for  
3 ongoing regulatory oversight of such terms and conditions, and consider adopting affirmative  
4 regulatory measures where anticompetitive practices are in evidence.

5

6 154. And in that regard, the Joint Applicants have attempted to assure the Commission that  
7 the business incentives confronting a New T-Mobile will compel it to keep its prices low, not to  
8 participate in any cartel-like pricing in coordination with AT&T and Verizon. But if the merger  
9 takes place, the overall scale of New T-Mobile's operations will be roughly the same as the  
10 *existing* scale of AT&T's and Verizon's operations. Yet the Joint Applicants and their experts  
11 ask the Commission to believe that AT&T and Verizon will sit on their hands and refrain from  
12 investing in 5G at the level that New T-Mobile plans to do. Dr. Evans states: "The Applicants  
13 have determined that the Transaction will result in a substantial decrease in both the fixed costs  
14 of deploying a strong national 5G cellular network as well as the marginal costs of  
15 improvements in the quality and capacity of that network. As a result of these efficiencies, New  
16 T-Mobile will experience a substantial decline in the cost of investing in 5G technologies and a  
17 substantial increase in the coverage and performance that it can achieve for a given capital  
18 expenditure. That in time would lead New T-Mobile to make the profit-maximizing decision to

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169. (...continued)

I.02-06-003, *Interim Opinion Granting Petition for Modification and Denying Motion to Dismiss but Modifying Oii for Greater Clarity*, D.02-10-061. Aff'd, *Pacific Bell Wireless, LLC v. Public Utilities Commission, Respondent, Utility Consumers' Action Network, Real Party in Interest*, G034991, Court of Appeal of California, Fourth Appellate District, Division Three, 140 Cal. App. 4th 718; 44 Cal. Rptr. 3d 733; 2006 Cal. App. LEXIS 905; 2006 Cal. Daily Op. Service 5399; 2006 Daily Journal DAR 7751.

1 deploy a stronger 5G network covering a significantly larger portion of the population materially  
2 sooner than the stand-alone companies would. ...”<sup>170</sup> But this would also hold for AT&T and  
3 Verizon *as both firms exist today*, yet the Joint Applicants argue that only they will make the  
4 investment and commitment to bring 5G to fruition, that AT&T and Verizon will bring only a  
5 scaled-down 5G to fruition absent the competitive pressure of post-merger New T-Mobile.

6  
7 155. To explore this point further, the Public Advocates Office asked the Joint Applicants  
8 “Does Dr. Evans consider this “tepid adoption” of 5G by all of the existing wireless carriers –  
9 and particularly by AT&T and Verizon – to constitute a “common (tacit) understanding”  
10 between AT&T and Verizon?”<sup>171</sup> The response to this question was that “Dr. Evans has not  
11 identified any “common (tacit) understanding” in the wireless sector about 5G technology or any  
12 other aspect of competition. To the contrary, Dr. Evans’s view is that in the wireless sector, it is  
13 often the case that one competitor is first to deploy a new technology, which in turn prompts  
14 competitive responses by other firms.”<sup>172</sup> Left entirely unexplained by the Joint Applicants is  
15 why, now that they have revealed their post-merger 5G plans to their two larger rivals, both of  
16 those firms will continue to offer only the same tepid 5G initiative.

17  
18 156. At para. 39 of their joint declaration, Drs. Salop and Sarafidis assert that “as a result of  
19 substantial merger-induced efficiencies, Newco will have increased capacity, improved network  
20 quality, and reduced network and non-network marginal costs (relative to the standalone firms).

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170. Evans decl., at para. 184,

171. Public Advocates Data Request 5-6(a).

172. Joint Applicants’ Response to Public Advocates Data Request 5-6(a).

1 These efficiencies will provide an increased incentive to the merged firm to grow its market  
2 share, rather than to settle into coordinated interaction with AT&T and Verizon.”<sup>173</sup> Again, and  
3 left unexplained, is why AT&T and Verizon will not themselves confront precisely the same  
4 incentives. the Public Advocates Office asked the Joint Applicants:

- 5  
6 c. How, in the opinion of Drs. Salop and Sarafidis, will the post-merger level of  
7 “efficiencies” that would then exist for New T-Mobile compare with the level of  
8 “efficiencies” currently being realized by Verizon and AT&T in their respective  
9 operations?  
10  
11 d. If Drs. Salop and Sarafidis believe that post-merger New T-Mobile will be more efficient  
12 than Verizon and/or AT&T, please provide all facts upon which that opinion is based.  
13  
14 e. If Drs. Salop and Sarafidis believe that post-merger New T-Mobile will still be less  
15 efficient than Verizon and/or AT&T, please provide all facts upon which that opinion is  
16 based.<sup>174</sup>  
17

18 The Joint Applicants’ response was that “in the Salop-Sarafidis declaration, the term  
19 ‘efficiencies’ has the meaning of New T-Mobile having increased capacity, improved network  
20 quality, and reduced marginal cost relative to Sprint and T-Mobile as standalone firms. Drs.  
21 Salop and Sarafidis have not offered any opinions on how the capacity, quality, and marginal  
22 cost of New T-Mobile might compare to those of AT&T and Verizon.”<sup>175</sup>  
23

24 157. As I noted above, Mr. Ray has characterized AT&T and Verizon as “the duopoly.”  
25 This view is consistent with Drs. Evans’, Salop’s and Sarafidis’ view that, to paraphrase,

---

173. Salop-Sarafidis decl., at para. 39.

174. Public Advocates Data Request 5-8.

175. Joint Applicants’ Response to Public Advocates Data Request 5-8.

1 T-Mobile will build out a better 5G network, T-Mobile will have incentives to charge lower  
2 prices, and the “duopoly’s” responses will be tepid. As I have also shown, AT&T and Verizon  
3 have persisted in maintaining their prices well in excess of those offered by Sprint and T-Mobile,  
4 and through that policy have been able to maintain earnings levels in excess of those of their  
5 smaller rivals. This expectation of “duopoly” conduct serves only to underscore both the  
6 presence of coordinated and parallel conduct on the part of the two “duopoly” incumbents, and  
7 fails to provide any assurance that, once a New T-Mobile is formed and is able to operate at a  
8 size and scale roughly comparable to that of AT&T and Verizon, there is a strong likelihood that  
9 New T-Mobile will come to the conclusion that it would rather join the cartel than fight it, that  
10 joining will permit it to scale back on its investment plans, increase its prices and, most  
11 importantly, by so doing produce and sustain higher profits overall. If this *de facto* market  
12 allocation materializes, as is likely the case, reinstatement of a more active regulatory response  
13 may be required.

14

15 **ISSUE 14. Would the benefits of the merger likely exceed any detrimental**  
16 **effects?**

16

17 **The potential impact of the merger on New T-Mobile’s ability to deploy massive 5G**  
18 **capacity relative to what the two companies could achieve on a stand-alone basis is**  
19 **overblown.**

20

21 158. The Joint Applicants claim that when combined, their networks can support a far  
22 greater geographic scope and bandwidth of 5G capacity than the sum of the two firms’  
23 individual spectrum holdings if forced to continue to operate on a standalone basis. However,

1 we've heard this song before: T-Mobile had advanced similar "scale" and "efficiency"  
2 arguments when it sought in 2011 to defend its then-proposed merger with AT&T:

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6

**3. Absent This Transaction, T-Mobile USA Would Confront Capacity Constraints and Lack a Clear Path to LTE.**

7           Meanwhile, T-Mobile USA faces spectrum constraints of its own, despite its  
8 substantial investments in spectrum and network facilities. Like AT&T, T-Mobile  
9 USA confronts rising demand for data services. As of the end of 2010, 3G/4G  
10 smartphone customers accounted for 24 percent of T-Mobile USA's total customers,  
11 about double the 12 percent figure it had achieved by the fourth quarter of 2009.  
12 Because of this "explosive growth in demand," T-Mobile USA "faces spectrum  
13 exhaust in a number of markets." Larsen Decl. ¶ 12. ...

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Just as significantly, T-Mobile USA has "no clear path" to LTE. Larsen Decl. ¶¶ 23-  
26; Langheim Decl. ¶ 11. T-Mobile USA has already dedicated its current spectrum  
to UMTS/HSPA+ and GSM technologies. Larsen Decl. ¶ 11; Langheim Decl. ¶ 12.  
As a result, T-Mobile USA "does not have access to the spectrum needed to deploy  
LTE in an economically and technically sustainable fashion." Langheim Decl. ¶ 12.  
Even in areas where T-Mobile USA could try to "refarm" its existing spectrum to  
make room for LTE, it would face serious competitive disadvantages. ...

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T-Mobile USA could try to alleviate these problems by purchasing more  
spectrum and investing in the necessary network infrastructure—at an estimated cost  
of **[Begin Confidential Information] \*\*\* [End Confidential Information]**.  
Langheim Decl. ¶ 14. But T-Mobile USA has concluded that its options for acquiring  
sufficient additional spectrum **[Begin Confidential Information] \*\*\* [End  
Confidential Information]**. Larsen Decl. ¶ 9. Further, T-Mobile USA could not  
acquire new spectrum unless it obtains the necessary billions of dollars in investment  
capital, and it can no longer look to its corporate parent for that purpose. As DT  
Senior Vice President Langheim explains, "[t]he required substantial investments in  
LTE in the United States would significantly stretch Deutsche Telekom's financial  
capability or, alternatively, force Deutsche Telekom to reallocate investments from  
our core Europe operations into T-Mobile USA, which has been shrinking for the last  
two years and which is lacking a clear path towards LTE to stay competitive."  
Langheim Decl. ¶ 14. Because Deutsche Telekom has determined that it cannot  
divert capital from its core business, it has directed T-Mobile USA to "fund its future  
itself."<sup>40</sup> As Langheim concludes, "[t]his means that T-Mobile USA would need to

1 fund spectrum acquisitions and other necessary capital investments through its own  
 2 operations rather than by drawing on the resources of its corporate parent.”  
 3 Langheim Decl. ¶ 14. That DT decision has made it significantly more difficult for  
 4 T-Mobile USA to obtain the capital it needs to upgrade its network.<sup>176</sup>  
 5

6 But T-Mobile’s spectacular growth in the immediate aftermath of the merger’s demise puts a lie  
 7 to these claims and to the sworn testimony upon which they were based.

8  
 9 159. Despite T-Mobile’s claims about its lack of spectrum capacity back in 2011, after the  
 10 AT&T/T-Mobile merger collapsed, T-Mobile, operating on a standalone basis, somehow  
 11 managed to nearly double its total wireless connections by the end of 2016, going from 40.10-  
 12 million in 2011 to 71.46-million by the end of 2016 (see Table 17 below):

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<b>Table 17</b>							
<b>ESTIMATED TOTAL CONNECTIONS 2010-2016</b>							
<b>(000)</b>							
<b>Carrier</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>Pct Increase 2011-2016</b>
Verizon	108,667	116,570	125,535	134,612	140,924	145,859	34.2%
AT&T	103,247	106,965	110,276	120,620	128,679	134,875	30.6%
Sprint	55,021	55,626	54,622	55,929	58,578	59,515	8.2%
T-Mobile	40,103	39,186	46,684	55,018	63,282	71,455	78.2%

18  
 19  
 20  
 21  
 22  
 23 Source: Seventeenth CMRS Report, at p. 11, Table II.B.1, Twentieth CMRS Report, at p. 15, Table II.B.1.  
 24 T-Mobile connections for 2011 and 2012 include Metro PCS connections for those years. Metro PCS became part  
 25 of T-Mobile in 2013.

26  
 27 Under the terms of the AT&T/T-Mobile merger agreement, AT&T was required to pay a “break-  
 28 up fee” to T-Mobile amounting to some \$3-billion in cash, approximately \$2-billion worth of

176. AT&T/T-Mobile April 21, 2011 FCC Public Interest Statement,” WT Docket No. 11-65, at p. 30:



1 spectrum, and a roaming agreement with an estimated value of \$1-billion.<sup>177</sup> T-Mobile acquired  
2 Metro PCS in 2013, which including some additional spectrum in the regions where Metro PCS  
3 had been providing facilities-based service. To be sure, T-Mobile was able to obtain a modest  
4 gain in overall spectrum capacity as a result of the estimated 10 MHz of bandwidth that was  
5 transferred by AT&T together with whatever it had obtained in the Metro PCS acquisition.  
6 However, that small increase in spectrum would not account for T-Mobile’s ability to increase  
7 its total connections by 78% in just five years.

8

9 160. As I have discussed at length above, the primary 5G-related “benefits” that the Joint  
10 Applicants have identified relate to their *transition* to 5G, not to the permanent state of their 5G  
11 deployment. Their claims that combining their spectrum holdings will be particularly beneficial  
12 in rural areas is utterly devoid of merit since, as I have shown, neither carrier is currently  
13 utilizing anything close to the spectrum bandwidth they each already control in rural counties.  
14 Serving rural areas requires *capital*, not spectrum, and the economics of directing capital to rural  
15 communities – which are costly to serve and, due to their low populations, difficult to justify as  
16 an economically sound investment – are not in any way improved by the proposed merger.

17

18 161. The diminution of competition that will result from the marked increase in concen-  
19 tration – well in excess of the 200-point threshold established by the *Horizontal Merger*  
20 *Guidelines* in all but the most rural California counties – cannot offset the speculative and, in any  
21 event, entirely transitory “benefits” that are being advanced by the Joint Applicants in support of

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177. “AT&T, T-Mobile USA break-up is \$6 billion: sources,” Reuters, May 12, 2011,  
<https://www.reuters.com/article/us-mobileusa-att-breakupfee-idUSTRE74B5H220110512> (accessed 12/21/18)

1 their proposed merger.

2

3 **The potential anticompetitive impacts of the proposed merger of Sprint and T-Mobile far**  
4 **exceed any benefits than can realistically be expected to arise, and for that reason the**  
5 **merger should not be allowed to go forward.**

6

7 162. In sum, the Joint Applicants have failed to establish that their merger would produce  
8 anything beyond transitory benefits that may facilitate their deployment of 5G, but they have not  
9 even shown that a more rapid deployment of 5G will itself be all that beneficial, inasmuch as  
10 large-scale roll-outs of 5G handsets and other devices is not expected to occur until the mid-  
11 2020s. Claims that the merger will result in lower marginal costs, even if true, would produce  
12 benefits only to the extent that such cost reductions are ratably flowed through to consumers.  
13 However, the likelihood of such flow-throughs is seriously diminished by the elimination of one  
14 of only four competitors, coupled with the increased likelihood that a post-merger New  
15 T-Mobile, then being roughly equal in size to AT&T and Verizon, would not itself acquired the  
16 same incentives as the “big two” currently have to engage in *de facto* coordinated conduct and in  
17 so doing capture the benefits of any cost reductions for their shareholders rather than for their  
18 customers. Virtually every one of the Joint Applicants’ “benefits” claims parallel those put  
19 forward by T-Mobile in 2011 when it sought to merger with AT&T. All of those contentions  
20 were soundly rejected by the FCC staff. And underscoring the fundamental soundness of the  
21 FCC staff’s analysis, AT&T concluded that the likelihood of succeeding was so low that it  
22 conceded defeat and paid T-Mobile the \$6-billion in break-up fees and assets. *The Joint*  
23 *Applicants have been unable to demonstrate that the same fundamental shortcomings of these*  
24 *2011 benefits arguments do not also apply here.* But these “benefits arguments” are as vacant

1 today as they were back in 2011. For all of these reasons, the Commission should find that the  
2 proposed merger of T-Mobile and Sprint is not in the public interest, and should deny the  
3 Application.

4

5 **ISSUE 15. Should the Commission impose conditions or mitigation measures  
to prevent significant adverse consequences and, if so, what  
should those conditions or measures be?**

6

7 For the reasons discussed throughout this testimony, the potential anticompetitive impact of  
8 reducing the number of wireless providers with nationwide and California statewide footprints  
9 from four to three far exceeds whatever nominal – and largely transitory – economic benefits  
10 that might result from the transaction *and* that would be flowed through to consumers. For all of  
11 these reasons, the Commission should determine that the proposed merger of Sprint and  
12 T-Mobile is decidedly *not* in the public interest and should therefore withhold its approval of the  
13 transaction. However, in the event that the Commission determines otherwise and approves the  
14 merger, there are certain conditions and mitigation measures that might reduce, but in no sense  
15 eliminate, the anticompetitive consequences of losing a competitor in this market. Several  
16 Public Advocates Office witnesses have proposed such conditions,<sup>178</sup> and I will not repeat those  
17 here. I am, however, addressing one particularly important measure that would operate to  
18 significantly limit the ability of the merged New T-Mobile to wield its formidable economic  
19 power in the handling of disputes with individual consumers. As the number of potential service  
20 providers dwindles to three, consumers are less able to “vote with their feet” and take their  
21 business elsewhere in the event they become dissatisfied with any aspect of the service they are

178. Eileen Odell at 7, Adam Clark at 6, Kristina Donnelly at 4-5.

1 receiving. If the merger is approved and the Joint Applicants' combined market power is  
2 allowed to escalate, it is critical that consumers be afforded a legitimate opportunity to settle  
3 disputes with the service provider in a fair and even-handed manner.

4

5 **Any approval of the proposed merger should be expressly conditioned upon the Joint**  
6 **Applicants' agreement to eliminate all mandatory arbitration and class action waiver**  
7 **provisions in their adhesion contracts with residential and small business customers.**

8

9 163. In my discussion of parallel conduct on the part of the "big four" and particularly the  
10 "big two" CMRS carriers, I had highlighted in particular the fact that all four national CMRS  
11 carriers maintain virtually identical "terms and conditions" in their adhesion contract Customer  
12 Service Agreements ("CSAs"), including in particular a provision requiring mandatory  
13 arbitration and class action waiver. In DR 1-90, T-Mobile was asked: "Is it Your current  
14 practice to include a mandatory arbitration/class action waiver provision in Your CSAs?" to  
15 which it responded:

16

17 Subject to and without waiving its objections, T-Mobile responds the current terms and  
18 conditions for the T-Mobile branded consumer and small business CSAs do not include a  
19 mandatory arbitration or class action waiver. T-Mobile further responds that its  
20 agreements with large enterprise, wholesale, and government customers are individually  
21 negotiated. T-Mobile further responds that the current terms and conditions for  
22 consumer services offered by T-Mobile and MetroPCS do not include a mandatory  
23 arbitration or class action waiver. ...<sup>179</sup>

24

25 This response falls somewhere between (most charitably) disingenuous and an outright false  
26 statement. T-Mobile consumer/small business CSAs are adhesion contracts that certainly do

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179. T-Mobile response to Public Advocates DR 1-90.

1 contain mandatory arbitration/class action waiver provisions. However, these are subject to a  
2 limited “opt-out” provision that must be exercised by the customer within the first 30 days  
3 following service activation. For example:

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**Dispute Resolution and Arbitration.**

If you are a Covered Buyer, the following provisions relating to arbitration do not apply to this EIP. This section describes how any disputes between you and T-Mobile will be resolved. WE AND YOU EACH AGREE THAT, EXCEPT AS PROVIDED BELOW, ANY AND ALL CLAIMS OR DISPUTES IN ANY WAY RELATED TO OR CONCERNING THIS AGREEMENT, OUR PRIVACY POLICY, OUR SERVICES, EQUIPMENT, DEVICES OR PRODUCTS, INCLUDING ANY BILLING DISPUTES, WILL BE RESOLVED BY BINDING ARBITRATION OR IN SMALL CLAIMS COURT. This includes any claims against others relating to services or equipment provided or billed to you (such as our suppliers, dealers or vendors) when you also assert claims against us in the same proceeding. This agreement affects interstate commerce so that the Federal Arbitration Act and federal arbitration law apply (despite the choice of law provision below). THERE IS NO JUDGE OR JURY IN ARBITRATION, AND COURT REVIEW OF AN ARBITRATION AWARD IS LIMITED. THE ARBITRATOR MAY AWARD ON AN INDIVIDUAL BASIS THE SAME DAMAGES AND RELIEF AS A COURT (INCLUDING ATTORNEYS' FEES). Notwithstanding the above, YOU MAY CHOOSE TO PURSUE YOUR CLAIM IN COURT INSTEAD OF ARBITRATION IF YOU OPT OUT OF THESE ARBITRATION PROCEDURES.

To opt out, call 1-866-323-4405 or complete the opt-out form located at [www.T-Mobiledisputeresolution.com](http://www.T-Mobiledisputeresolution.com). TO BE EFFECTIVE, YOU MUST OPT OUT BY THE OPT OUT DEADLINE FOR EACH LINE OF SERVICE. THE OPT OUT DEADLINE IS 30 DAYS FROM THE EARLIER OF THE DATE OF YOUR SIGNATURE TO THIS AGREEMENT, THE DATE YOU PURCHASED EQUIPMENT FROM US OR THE DATE YOU ACTIVATED A NEW LINE EXCEPT THAT FOR A LINE OF SERVICE ACTIVATED PRIOR TO JUNE 28, 2008, THE OPT OUT DEADLINE IS 30 DAYS FROM THE FIRST TIME AFTER DECEMBER 30, 2011 WHEN YOU AGREED TO EXTEND OR RENEW YOUR TERM OF SERVICE FOR THAT LINE.

\* \* \*

**CLASS ACTION WAIVER.** WE AND YOU EACH AGREE THAT ANY PROCEEDINGS, WHETHER IN ARBITRATION OR COURT, WILL BE CONDUCTED ONLY ON AN INDIVIDUAL BASIS AND NOT IN A CLASS OR REPRESENTATIVE ACTION. If a court or arbitrator determines in an action between you and us that this Class Action Waiver is unenforceable, the arbitration agreement will be void as to you. If you choose to pursue your claim in court by opting out of the arbitration provision as specified above, this Class Action Waiver provision will not apply to you. Neither you, nor any other customer, can be a class representative, class member, or otherwise participate in a class, consolidated, or representative proceeding without having complied with the opt out requirements above.

**JURY TRIAL WAIVER.** If a claim proceeds in court rather than through arbitration, unless otherwise prohibited by law WE AND YOU EACH WAIVE ANY RIGHT TO A JURY TRIAL.

Source: TMUS-CPUC-PA-00003983

1 The nominal inclusion of a 30-day opt-out provision does not alter the fact that, once the opt-out  
2 period has ended, T-Mobile customers *are* subject to a mandatory arbitration/class action waiver  
3 provision. T-Mobile provided further clarification as to this “opt-out” provision in its response  
4 to Public Advocates DR 5-1(a):

5 If a customer chooses not to opt out of the provision/waiver within 30 days from  
6 the earlier of the date a device was purchased from T-Mobile or from the date a  
7 new line of service was activated, the arbitration provision and class action  
8 waiver are effective. T-Mobile further notes that since at least December 4, 2004,  
9 T-Mobile has provided its customers options for pursuing disputes other than  
10 arbitration even if the customer has not formally opted out. Specifically, as  
11 explicitly provided on the T-Mobile website and in the Terms and Conditions,  
12 T-Mobile customers may also choose to pursue their disputes in small claims  
13 court. In addition, as noted on their monthly invoices, customers also have the  
14 option to raise billing disputes with the California Public Utilities Commission’s  
15 Consumer Affairs Branch (“CAB”). Moreover, T-Mobile’s arbitration provision  
16 and class action waiver do not prohibit customers from notifying federal, state, or  
17 local agencies of their complaints including the Federal Communications  
18 Commission and CAB regardless of whether they have opted out of the  
19 arbitration provision. Finally, even where an arbitration demand is filed,  
20 T-Mobile’s Terms and Conditions provide that it will pay for all filing,  
21 administration and arbitrator fees.  
22

23 The problem, of course, is that most customers do not read the fine print lengthy adhesion  
24 contracts that are presented to them at the point of sale. For example, the CSA provided by  
25 T-Mobile at Bates no. TMUS-CPUC-PA-00003982, if presented in standard 12-point double-  
26 space typewriter format, would fill roughly 11 standard 8-1/2 by 11 inch sheets of paper.  
27 Customers are generally not aware of the mandatory arbitration / class action waiver provisions  
28 or their implications, nor are they aware of the limited “opt-out” opportunity or why they should  
29 or should not exercise it. Customers are not aware of these provisions because they are  
30 contained in the “fine print” of adhesion contracts that are rarely if ever read by the consumer.

1 Consumers are similarly not aware of their right to opt out of these provisions – or even what  
2 such an opt-out might entail. The inclusion of such clauses is at odds with T-Mobile’s  
3 purportedly consumer-friendly “Un-carrier” culture. T-Mobile has advised that “[f]rom June  
4 2008 through November 31, 2018, T-Mobile has received [BEGIN T-MOBILE HIGHLY  
5 CONFIDENTIAL] [REDACTED] [END T-MOBILE HIGHLY CONFIDENTIAL] opt out  
6 notifications from T-Mobile customers who provided a California address”<sup>180</sup> – i.e., about  
7 [BEGIN T-MOBILE HIGHLY CONFIDENTIAL] [REDACTED] [END T-MOBILE HIGHLY  
8 CONFIDENTIAL] or so each year. State-level wireless gross additions data is not available;  
9 however, the FCC does publish state-level wireless subscriber counts. However, according to  
10 FCC data as summarized in Table 17 above, between December 2014 and December 2016, the  
11 total number of T-Mobile subscribers nationally grew by some 16.4-million. Gross additions  
12 over that period are far greater. But for purposes of discussion, let’s assume that nationwide  
13 gross T-Mobile additions over that two-year period were 16.4-million (a very conservative  
14 estimate) and that California represents 10% of the total national T-Mobile customer base (also a  
15 conservative assumptions). Thus, the roughly [BEGIN T-MOBILE HIGHLY  
16 CONFIDENTIAL] [REDACTED] [END T-MOBILE HIGHLY CONFIDENTIAL] opt-out requests  
17 that T-Mobile received represented, *at the very most*, roughly [BEGIN T-MOBILE HIGHLY  
18 CONFIDENTIAL] [REDACTED] [END T-MOBILE HIGHLY  
19 CONFIDENTIAL] of all California customers initiating service. And, of course, the actual  
20 number, if based upon gross rather than net additions, would be considerably smaller! The  
21 number of customers exercising their right to “opt-out” of mandatory arbitration/class action

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180. T-Mobile response to Public Advocates DR 5-1(d).

1 waiver provisions is hardly more than [BEGIN T-MOBILE HIGHLY CONFIDENTIAL] at  
2 [REDACTED] [END T-MOBILE HIGHLY CONFIDENTIAL]!

3

4 164. Fixed-term service contracts were replaced with a bifurcated arrangement, whereby the  
5 wireless service itself was provided on a month-to-month no-contract basis, but the *handset* was  
6 provided under an installment purchase contract that is expressly linked to the month-to-month  
7 service and would, among other things, become fully due upon cancellation of the underlying  
8 service. From a customer’s perspective, there was not much difference between the prior term  
9 service contract and the “Un-carrier” “Equipment Installment Plan Contract” except that the  
10 handset payments would stop once that contract has been fulfilled.

11

12 165. Mandatory arbitration/class action waiver provisions have been in use for wireless  
13 consumer and small business Customer Service Agreements for many years – for example,  
14 T-Mobile states that it “has included an arbitration provision and class action waiver in its Terms  
15 and Conditions since at least December 4, 2004.”<sup>181</sup> However, many state courts – including  
16 courts in California – had held such provisions to be unconscionable and unenforceable.<sup>182</sup>  
17 These state court rulings were appealed by the carriers in federal courts and, in a 2011 5-4  
18 decision in *AT&T Mobility LLC v. Concepcion et Ux*,<sup>183</sup> the US Supreme Court ruled that such  
19 state court actions were preempted by the Federal Arbitration Act. The dissenting opinion was  
20 authored by Justice Stephen Breyer, whose analysis underscores the extreme adverse impact that

181. T-Mobile response to Public Advocates DR 5-1(b).

182. See, e.g., *Discover Bank v. Superior Court*, 36 Cal. 4th 148, 113 P. 3d 1100 (2005),

183. *AT&T Mobility LLC v. Vincent Concepcion et ux*, US Supreme Court, No. 09-893, 563 US 333 (2011).



1 the majority ruling had on consumer rights and protections:

2  
3 What rational lawyer would have signed on to represent the Concepcions in  
4 litigation for the possibility of fees stemming from a \$30.22 claim? See, e.g.,  
5 *Carnegie v. Household Int’l, Inc.*, 376 F. 3d 656, 661 (CA7 2004) (“The realistic  
6 alternative to a class action is not 17 million individual suits, but zero individual  
7 suits, as only a lunatic or a fanatic sues for \$30”). In California’s perfectly  
8 rational view, nonclass arbitration over such sums will also sometimes have the  
9 effect of depriving claimants of their claims (say, for example, where claiming  
10 the \$30.22 were to involve filling out many forms that require technical legal  
11 knowledge or waiting at great length while a call is placed on hold). *Discover*  
12 *Bank* sets forth circumstances in which the California courts believe that the  
13 terms of consumer contracts can be manipulated to insulate an agreement’s author  
14 from liability for its own frauds by”deliberately cheat[ing] large numbers of  
15 consumers out of individually small sums of money.” 36 Cal. 4th, at 162–163,  
16 113 P. 3d, at 1110. Why is this kind of decision—weighing the pros and cons of  
17 all class proceedings alike—not California’s to make?<sup>184</sup>  
18

19 166. There are absolutely no benefits to consumers from mandatory arbitration, whereas  
20 arbitration clauses have the practical effect of inoculating the service provider against having to  
21 bear any responsibility for its practices. Although the Joint Applicants currently utilize and will,  
22 presumably, continue to utilize arbitration provisions in their consumer contracts whether or not  
23 the merger goes forward, the substantial increase in concentration and market power inuring to  
24 the Joint Applicants will only exacerbate these provisions’ anti-consumer effects. One means by  
25 which the merger would provide a positive consumer benefit would be for New T-Mobile to  
26 agree to discontinue its use of mandatory arbitration/class action waiver provisions in its  
27 consumer agreements. As I have discussed above at para. 152, the CPUC retains regulatory  
28 jurisdiction with respect to wireless carrier terms and conditions, so the terms and conditions set  
29 out in a carrier’s CSA falls within the Commission’s regulatory jurisdiction. Nothing in

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184. *Id.*, at 365-366.

1 *Concepcion* operates to preempt this Congressionally-mandated state PUC jurisdiction to *require*  
2 that such provisions be removed from wireless carrier consumer service contracts.

3

4 167. Importantly, both Sprint and T-Mobile include mandatory arbitration/class action  
5 waiver provisions in their consumer/small business adhesion contracts, but such clauses are  
6 likely not present in negotiated contracts with large enterprise, wholesale, and government  
7 customers<sup>185</sup> who, unlike individual consumers, have sufficient economic power to resist the  
8 inclusion of such provisions in their individually negotiated contracts with wireless carriers. It is  
9 only because individual consumers and small businesses are confronted with non-negotiable,  
10 take-it-or-leave-it adhesion contracts that the carriers are able to impose these provisions.

11

12 168. While the CPUC has thus far had only a few occasions to exercise its Congressionally-  
13 mandated jurisdiction over wireless carrier terms and conditions, the significant diminution of  
14 competition in this market that would result from the T-Mobile/Sprint merger warrants, at the  
15 very least, that this policy be reexamined and, if appropriate, revised. More immediately,  
16 however, if the merger is allowed to go forward, the Commission should impose, as an explicit  
17 condition for approval, that all mandatory arbitration/class action waiver provisions be deleted  
18 from the post-merger New T-Mobile's customer service adhesion contracts, both for new as well  
19 as for preexisting customers.

20

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185. T-Mobile Response to Public Advocates Office Data Request 1-93.

1 **Conclusion**

2

3 When examined with respect to the relevant product and geographic markets, the proposed  
4 merger of Sprint and T-Mobile exceeds the HHI threshold for mergers in highly concentrated  
5 markets as established in the *Horizontal Merger Guidelines*, and thus will be presumed to be  
6 likely to enhance market power unless the merging parties are able to present persuasive  
7 evidence to the contrary. The Joint Applicants here have been unable to provide such persuasive  
8 evidence.

9

10 They have not shown any permanent substantive efficiency gains other than the possibility  
11 that the merger might facilitate the transition of the two companies' networks to 5G. However,  
12 even that benefit, if present, would be only transitory. Similar arguments were offered by  
13 T-Mobile in support of its 2011 attempt to merge with AT&T, were soundly rejected by the FCC  
14 staff, and have since been belied by T-Mobile's own success in almost doubling its customer  
15 base on a standalone basis. Any efficiency gains that might result from the merger would benefit  
16 consumers only to the extent that any cost reductions are flowed through in lower prices. Other  
17 than *assertions* that this will occur, the escalation in the Joint Applicants' combined market  
18 power would likely make it far more profitable for New T-Mobile to increase its prices to those  
19 of AT&T and Verizon rather than to engage in aggressive price competition. The econometric  
20 model that the Joint Applicants have provided to support their claim that the merger is  
21 procompetitive is so fraught with errors, omissions, and incorrect and unsupported assumptions  
22 that it must be discounted in its entirety.

23

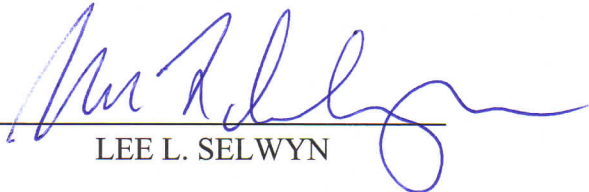
1 Many of the arguments being offered by the Joint Applicants here closely parallel claims that  
2 had been made by T-Mobile in its 2011 attempt to gain approval to merge with AT&T. Those  
3 arguments and the evidence (including econometric models) that were provided by T-Mobile  
4 and AT&T at that time were subject to detailed examination by the FCC staff, which found them  
5 to be entirely unpersuasive. The 2018 version barely differs from the 2011 submission, and  
6 should be similarly rejected.

7

8 For all of the reasons addressed in this testimony, the proposed merger is decidedly not in the  
9 public interest and should not be permitted to go forward.

DECLARATION

I declare under penalty of perjury that the foregoing statements are true and correct to the best of my knowledge, information and belief, and if called to testify thereon I am prepared to do so.

  
\_\_\_\_\_  
LEE L. SELWYN

Executed at Boston, Massachusetts  
this 4th day of January, 2019.

**Attachment 1**

**Statement of Qualifications  
Dr. Lee L. Selwyn**

## Statement of Qualifications

### LEE L. SELWYN

Dr. Lee L. Selwyn has been actively involved in the telecommunications field for more than forty years, and is an internationally recognized authority on telecommunications regulation, economics and public policy. Dr. Selwyn founded the firm of Economics and Technology, Inc. in 1972, and has served as its President since that date. He received his Ph.D. degree from the Alfred P. Sloan School of Management at the Massachusetts Institute of Technology. He also holds a Master of Science degree in Industrial Management from MIT and a Bachelor of Arts degree with honors in Economics from Queens College of the City University of New York.

Dr. Selwyn has testified as an expert on rate design, service cost analysis, form of regulation, and other telecommunications policy issues in telecommunications regulatory proceedings before some forty state commissions, the Federal Communications Commission and the Canadian Radio-television and Telecommunications Commission, among others. He has appeared as a witness on behalf of commercial organizations, non-profit institutions, as well as local, state and federal government authorities responsible for telecommunications regulation and consumer advocacy.

He has served or is now serving as a consultant to numerous state utilities commissions including those in Arizona, Minnesota, Kansas, Kentucky, the District of Columbia, Connecticut, California, Delaware, Maine, Massachusetts, New Hampshire, Vermont, New Mexico, Wisconsin and Washington State, the Office of Telecommunications Policy (Executive Office of the President), the National Telecommunications and Information Administration, the Federal Communications Commission, the Canadian Radio-television and Telecommunications Commission, the United Kingdom Office of Telecommunications, and the Secretaria de Comunicaciones y Transportes of the Republic of Mexico. He has also served as an advisor on telecommunications regulatory matters to the International Communications Association and the Ad Hoc Telecommunications Users Committee, as well as to a number of major corporate telecommunications users, information services providers, competitive local exchange carriers, interexchange carriers, wireless services providers, and specialized access services carriers.

Dr. Selwyn has presented testimony as an invited witness before the U.S. House of Representatives Subcommittee on Telecommunications, Consumer Protection and Finance and before the U.S. Senate Judiciary Committee, on subjects dealing with restructuring and deregulation of portions of the telecommunications industry.

In 1970, he was awarded a Post-Doctoral Research Grant in Public Utility Economics under a program sponsored by the American Telephone and Telegraph Company, to conduct research on the economic effects of telephone rate structures upon the computer time sharing industry. This work was conducted at Harvard University's Program on Technology and Society, where he was appointed as a Research Associate. Dr. Selwyn was also a member of the faculty at the College of Business Administration at Boston University from 1968 until 1973, where he taught courses in economics, finance and management information systems.

*Statement of Qualifications – Lee L. Selwyn*

Dr. Selwyn has been an invited speaker at numerous seminars and conferences on telecommunications regulation and policy, including meetings and workshops sponsored by the National Telecommunications and Information Administration, the National Association of Regulatory Utility Commissioners, the U.S. General Services Administration, the Institute of Public Utilities at Michigan State University, the National Regulatory Research Institute, the Harvard University Program on Information Resources Policy, the Columbia University Institute for Tele-Information, the Massachusetts Institute of Technology Alfred P. Sloan School of Management, the National Association of State Utility Consumer Advocates (NASUCA), the National Conference of Regulatory Attorneys, as well as at numerous conferences and workshops sponsored by individual regulatory agencies. Dr. Selwyn is an elected Town Meeting Member for the Town of Brookline, Massachusetts, and serves on the Town's Advisory and Finance Committee and its Subcommittee on Planning and Regulation, on the Town's Audit Committee, and on its Tax Override Study Committee.



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**RECORD OF EXPERT TESTIMONY  
BEFORE THE CALIFORNIA PUBLIC UTILITIES COMMISSION**

**DR. LEE L. SELWYN**

*Order Instituting Investigation into the State of Competition Among Telecommunications Providers in California, and to Consider and Resolve Questions raised in the Limited Rehearing of Decision 08-09-042, Investigation (I) 15-11-007, on behalf of the California Public Utilities Commission Office of Ratepayer Advocates, Direct Testimony filed June 1, 2016; Rebuttal Testimony filed June 15, 2016.*

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*Applications of the Pacific Telephone and Telegraph Company for authority to increase certain intrastate rates and charges applicable to telephone services furnished within the State of California*, Application No. 59849, on behalf of ABC, Inc., CBS, Inc., California Retailers Association, Tele-Communications Association, Direct Testimony filed January 26, 1981, cross-examination March 11-12, 1981.

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# RECORD OF EXPERT TESTIMONY

## DR. LEE L. SELWYN

### 2017

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**California Public Utilities Commission, Order Instituting Investigation into the State of Competition Among Telecommunications Providers in California, and to Consider and Resolve Questions raised in the Limited Rehearing of Decision 08-09-042**, Investigation (I.) 15-11-007, on behalf of the California Public Utilities Commission Office of Ratepayer Advocates, Direct Testimony filed June 1, 2016; Rebuttal Testimony filed June 15, 2016.

**California Public Utilities Commission, In the matter of Joint Application of Charter Communications, Inc.; Charter Fiberlink CACCO, LLC (U6878C); Time Warner Cable Inc.; Time Warner Cable Information Services (California), LLC (U6874C); Advance/Newhouse Partnership; Bright House Networks, LLC; and Bright House Networks Information Services (California), LLC (U6955C) Pursuant to California Public Utilities Code Section 854 for Expedited Approval of the Transfer of Control of both Time Warner Cable Information Services (California), LLC (U6874C) and Bright House Networks Information Services (California), LLC (U6955C) to Charter Communications, Inc., and for Expedited Approval of a pro forma transfer of control of Charter Fiberlink CA-CCO, LLC (U6878C)**, Application 15-07-009, on behalf of the California Public Utilities Commission Office of Ratepayer Advocates, Reply Testimony filed January 15, 2016.

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**Federal Communications Commission, High-Cost Universal Service Support, Federal-State Joint Board on Universal Service, and other combined dockets**, WC Docket No. 05-337, CC Docket 96-45 and others, on behalf of Broadview Networks, Cavalier Communications, Nuvox, Inc., Pac-West Telecomm, Inc., tw telecom inc., XO Communications, Declaration filed November 26, 2008.

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**Federal Communications Commission, Petition of AT&T Inc. For Interim Declaratory Ruling and Limited Waivers, Developing a Unified Intercarrier Compensation Regime, Intercarrier Compensation for ISP-Bound Traffic**, WC Docket No. 08-152, CC Docket No. 01-92, WC Docket No. 99-68, on behalf Pac-West Telecomm, Inc., Declaration filed August 21, 2008.

**Superior Court of the State of California, County of Alameda, Molly White, et al v. Cellco Partnership dba Verizon Wireless**, Case No. RG04-137699, Cellular Termination Fees, on behalf of the Plaintiffs, Oral Testimony and Cross-Examination, June 27, June 30 and July 1, 2008.

**Federal Communications Commission, CTIA Petition for Expedited Declaratory Ruling on Early Termination Fees**, WT Docket No. 05-194, Oral and Written Statements at *en banc* hearing, June 12, 2008.

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**Industry Canada, Telecommunications Policy Branch**, Notice DGTP-002-07: *Consultation on a Framework to Auction Spectrum on the 2GHz Range including Advanced Wireless Services*, Appendix B – *Comparison of Wireless Service Price Levels in the US and Canada* – to Comments of MTS Allstream Inc., filed May 25, 2007; Appendix A – *The AWS Spectrum Auction: a One-time Opportunity to Introduce Real Competition or Wireless Services in Canada* – to Reply Comments of MTS Allstream Inc., filed June 27, 2007.

**Federal Communications Commission**, *Petitions of Verizon Telephone Companies for Forbearance*, WC Docket 06-172, on behalf of the AdHoc Telecommunications Users Committee, Declaration filed March 15, 2007, *under seal*.

**Canadian Radio-television and Telecommunications Commission**, *Review of Regulatory Framework for Wholesale Services and Definition of Essential Service*, Telecom Public Notice CRTC 2006-14, on behalf of MTS Allstream Inc. and Primus Telecommunications Canada Incorporated, Direct Testimony filed March 15, 2007, Supplementary Evidence filed July 5, 2007, cross-examination October 26, 29, 30, 2007.

**Telecommunications Regulatory Board of Puerto Rico**, *Telefónica Larga Distancia de Puerto Rico, Inc., Petition for arbitration pursuant to Section 47 U.S.C. 252 (b) of the Federal Communications Act and Section 5 (b), Chapter III, of the Puerto Rico Telecommunications Act, regarding interconnection rates, terms and conditions with Puerto Rico Telephone Company, Inc.*, Docket No. JRT-2006-AR-0001, on behalf of Telefónica Larga Distancia de Puerto Rico, Inc., Direct Testimony filed January 16, 2007, Reply Testimony filed February 7, 2007, cross-examination February 14, 2007, Declaration filed March 30, 2007.

**American Arbitration Association Class Action Arbitration Tribunal**, *Patricia Brown and Harold P. Schroer on an individual basis, and also on a classwide basis on behalf of other similarly situated, Claimant, against Celco Partnership d/b/a Verizon Wireless, Respondent*, Case No. 11 494 01274 05, on behalf of Plaintiffs, oral testimony January 25, 2007, Rebuttal Report filed March 1, 2007

**Industry Canada, Competition Bureau**, *Competition Bureau's Draft Information Bulletin on the abuse of Dominance provisions as Applied to the Telecommunications Industry*, Appendix A – *Preventing Abuse of Dominance in Canadian Telecom Markets* – to Comments of MTS Allstream Inc., filed January 12, 2007.

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**Superior Court of the State of California, County of Alameda**, *Cell Phone Termination Fee Cases, Re: Zill et al. v. Sprint Spectrum Limited Partnership, et al.* Judicial Council Coordination Proceeding No. 4332, on behalf of Bramson, Plutzik, Mahler & Birkhaeuser, LLP; Lerach, Coughlin, Stoia Geller Rudman & Robbins; and Franklin & Franklin, Declaration filed November 9, 2006, Declaration filed December 19, 2006, Rebuttal Declaration filed December 19, 2006, *all under seal*.

**Commonwealth Court of Pennsylvania, *America Online, Inc., Petitioner, v. Commonwealth of Pennsylvania, No. 621 F.R. 2004***, on behalf of the Pennsylvania Department of Revenue, Declaration filed October 19, 2006.

**Federal Communications Commission, *CTIA Petition for Expedited Declaratory Ruling on Early Termination Fees***, WT Docket No. 05-194, on behalf of AARP, Declaration filed September 8, 2006.

**United States District Court for the District of Columbia, *United States of America, Plaintiff, v. SBC Communications, Inc. and AT&T Corp.***, Civil Action No. 1:05CV02102 (EGS); *United States of America, Plaintiff, v. Verizon Communications Inc. and MCI, Inc., Defendants*. Civil Action No.: 1:05CV02103 (EGS), on behalf of the National Association of State Utility Consumer Advocates (NASUCA), Declaration filed September 5, 2006.

**Superior Court of the State of California, County of Alameda, *Cell Phone Termination Fee Cases***, Judicial Council Coordination Proceeding No. 4332, on behalf of Bramson, Plutzik, Mahler & Birkhaeuser, LLP; Lerach, Coughlin, Stoia Geller Rudman & Robbins; and Franklin & Franklin, Declaration filed June 1, 2006.

**Federal Communications Commission, *CTIA Petition for Expedited Declaratory Ruling on Early Termination Fees***, WT Docket No. 05-194, on behalf of Wireless Consumers Alliance *et al.*, Declaration filed May 11, 2006.

**Illinois Commerce Commission, *Annual Rate Filing for Non-Competitive Services Under an Alternative Form of Regulation***, Docket No. 06-0269, on behalf of the People of the State of Illinois, Declaration filed May 5, 2006.

**Illinois Commerce Commission, *Illinois Commerce Commission vs. Illinois Bell Telephone Company, Investigation of Specified Tariffs Declaring Certain Services to be Competitive Telecommunications Services***, Docket No. 06-0027, on behalf of the People of the State of Illinois, the City of Chicago, the Cook County State's Attorney's Office, and AARP, Supplemental Testimony filed May 24, 2006, cross-examination April 5, 2006.

**Illinois Commerce Commission, *Illinois Commerce Commission vs. Illinois Bell Telephone Company, Investigation of Specified Tariffs Declaring Certain Services to be Competitive Telecommunications Services***, Docket No. 06-0027, on behalf of the People of the State of Illinois, Direct Testimony filed March 6, 2006, Rebuttal Testimony filed March 24, 2006, cross-examination April 5, 2006.

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**Superior Court of California, County of Alameda, *Bay Area Cellular Telephone Company, doing business as AT&T Wireless Services; GTE Mobilnet of California Limited Partnership, doing business as Verizon Wireless;; Cingular Wireless LLC; Silvano Mendoza; and Walid Achikxai, Plaintiffs, v. City of Union City, and DOES 1 through 100, Defendants***, Case No: HG04-161366, Declaration filed November 8, 2005.

**California Public Utilities Commission, *Joint Application of Verizon Communications Inc. ("Verizon") and MCI, Inc. ("MCI") to Transfer Control of MCI's California Utility Subsidiaries to Verizon, Which Will Occur Indirectly as a Result of Verizon's Acquisition of MCI***, Application No. 05-04-020, on behalf of the Office of Ratepayer Advocates, Reply Testimony filed August 15, 2005.

**California Public Utilities Commission, *Joint Application of SBC Communications Inc. ("SBC") and AT&T Corp. ("AT&T") for Authorization to Transfer Control of AT&T Communications of California (U-5002), TCG Los Angeles, Inc. (U-5462), TCG San Diego (U-5389) and TCG San Francisco (U-5454) to SBC, Which Will Occur Indirectly as a Result of AT&T's Merger with SBC, Tau Merger Sub Corporation***, Application No. 05-02-027, on behalf of the Office of Ratepayer Advocates, Reply Testimony filed June 24, 2005.

**Federal Communications Commission, AT&T Corp. And SBC Communications Inc. Application Pursuant to Section 214 of the Communications Act of 1934 and Section 63.04 of the Commission's Rules for Consent to the Transfer of Control of AT&T Corp. To SBC Communications Inc.,** WC Docket No. 05-65, on behalf of CompTel/ALTS, Reply Declaration filed May 10, 2005.

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**United States District Court for the District of Colorado, Qwest Corporation, a Colorado corporation, Plaintiff, v. AT&T Corp., a New York corporation, and AT&T Communications, Inc., a Delaware corporation, Defendants,** Civil Action No. 03-F-2084 (CBS), Export Report of Dr. Lee L. Selwyn, filed November 30, 2004.

**Washington Utilities and Transportation Commission, Washington and Utilities and Transportation Commission, Complainant v. Verizon Northwest, Inc., Respondent,** Docket No. UT-040788, on behalf of the Washington Utilities and Transportation Commission Staff, Direct Testimony filed November 22, 2004.

**Federal-State Joint Board on Universal Service, En Banc Hearing on High-Cost Universal Service Support in Areas Served by Rural Carriers,** CC Docket No. 96-45, on behalf of Western Wireless Corp, November 17, 2004.

**New Mexico Public Regulation Commission, Investigation of Whether Qwest Corporation is in Compliance with the Investment Requirements of its Amended Alternative Form of Regulation Plan,** Docket No. 04-00237-UT, on behalf of the New Mexico Public Regulation Commission Staff, Direct Testimony filed October 22, 2004.

**Federal Communications Commission, Unbundled Access to Network Elements, Review of the Section 251; Unbundling Obligations of the Incumbent Local Exchange Carriers,** WC Docket No. 04-313 and CC Docket No. 01-338, on behalf of AT&T Corp., Declaration filed October 4, 2004, Reply Declaration filed October 19, 2004, *Ex Parte* Declaration filed November 8, 2004.

**Federal Communications Commission, Petition of Qwest Corporation for Forbearance Pursuant to 47 U.S.C. § 160(c) in the Omaha Metropolitan Statistical Area,** WC Docket No. 04-223, on behalf of AT&T Corp., Declaration filed August 24, 2004.

**Wisconsin Public Service Commission, Petition of Wisconsin Bell, Inc., d/b/a SBC Wisconsin, to Establish Rates and Costs for Unbundled Network Elements,** Docket No. 6720-T1-187, on behalf of AT&T Communications of Wisconsin, L.P. and TCG Milwaukee, Rebuttal Testimony filed June 15, 2004, cross-examination July 30, 2004.

**Federal Communications Commission, Section 272(f)(1) Sunset of the BOC Separate Affiliate and Related Requirements; 2000 Biennial Regulatory Review Separate Affiliate Requirements of Section 64.1903 of the Commission's Rules,** on behalf of AT&T Corp., *Ex Parte* Declaration filed June 8, 2004.

**Ohio Public Utilities Commission, Review of SBC Ohio's TELRIC Costs for Unbundled Network Elements,** Docket No. 02-1280-TP-UNC, on behalf of AT&T Communications of Ohio, Inc., TCG Ohio, LDMI Telecommunications, Inc., CoreComm Newco, Inc., and XO Ohio Inc., Direct Testimony filed May 28, 2004.

**Washington Utilities and Transportation Commission, Review of: Unbundled Loop and Switching Rates; the Deaveraged Zone Rate Structure; and Unbundled Network Elements, Transport, and Termination (Recurring Costs),** Docket No. UT-023003, on behalf of AT&T Communications of the Pacific Northwest, Inc., Direct Testimony filed April 20, 2004, Surrebuttal Testimony filed May 12, 2004, Affidavit filed June 1, 2004.

**Arizona Corporation Commission, Qwest Corporation's Filing Amended Renewed Price Regulation Plan; Investigation of the Cost of Telecommunications Access,** Docket No. T-01501B-03-0454 and Docket No. T-00000D-00-0672, on behalf of AT&T Communications of the Mountain States, Inc., Affidavit filed April 8, 2004.

**Iowa Department of Commerce Utilities Board**, *Implementation of the Federal Communications Commission's Triennial Review Order Adopting New Rules For Network Unbundling Obligations*, Docket No. INU-03-1, on behalf of AT&T Communications of the Midwest, Inc., and TCG Omaha, Inc., (Collectively "AT&T"), Direct Testimony (with William H. Lehr) filed February 25, 2004.

**Illinois Commerce Commission**, *Illinois Bell Telephone Company Filing to Increase Unbundled Loop and Nonrecurring Rates*, ICC Docket No. 02-0864, on behalf of AT&T Communications of Illinois, Inc., Direct Testimony filed February 20, 2004, Rebuttal Testimony filed February 20, 2004.

**United States Court of Appeals for the District of Columbia Circuit**, *Verizon Virginia, Inc., Petitioner v. Federal Communications Commission and United States of America, Respondents*, No. 04-1043 on behalf of AT&T Communications of Virginia, LLC ("AT&T") and WorldCom, Inc. ("MCI"), Declaration filed February 17, 2004.

**Oregon Public Utility Commission**, *Investigation to Determine, Pursuant to Order of the Federal Communications Commission, Whether Impairment Exists in Particular Markets if Local Circuit Switching for Mass Market Customers is No Longer Available as an Unbundled Network Element*, UM 1100, on behalf of AT&T Communications of the Pacific Northwest, Inc., AT&T Local Services on behalf of TCG Oregon (Collectively "AT&T"), Direct Testimony (with William H. Lehr) filed February 17, 2004.

**New Mexico Public Regulations Commission**, *Staff's Petition for Issuance of a Notice of Inquiry into State Implementation of the FCC's Triennial Review of Its Rules Concerning ILECs' Network Unbundling Obligations*, Case No. 03-00201-UT, on behalf of AT&T Communications of the Mountain States, Inc., Direct Testimony (with William H. Lehr) filed February 16, 2004.

**Colorado Public Utilities Commission**, *Implementation of the Federal Communications Commission's Triennial Review Order Adopting New Rules for Network Unbundling Obligations*, Docket No. 031-478T, on behalf of AT&T Communications of the Mountain States and TCG Colorado, Direct Testimony (with William H. Lehr) filed January 26, 2004.

**Minnesota Public Utilities Commission**, *Commission Investigation into ILEC Unbundling Obligations as a Result of the Federal Triennial Review Order*, Docket Nos. MPUC P-999/CI-3-961, OAH 12-2500-15571-2, on behalf of AT&T Communications of the Midwest, Inc. and TCG Minnesota, Inc., Direct Testimony (with William H. Lehr) filed January 23, 2004.

**Michigan Public Service Commission**, *Commission's own motion, to review the costs of telecommunications services provided by SBC Michigan*, Case No. U-13531, on behalf of AT&T Communications of Michigan, Inc., Initial Testimony filed January 20, 2004; Reply Testimony filed May 10, 2004.

**Utah Public Service Commission**, *Proceeding to Address Actions Necessary to Respond to the Federal Communications Commission Triennial Review Order Released August 21, 2003*, Docket No. 03-999-04, on behalf of AT&T Communications of the Mountain states, Inc., and TCG Utah, Direct Testimony (with William H. Lehr) filed January 13, 2004.

**Arizona Corporation Commission**, *ILEC Unbundling Obligations as a Result of the Federal Triennial Review Order*, Docket No. T-00000A-03-0369, on behalf of AT&T Communications of the Mountain States, Inc., and TCG Phoenix, Direct Testimony (with William H. Lehr) filed January 9, 2004.

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**Washington Utilities and Transportation Commission**, *Petition of QWEST CORPORATION To Initiate a Mass-Market Switching And Dedicated Transport Case Pursuant to the Triennial Review Order*, Docket No. UT-033044, on behalf of AT&T Communications of the Pacific Northwest, Inc., AT&T Local Services on behalf of TCG Seattle, and TCG Oregon (Collectively “AT&T”), Direct Testimony (with William H. Lehr) filed December 22, 2003, Response Testimony filed February 2, 2004, Rebuttal Testimony filed February 20, 2004.

**Federal Communications Commission**, *Review of the Commission’s Rules Regarding the Pricing of Unbundled Network Elements and the Resale of Service by Incumbent Local Exchange Carriers*, WC Docket No. 03-173, on behalf of AT&T Corp., Declaration filed December 16, 2003, Reply Declaration filed January 30, 2004.

**Federal Communications Commission**, *Section 272(b)(1)’s “Operate Independently” Requirement for Section 272 Affiliates*, WC Docket 03-228, on behalf of AT&T Corp., Declaration filed December 10, 2003.

**California Public Utilities Commission**, *Order Instituting Rulemaking to Review Policies Concerning Intrastate Carrier Access Charges*, Docket No. R.03-08-018, on behalf of AT&T Communications of California, Inc. , Declaration filed November 12, 2003.

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**New Jersey Board of Public Utilities**, *AT&T Communications of NJ, P.P., v. Verizon New Jersey, Inc., Verizon Long Distance, Inc., Verizon Enterprise Solutions, Inc., Verizon Global Networks, Inc., and Verizon Select Services, Inc.*, Docket TR 03100767, on behalf of AT&T Communications of NJ, P.L., Affidavit filed October 1, 2003.

**Utah Public Service Commission**, *Petition of Qwest Corporation for Pricing Flexibility for Residence Services in the Areas Served by 19 Central Offices*, Docket No. 03-049-49, on behalf of the Utah Committee of Consumer Services, Direct Testimony filed September 29, 2003, cross-examination October 28, 2003.

**Utah Public Service Commission**, *Petition of Qwest Corporation for Pricing Flexibility for Business Services in the Areas Served by 19 Central Offices*, Docket No. 03-049-50, on behalf of the Utah Committee of Consumer Services, Direct Testimony filed September 29, 2003, cross-examination October 28, 2003.

**United States Court of Appeals for the Eighth Circuit**, *Eschelon Telecom, Inc. v. Federal Communications Commission and United States of America*, Docket No. 03-3212 (and consolidated cases), on behalf of AT&T Corp., Declaration filed September 23, 2003.

**Superior Court of the State of Washington in and for the County of Snohomish**, *Verizon Northwest, Inc., v. Washington Utilities and Transportation Commission*, on behalf of AT&T of the Pacific Northwest, Inc., Affidavit filed September 2, 2003.

**Louisiana, Thirty-third Judicial District Court for the Parish of Allen**, *Judi Abruseley, Individually and on behalf of Class of All Other Similarly Situated Customers v. Centennial Lafayette Cellular Corporation and Centennial Cellular Corporation*, Docket No. C-99-0380, on behalf of Centennial Lafayette Cellular Corporation and Centennial Cellular Corporation, Affidavit and Report filed August 28, 2003; Deposition on August 8, 2003.

**Federal Communications Commission**, *Petition for Forbearance From The Prohibition of Sharing Operating, Installation, and Maintenance Functions Under Section 53.203(a)(2) Of The Commission’s Rules*, CC Docket No. 96-149, on behalf of AT&T Corp., *Ex Parte* Declaration filed July 9, 2003.

**Federal Communications Commission**, *Section 272(f)(1) Sunset of the BOC Separate Affiliate and Related Requirements*, WC Docket No. 02-112, *2000 Biennial Regulatory Review Separate Affiliate Requirements of Section 64.1903 of the Commission's Rules*, CC Docket No. 00-175, on behalf of AT&T Corp., Declaration filed June 30, 2003, Reply Declaration filed July 28, 2003, *Ex parte* Declaration June 8, 2004.

**Federal Communications Commission**, *Improving Public Safety Communications in the 800 MHz Band Consolidating the 900 MHz Industrial/Land Transportation and Business Pool Channels*, WT Docket No. 02-55, on behalf of James A. Kay, Jr., *Ex Parte* presentation and report *Market-based Solutions for Realigning Spectrum Use in the 800 MHz Band*, *Ex Parte* filed (with Helen Golding) June 25, 2003.

**United States District Court For The Northern District of Illinois**, *Voices for Choices, AT&T Communications of Illinois, Inc., MCI Metro Access Transmission Services, LLC, and Association of Local Telecommunications Services*, Plaintiffs, v. *Illinois Bell Telephone Co. Inc. d/b/a SBC Illinois, Ameritech Corp. d/b/a SBC Midwest, and Edward C. Hurley, Erin M. O'Connell-Diaz, Lula M. Ford, Mary Frances Squires, and Kevin K. Wright, in their capacities as Commissioners of the Illinois Commerce Commission and Not as Individuals*, Defendants, No. 03 C 3290, Hon. Charles P. Kocoras, on behalf of AT&T, Affidavit filed May 30, 2003.

**Washington Utilities and Transportation Commission**, *Application of Qwest Corporation Regarding the Sale and Transfer of Qwest Dex to Dex Holdings, LLC, a non-affiliate*, Docket No. UT-021120, on behalf of the Washington Utilities and Transportation Commission Staff, Direct Testimony Filed March 18, 2003, cross-examination May 19-23, 2003.

**Virginia State Corporation Commission**, *AT&T Communications of Virginia, L.L.C., Complainant v. Verizon Virginia, Inc., Verizon South, Inc., Verizon Long Distance Virginia, Inc., Verizon Enterprise Solutions Virginia, Inc., Verizon Global Networks, Inc., and Verizon Select Services of Virginia, Inc.*, Case No. PUC-2003-00091, on behalf of AT&T Communications of Virginia, L.L.C., Affidavit filed May 6, 2003.

**Washington Utilities and Transportation Commission**, *Verizon Northwest Inc., Advice Letter No. 3076*, Docket No. UT-030395, on behalf of the AT&T Communications of the Pacific Northwest, Inc., Affidavit filed April 14, 2003.

**Federal Communications Commission**, *AT&T Corp. Petition for Rulemaking to Reform Regulation of Incumbent Local Exchange Carrier Rates for Interstate Special Access Services*, RM No. 10593, on behalf of AT&T Corp., Reply Declaration filed January 23, 2003.

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**Federal Communications Commission**, *Petition for Forbearance From The Prohibition of Sharing Operating, Installation, and Maintenance Functions Under Section 53.203(a)(2) Of The Commission's Rules*, CC Docket No. 96-149, on behalf of AT&T Corp., *Ex Parte* Declaration filed November 15, 2002.

**Minnesota Public Utilities Commission, Office of Administrative Hearings**, *Complaint of the Minnesota Department of Commerce Against Qwest Corporation Regarding Unfiled Agreements*, PUC Docket No. P-421/CI-02-197, on behalf of the Minnesota Department of Commerce, Affidavit filed November 8, 2002.

**Maine Public Utilities Commission**, *Petition for Global NAPs, Inc. For Arbitration Pursuant to 47 U.S.C. §252(b) of the Telecommunications Act of 1996 to Establish and Interconnection Agreement with Verizon Maine, Inc. f/k/a Bell Atlantic-Maine*, Docket No. 2002-421, on behalf of Global NAPs, Inc., Direct Testimony filed October 30, 2002.



**Federal Communications Commission**, *Qwest Communications International, Inc. Consolidated Application for Authority to Provide In-Region, InterLATA Services in Colorado, Idaho, Iowa, Montana, Nebraska, North Dakota, Utah, Washington, and Wyoming*, WC Docket No. 02-314, filed on behalf of AT&T Corp., Declaration filed October 15, 2002.

**District of Columbia Public Service Commission**, *Verizon Washington, D.C., Inc.'s Compliance With the Conditions Established in Section 271 of the Federal Telecommunications Act of 1996*, Case No. 1011, on behalf of the Office of People's Counsel of the District of Columbia, Affidavit filed September 30, 2002, Supplemental Affidavit filed November 8, 2002.

**Washington Utilities and Transportation Commission**, *AT&T Communications of the Pacific Northwest v. Verizon Northwest, Inc.*, Docket No. UT-020406, on behalf of AT&T Communications of the Pacific Northwest, Inc., Direct Testimony filed September 30, 2002, Rebuttal Testimony filed January 31, 2003, Revisions dated May 1, 2003, Settlement Conference March 4-5, 2003, Surrebuttal Testimony filed March 6, 2003.

**Florida Public Service Commission**, *Global NAPs, Inc. Petition for Arbitration Pursuant to 47 U.S.C. Section 252(b) of Interconnection Rates, Terms and Conditions with ALLTEL Florida, Inc.*, on behalf of Global NAPs, Inc., Docket No. 011354-TP, Direct Testimony filed September 27, 2002, Reply Testimony filed October 21, 2002, deposition January 13, 2003.

**New Hampshire Public Utilities Commission**, *Petition of Global NAPs, Inc. For Arbitration Pursuant to 47 U.S.C. §252(b) of the Telecommunications Act of 1996 to Establish an Interconnection Agreement with Verizon New Hampshire, Inc. f/k/a Bell Atlantic - New Hampshire*, Docket No. 02-107, on behalf of Global NAPs, Inc., Direct Testimony filed September 17, 2002, Reply Testimony filed September 23, 2002, cross-examination October 11, 2002.

**Massachusetts Department of Telecommunications and Energy**, *Global NAPs, Inc. Petition for Arbitration Pursuant to Section 252(b) of the Telecommunications Act of 1996 to Establish an Interconnection Agreement with Verizon New England Inc. d/b/a Verizon Massachusetts f/k/a New England Telephone and Telegraph Company. d/b/a Bell Atlantic*, D.T.E. 02-45 on behalf of Global NAPs, Inc., Direct Testimony filed September 10, 2002, cross-examination October 9, 2002.

**Pennsylvania Senate Communications and High Technology Committee**, *Hearing on Chapter 30 and the Telecommunications Industry in Pennsylvania*, on behalf of AT&T, Testimony filed September 10, 2002.

**Federal Communications Commission**, *Section 272(f)(1) Sunset of the BOC Separate Affiliate and Related Requirements*, WC Docket No. 02-112, on behalf of AT&T Corp., Declaration filed August 5, 2002, Reply Declaration filed August 26, 2002.

**New Jersey Board of Public Utilities**, *Petition of Global NAPs New Jersey, Inc. For Arbitration Pursuant to 47 U.S.C. §252(b) of Interconnection Rates, Terms and Conditions with Verizon New Jersey, Inc.*, Docket No. TO02060320, on behalf of Global NAPs, Inc., Direct Testimony filed August 13, 2002, cross-examination August 28, 2002.

**Federal Communications Commission**, *Application by Verizon New England, Inc., Bell Atlantic Communications, Inc. (d/b/a Verizon Long Distance), NYNEX Long Distance Company (d/b/a Verizon Enterprise Solutions), Verizon Global Networks, Inc., and Verizon Select Services (collectively, "Verizon") for Authorization to Provide In-Region, InterLATA Services in the States of Delaware and New Hampshire*, CC Docket No. 02-157, on behalf of AT&T Corp., Reply Declaration filed August 12, 2002.

**Maryland Public Service Commission**, *Review by the Commission Into Verizon Maryland's Compliance with the Conditions of U.S.C. §271(c)*, Case No. 8921 on behalf of the Maryland People's Counsel, Direct Testimony filed July 29, 2002, cross-examination October 31, 2002.

**California Public Utilities Commission**, *Verizon-California, Inc. (U1002) Petition for Arbitration of an Interconnection Agreement with Pac-West Telecomm, Inc. (U5266C) pursuant to Section (252(b) of the Telecommunications Act of 1996*, Application No. 02-06-024, on behalf of Pac-West Telecomm, Inc., Direct Testimony filed July 8, 2002.

**Federal Communications Commission**, *Notice of Inquiry Concerning a Review of the Equal Access and Nondiscrimination Obligations Applicable to Local Exchange Carriers*, CC Docket No. 02-39, on behalf of AT&T Corp., Declaration filed May 10, 2002.

**Florida Public Service Commission**, *Petition by Global NAPs, Inc. for arbitration pursuant to 47 U.S.C. §252(b) of interconnection rates, terms and conditions with Verizon Florida, Inc.*, Docket No. 011666-TP, on behalf of Global NAPs, Inc., Direct Testimony filed on May 8, 2002, Rebuttal Testimony filed January 16, 2003.

**Virginia State Corporation Commission**, *Inquiry into Verizon Virginia Inc.'s Compliance with the Conditions Set Forth in 47 U.S.C. § 271(c)*, Case No. PUC-2002-0046, on behalf of AT&T Corp., Declaration filed May 3, 2002.

**Minnesota Public Utilities Commission, Office of Administrative Hearings**, *Commission Investigation into Qwest's Compliance with Section 271(d)(3)(c) of the Telecommunications Act of 1996 that the Requested Authorization is Consistent with the Public Interest, Convenience and Necessity*, Docket No. P-421/CI-01-1373, OAH Docket No. 7-2500-24487-2, Affidavit on behalf of the Minnesota Department of Commerce filed May 3, 2002, cross-examination June 3, 2002, Surrebuttal Affidavit filed June 17, 2002.

**California Public Utilities Commission**, *Petition by Pac-West Telecomm, Inc. for Arbitration of an Interconnection Agreement with Pacific Bell Pursuant to Section 252(b) of the Telecommunications Act of 1996*, Application No. 02-03-059 on behalf of Pac-West Telecomm, Inc., Direct Testimony filed April 23, 2002, cross-examination May 30, 2002.

**Pennsylvania Public Utility Commission**, *Petition of Global NAPs South, Inc. For Arbitration Pursuant to 47 U.S.C. §252(b) of Interconnection Rates, Terms and Conditions with Verizon Pennsylvania*, Docket No. A-310771F7000 on behalf of Global NAPs, Inc., Direct Testimony filed April 23, 2002, Rebuttal Testimony filed May 22, 2002, cross-examination July 2, 2002, July 9, 2002.

**Federal Communications Commission**, *Review of Regulatory Requirements for Incumbent LEC Broadband Telecommunications Services*, CC Docket No. 01-337, on behalf of Focal Communications Corp. and Pac-West Telecomm, Inc. and on behalf of US LEC Corp., Declaration filed April 22, 2002.

**Delaware Public Service Commission**, *Inquiry into Verizon Delaware Inc.'s Compliance with the Condition set Forth in 47 U.S.C. § 271(c)*, Docket No. 02-001, on behalf of AT&T Corp., Declaration filed April 8, 2002.

**Washington Utilities and Transportation Commission** *AT&T Communications of the Pacific Northwest, Inc. v. Verizon Northwest, Inc.*, Docket UT-\_\_\_\_\_, on behalf of AT&T Communications of the Pacific Northwest, Inc., Affidavit filed March 28, 2002.

**New York Public Service Commission**, *Global NAPs, Inc. Petition for Arbitration Pursuant to Section 252(b) of the Telecommunications Act of 1996 to Establish and Interconnection Agreement with Verizon New York, Inc.*, Case No. 02-C-006, on behalf of Global NAPs, Inc., Direct Testimony filed March 15, 2002.

*Record of Expert Testimony – Dr. Lee L. Selwyn*

**Georgia Public Service Commission**, *Global NAPs, Inc. Petition for Arbitration Pursuant to 47 U.S.C. Section 252(b) of Interconnection Rates, Terms and Conditions with ALLTEL Georgia, Inc.; ALLTEL Georgia Communications Corp.; Georgia ALLTEL Telecom, Inc.; Georgia Telephone Corp.; and Standard Telephone Company*, Docket No. 14529-U, on behalf of Global NAPs, Inc., Direct Testimony filed March 11, 2002, Rebuttal Testimony filed April 8, 2002.

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**Illinois Commerce Commission**, *Investigation Concerning the Appropriate Methodology for the Calculation of Intrastate Access Charges for all Illinois Telephone Utilities*, Docket No. 83-0142, on behalf of Illinois Retail Merchants Association, Direct Testimony filed November 12, 1985, Supplemental Testimony filed January 17, 1986, cross-examination February 11, 1986.

**Michigan Public Service Commission**, *Application of Michigan Bell Telephone Company for Authority to Issue its Tariff MPSC No. 12 as it Pertains to Pole Attachment and Conduit Occupancy Accommodations*, Docket No. U-8148, on behalf of Michigan Cable Television Association, Direct Testimony filed October 18, 1985.

**Hawaii Public Utilities Commission**, *Application of GTE Mobilnet of Hawaii Inc. for a Certificate of Public Convenience and Necessity to Provide Cellular Radio Telecommunications Service in the Honolulu, Hawaii Metropolitan Statistical Area*, Docket No. 5180, on behalf of Honolulu Cellular Telephone Company, Direct Testimony filed August 15, 1985, cross-examination October 7, 1985.

**New York Public Service Commission**, *Proceeding on Motion of the Commission as to the Impact of the Modification of Final Judgement and the Federal Communications Commission's Docket 78-72 on the Provision of Toll Service in New York State*, Case No. 28425, on behalf of American Express Company, Capital Cities/ABC Inc., CBS Inc., National Broadcasting Company Inc., General Electric Company, Mobil Corporation, Sears, Roebuck and Company, Direct Testimony filed July 17, 1985.

**Arizona Corporation Commission**, *Application of the Mountain States Telephone and Telegraph Company for a Hearing to Determine the earnings of the company, a fair value for the company for ratemaking purposes, to fix a just and reasonable rate of return thereon, and to approve rate schedules designed to develop such return*, Docket Nos. E-1051-84-100, on behalf of Tele-Communications Association, Direct Testimony filed June 3, 1985, June 28, 1985, cross-examination August 20, 1985.

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**Colorado Public Utilities Commission**, *Investigation and Suspension of Proposed Change in Tariff - Colorado PUC No. 5 - Telephone, the Mountain States Telephone and Telegraph Company*, Docket No. 1671, on behalf of Oxford-AnsCo Development Company, Reynolds Properties, Inc., and SBS RealCorn, Direct Testimony filed June 14, 1985.

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#### **1984**

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**New York Public Service Commission**, *Proceeding on Motion of the Commission as to the Provision of Telephone Services that Bypass Local Exchange or Toll Networks*, Case No. 28710, Phase II, on behalf of American Express Company, ABC, Inc., CBS, Inc., National Broadcasting Company, Inc., General Electric Company, Mobil Corporation, Direct Testimony filed October 5, 1984, Rebuttal Testimony filed November 20, 1984.

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**California Public Utilities Commission**, *Application of GTE Mobilnet of San Francisco, and GTE Mobilnet of San Jose for certificates of public convenience and necessity to construct and operate a domestic cellular mobile radio system in the San Francisco-Oakland and San Jose Metropolitan areas*, Application No. 83-07-04, on behalf of McCaw/Intrastate Cellular Systems, Direct Testimony filed June 22, 1984, cross-examination July 5, 1984.

**Alabama Public Service Commission**, *South Central Bell Company*, Docket No. 18882, on behalf of Department of Finance of the State of Alabama, Direct Testimony filed May 30, 1984, cross-examination June 13, 1984.



**Massachusetts Department of Public Utilities**, *Investigation by the Department on Its Own Motion as to the Propriety of the Rates and Charges Set Forth in Revised Pages to Tariffs Filed With the Department on March 2, 1984 by the New England Telephone Company*, Docket No. 84-82, on behalf of Massachusetts Institute of Technology, Direct Testimony filed May 25, 1984, cross-examination August 1, 1984.

**New York Public Service Commission**, *Proceeding on Motion of the Commission as to the Provision of Telephone Services that Bypass Local Exchange or Toll Networks*, Case No. 28710, on behalf of American Express Company, ABC, Inc., CBS, Inc., National Broadcasting, Inc., American Express Company, General Electric, Mobil Corporation, Direct Testimony filed May 1, 1984, Rebuttal Testimony filed June 1, 1984, cross-examination June 26, 1984.

**Pennsylvania Public Utilities Commission**, *Petition Requesting the Commission to Institute a Generic Investigation Concerning the Development of Intrastate Access Charges*, Docket No. 830452, on behalf of Bethlehem Steel Corporation, Burlington Industries, Fox Chase Medical Center, Honeywell, Inc., Jones and Laughlin Steel, Lehigh University, National Liberty Corporation, Pennsylvania Retailers, Pennsylvania State University, PPG Industries, Inc., Scott Paper Company, Sears, Roebuck and Company, Strawbridge and Clothier, Westinghouse Electric Corporation, Direct Testimony filed April 6, 1984, August 1, 1984, cross-examination April 26, 1984.

**Maine Public Utilities Commission**, *New England Telephone Company Re: Consideration of Local Measured Service and Alternative Exchange Service Options*, Docket No. 83-179, on behalf of Maine Public Advocate, Direct Testimony filed February 17, 1984.

**Maine Public Utilities Commission**, *New England Telephone and Telegraph Company Re: Proposed Increase in Rates*, Docket No. 83-213, on behalf of Maine Public Utilities Commission Staff, Direct Testimony filed February 7, 1984, Supplemental Testimony filed March 6, 1984, cross-examination March 15, 1984.

**Mississippi Public Service Commission**, *Notice of South Central Bell Telephone Company of its Intent to Revise its Rates for Intrastate Telephone Service throughout its Service Area in Mississippi, effective January 1, 1984*, Docket No. U-4415, on behalf of Mississippi Public Service Commission Staff, Direct Testimony filed January 24, 1984, cross-examination February 16, 1984.

## 1983

**Minnesota Public Utilities Commission**, *Petition of Northwestern Bell Telephone Company, Minneapolis Minnesota for Authority to Change its Schedule of Telephone Rates for Customers within the State of Minnesota*, Docket No. P-421-GR-83-600, on behalf of Minnesota Business Utility Users Council, Direct Testimony filed December 21, 1983, cross-examination January 27, 1984.

**New York Public Service Commission**, *New York Telephone*, Case No. 28601, on behalf of County of Suffolk, Town of Hempstead, Town Supervisors Association of Suffolk County, Direct Testimony filed December 14, 1983, Rebuttal Testimony filed January 1, 1984, Surrebuttal Testimony January 18, 1984, Rebuttal Testimony filed January 1, 1984.

**New York Public Service Commission**, *Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of New York Telephone Company*, Case No. 28601, on behalf of ABC, Inc., CBS, Inc., General Electric, Mobil Corporation, Direct Testimony filed December 14, 1983.

**Oregon Public Utilities Commission**, *Revised Tariff Schedules for Telephone Service in the State of Oregon Filed by Pacific Northwest Bell*, Docket No. UT-9, on behalf of Telephone Ratepayers for Cost-based Equitable Rates (TRACER), Direct Testimony filed October 27, 1983, Surrebuttal Testimony filed November 28, 1983.

**Kentucky Public Service Commission**, *Notice of South Central Bell of an Adjustment in its Intrastate Rates and Charges*, Docket No. 8847, on behalf of Kentucky Public Service Commission Staff, filed October 25, 1983.

**Indiana Public Service Commission**, *Petition of Indiana Bell: I. to Report Restructuring II. for Changes and Adjustment in its Rates, Tolls, Changes and Schedules for Telephone Service, Including Basic Exchange Service, III. Intrastate Wide Area Telephone Service and Message Toll Telephone Service, IV. Private Line Services and Channels and Certain Other Dedicated Facilities in Accordance with the Proposed Schedules Filed Herewith; and V. Establishment of Appropriate Intrastate Access Charges*, Cause No. 37200, on behalf of Utility Consumer Counselor. Direct Testimony filed October 21, 1983.

**Texas Public Utilities Commission**, *Petition of Texas PUC for Inquiry Concerning the Effects of the Modified Final Judgement and the Access Charge order upon Southwestern Bell and the Independent Companies of Texas*, Docket No. 5113; *Application of Southwestern Bell for Authority to Increase Rates*, Docket No. 5220, on behalf of Texas Retailers Association, Direct Testimony filed October 11, 1983.

**Pennsylvania Public Utilities Commission**, *Pennsylvania Public Utility Commission v. The Bell Telephone Company of Pennsylvania*, Docket No. R-832316, on behalf of Bethlehem Steel Corporation, Jones and Laughlin Steel Corporation, Lehigh University, PPG Industries Inc, Pennsylvania Retailers Association, Penn State University, Pomeroy's Department. Store, Scott Paper Company, Temple University of the Commonwealth System of Higher Education, U.S. Steel Corporation, Westinghouse Electric Corporation, Direct Testimony filed August 12, 1983, cross-examination September 1, 1983.

**Michigan Public Service Commission**, *Application of Michigan Bell for Authority to Revise its Schedule of Rates and Charges*, Docket No. U-7473, on behalf of the Association of Businesses Advocating Tariff Equity, Direct Testimony filed July 18, 1983, cross-examination August 17, 1983.

**Minnesota Public Utilities Commission**, *Investigation into Intrastate Access Charges of Twenty-Three Telephone Companies Operating in Minnesota*, Docket No. PUC-83-102-HC, on behalf of Minnesota Business Utility Users Council, filed on July 17, 1983.

**California Public Utilities Commission**, *Application of Pacific Telephone for Authority to Increase Certain Intrastate Rates and Charges Applicable to Telephone Services Furnished with the State of California due to Increased Depreciation Rates*, Application No. 82-11-07; *Application of Pacific Telephone for Authority to Increase Certain Intrastate Rates and Charges Applicable to Telephone Services Furnished with the State of California*, Application No. 83-01-22, on behalf of ABC, Inc., CBS, Inc., California Bankers Association, Telecommunications Association, Direct Testimony filed May 13, 1983, October 21, 1983.

**Kentucky Public Service Commission**, *Inquiry into the Resale of Intrastate- Wide Area Telecommunication Service*, Docket No. 261, on behalf of Commonwealth of Kentucky, Direct Testimony filed May, 1983, cross-examination May 17, 1983.

**Colorado Public Utilities Commission**, *Investigation and Suspension of Proposed Changes in Tariff-CO PUC #5-Telephone, Mountain. State Telephone and Telegraph Company, Denver, Colorado*, Docket No. 1575, on behalf of Colorado Retail Council, Colorado State Agencies, Direct Testimony Direct Testimony filed April 18, 1983, cross-examination May 18, 1983.

**Florida Public Service Commission**, *Petition of Southern Bell Telephone and Telegraph Company for an Increase in its Rates and Charges*, 820294-TP, on behalf of Florida Department of General Services, Florida Ad Hoc Telecommunications Users Committee, Direct Testimony filed March 21, 1983

**Alabama Public Service Commission**, *Resale of WATS and Toll Services*, Docket Nos. 18548, 18617, on behalf of the State of Alabama, Direct Testimony filed February 28, 1983.

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**Washington Utilities and Transportation Commission**, *Washington Utilities and Transportation Commission v. Pacific Northwest Bell Telephone Company*, Docket No. U-82-19, on behalf of Tele-Communications Association, Direct Testimony filed November 10, 1982.

**Maryland Public Service Commission**, *Application of the Chesapeake and Potomac Telephone Company of Maryland for Authority to Increase and Restructure its Schedule of Rates and Charges*, Case No. 7661, on behalf of Maryland Industrial Group, Direct Testimony filed November 9, 1982.

**New York Public Service Commission**, *Proceeding on Motion of the Commission as to the Rates, Charges, and Regulations of New York Telephone*, Case No. 28264, on behalf of Suffolk County, Direct Testimony filed November 4, 1982, Rebuttal Testimony filed November 29, 1982.

**New York Public Service Commission**, *Proceeding on Motion of the Commission as to the Rates, Charges, and Regulations of New York Telephone*, Case No. 28264, on behalf of ABC, Inc., CBS, Inc., General Electric Company, and Mobil Corporation, Direct Testimony filed November 4, 1982, Rebuttal Testimony filed November 29, 1982.

**Minnesota Public Utilities Commission**, *Petition of Northwestern Bell, Minneapolis, Minnesota, for Authority to Change its Schedule of Rates*, Docket No. P-421/GR-79-388 (Remand), on behalf of Minnesota Department of Public Services, Direct Testimony filed October 5, 1982, Surrebuttal Testimony filed December 9, 1982, cross-examination January 19, 1983.

**Texas Public Utilities Commission**, *Petition of Southwestern Bell Telephone Company for Authority to Change Rates*, Docket No. 4545, on behalf of Texas Retailers Association, State Purchasing and General Services Commission, Direct Testimony filed August 25, 1982, Supplemental Testimony filed October 18, 1982.

**Massachusetts Department Public Utilities**, *New England Telephone and Telegraph Company Rates and Charges for Private Line Telephone Service*, Docket No. 1117 on behalf of Massachusetts Ad Hoc Committee of Telecommunication Users, Brigham and Women's Hospital, Children's Hospital Medical Center, Harvard School of Public Health, Harvard Medical School, Harvard School of Dentistry, Honeywell Corporation, Joslin Diabetes Foundation, Inc., Massachusetts College of Pharmacy and Allied Health Professionals, Medical Area Service Company, New England Deaconess Hospital, Polaroid Corporation, Sidney Farber Cancer Institute, Direct Testimony filed August 20, 1982, Surrebuttal Testimony filed October 4, 1982.

**Kentucky Public Service Commission**, *Notice of South Central Bell Telephone Company of Changes in its Intrastate Rates and Charges for Services and Increased Revenue Authority*, Docket No. 8467, on behalf of the Commonwealth of Kentucky, Direct Testimony filed July 26, 1982.

**Federal Communication Commission**, *AT&T vs. USA*, on behalf of Ad Hoc Telecommunications Users Committee, filed June 14, 1982.

*Record of Expert Testimony – Dr. Lee L. Selwyn*

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**California Public Utilities Commission**, *Applications of the Pacific Telephone and Telegraph Company for authority to increase certain intrastate rates and charges applicable to telephone services furnished within the State of California*, Application Nos. 59849, 59269, on behalf of Telephone Answering Services of California, Inc., and Tele-Communications Association, Direct Testimony filed January 25, 1982, cross-examination February 9-10, 1982.

**Iowa State Commerce Commission**, *Northwestern Bell Telephone Company, Des Moines, Iowa*, Docket No. RPU-81-40, on behalf of Meredith Corporation, Deere and Company, Hawkeye Security Insurance Company, Direct Testimony filed January 8, 1982.

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**Maryland Public Service Commission**, *Application of the Chesapeake and Potomac Telephone Company of Maryland for Authority to Increase and Restructure its Schedule of Rates and Charges*, Case No. 7591, on behalf of City of Baltimore, Equitable Trust Company, First National Bank of Maryland, Maryland Industrial Group, Maryland National Bank, Mercantile-Safe Deposit and Trust Company, Suburban Trust Company, Direct Testimony filed December 18, 1981, cross-examination January 11, 1982.

**Illinois Commerce Commission**, *Illinois Bell Telephone Company*, Docket No. 81-0478, on behalf of Communication Users of Illinois, Direct Testimony filed November, 1981, cross-examination January 6, 1982.

**New York Public Service Commission**, *Proceeding of the Commission as to the rates, charges, rules and regulations of New York Telephone Company*, Case No. 27995, on behalf of ABC, Inc., CBS, Inc., General Electric Company, Mobil Corporation, Direct Testimony filed September 28, 1981, Surrebuttal Testimony filed October 13, 1981, cross-examination October 21, 1981, November 4, 1981.

**New York Public Service Commission**, *Proceeding of the Commission as to the rates, charges, rules and regulations of New York Telephone Company*, Case No. 27995, on behalf of Nassau County Suffolk County, Direct Testimony filed September 17, 1981, Surrebuttal Testimony filed October 13, 1981, cross-examination October 21, 1981, November 4, 1981.

**Texas Public Utilities Commission**, *Petition of Southwestern Bell Telephone Company for Authority to Change Rates*, Docket No. 3920, on behalf of Texas Retailers Association, State Purchasing and General Service Commission, Direct Testimony filed August 14, 1981, cross-examination October 1, 1981.

**Iowa State Commerce Commission**, *Rules Regarding Telephone Utilities Chapter 250-22 Iowa Administrative Code*, Docket No. RMU-81-4, on behalf of AID Insurance, Deere & Company, Dubuque Telegraph & Herald, Farmers Grain and Livestock, Fisher Controls Company, Hawkeye-Security Insurance Company, Meredith Corporation, Polk County, Quad City Times, Sioux City Journal, State of Iowa, Comments filed August 14, 1981.

**Maryland Public Service Commission**, *Application of the Chesapeake and Potomac Telephone Company of Maryland to establish appropriate principles for the pricing of competitive telephone services*, Case No. 7435, on behalf of Maryland Independent Group, Direct Testimony filed July 14, 1981, cross-examination October 20, 1981.

**Florida Public Service Commission**, *Petition of Southern Bell Telephone and Telegraph Company to place into effect certain new rates and charges pursuant to Section 364.05, Florida Statutes*, Docket No. 810035-TP, on behalf of Florida Ad Hoc Committee of Telecommunication Users, Direct Testimony filed June 22, 1981, Direct Supplemental June 30, 1981, cross-examination October 16, 1981.

**United States Senate**, Committee on the Judiciary, 97<sup>th</sup> Congress, *Hearings on the Monopolization and Competition in the Telecommunications Industry*, Oral Statement July 24, 1981.

**Iowa State Commerce Commission**, *Northwestern Bell Telephone Company, Des Moines, Iowa*, Docket No. RPU-80-40, on behalf of Aid Insurance, Deere and Company, Dubuque Telegraph and Herald, Farmers Grain and Livestock, Fisher Controls Company, Hawkeye Security Insurance, Meredith Corporation, Polk County, Quad City Times, Sioux City Journal, State of Iowa, Direct Testimony filed June 1, 1981, Surrebuttal Testimony filed October 7, 1981, cross-examination July 17, 1981.

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**Ohio Public Utilities Commission**, *Application of Cincinnati Bell Inc. for Authority to Adjust its Rates and Charges and to Change its Tariffs*, Docket No. 80-476-TP-AIR, on behalf of Tri-State Telecommunication Association, Direct Testimony filed March 27, 1981, cross-examination May 14, 1981.

**Utah Public Service Commission**, *Application of the Mountain States Telephone and Telegraph Company for Approval of an Increase in Rates and Associated Tariff Revisions*, Docket No. 80-049-01, on behalf of State of Utah Department of Finance, University of Utah, Utah State University, Weber State College, Brigham Young University, Direct Testimony filed March 6, 1981, Surrebuttal Testimony filed June 29, 1981, cross-examination April 9, 1981.

**California Public Utilities Commission**, *Applications of the Pacific Telephone and Telegraph Company for authority to increase certain intrastate rates and charges applicable to telephone services furnished within the State of California*, Application No. 59849, on behalf of ABC, Inc., CBS, Inc., California Retailers Association, Telecommunications Association, Direct Testimony filed January 26, 1981, cross-examination March 11-12, 1981.

**Maine Public Utilities Commission**, *New England Telephone and Telegraph Company Proposed Increase in Rates*, Docket No. 80-142, on behalf of State of Maine Department of Finance and Administration, Direct Testimony filed January 8, 1981, cross-examination March 15-16, 1981.

**1980**

**Maine Public Utilities Commission**, *New England Telephone and Telegraph Company Proposed Increase in Rates*, Docket No. 80-142, on behalf of Casco Bank and Trust Company, Direct Testimony filed December 22, 1980, Supplemental Testimony filed January 8, 1981, cross-examination March 15-16, 1981.

**Massachusetts Department of Public Utilities**, *Investigation by the Department on its own motion as to the propriety of the rates and charges filed by the new England Telephone and Telegraph Company on October 4, 1980*, Docket No. 411, on behalf of Massachusetts Ad Hoc Committee of Telecommunication Users, Direct Testimony filed December 15, 1980, Surrebuttal Testimony filed February 2, 1981.

**Arizona Corporation Commission**, *Determine the Earnings of the Company and the Valuation of all of the Company's Properties and a Fair Rate of Return Thereon*, Docket No. 9981-E-1051, on behalf of Telecommunications Association, Sears, Roebuck and Company, Direct Testimony filed December 10, 1980, June 17, 1981, cross-examination December 17, 1980.

**Pennsylvania Public Utilities Commission**, *Pennsylvania Bell*, Docket No. R-80061235, on behalf of Business Users Group, Direct Testimony filed December 5, 1980, cross-examination December 16, 1980.

**Missouri Public Service Commission**, *Filing by Southwestern Bell Telephone Company of New Intrastate Rates, Tolls, and Charges Applicable to Intrastate Telecommunication Services Furnished Within the State of Missouri*, Docket No. TR-80-256, on behalf of Missouri Retailers Association, Missouri Hotel and Motel Association, Armco, Inc., Direct Testimony filed October 31, 1980.

**Minnesota Public Utilities Commission**, *Petition of Northwestern Bell Telephone Company Minneapolis Minnesota for Authority to Change its Schedule of Private Line Telephone Rates for Customers within the state of Minnesota*, Docket No. P-421/M-80-306, on behalf of Minnesota Department of Public Services, Direct Testimony filed October 31, 1980, Surrebuttal Testimony filed December 10, 1980, cross-examination December 18, 1980.

**Indiana Public Service Commission**, *Petition of Indiana Bell for approval of changes and adjustments in rates,, and a proposal for measured telephone service*, Cause No. 36105, on behalf of Indiana Retail Council, Direct Testimony filed October 10, 1980, cross-examination October 27, 1980.

**Massachusetts Department of Public Utilities**, *Request for interim rate relief by New England Telephone and Telegraph Company*, Docket No. 380, on behalf of Massachusetts Ad Hoc Committee of Telecommunications Users, Direct Testimony filed October 3, 1980, cross-examination October 8, 1980.

**Texas Public Utilities Commission**, *Application of Southwestern Bell Telephone Company for Authority to Change Rates Statewide*, Docket No. 3340, on behalf of Texas Retailers Association State Purchasing and General Services Commission, Direct Testimony filed September 9, 1980, cross-examination October 20, 1980.

**Alabama Public Service Commission**, *Application of South Central Bell Telephone Company for a Rate Change*, Rehearing Docket No. 17743, on behalf of Attorney General of Alabama, Direct Testimony filed September 1980, cross-examination January 21, 1981.

**Illinois Commerce Commission**, *Illinois Bell Telephone Company*, Docket No. 80-0010, on behalf of Illinois Retail Merchants Association, Direct Testimony filed July 1980, cross-examination, July 28, 1980.

**New York Public Service Commission**, *Proceeding on motion of the Commission as to the rates, charges, rules and regulations of the New York Telephone Company for telephone service*, Case No. 27710, on behalf of ABC, Inc., General Electric Company, New York State Council of Retail Merchants, Direct Testimony filed July 9, 1980, Rebuttal Testimony filed August 4, 1980, cross-examination July 24, 1980.

**Texas Public Utilities Commission**, *Inquiry by the Public Utility Commission of Texas into Certain Cost Studies of Southwestern Bell Telephone Company*, Docket No. 2944, on behalf of Texas Retailers Association, Texas Alarm and Signal Association, Direct Testimony filed June 23, 1980.

**Texas Public Utilities Commission**, *Petition of Mountain States Telephone and Telegraph Company for Authority to Change Rates*, Docket No. 3040, on behalf of Texas Retailers Association, Direct Testimony filed March 31, 1980, cross-examination May 28-29, 1980.

**Ohio Public Utilities Commission**, *Complaint of the Ohio Bell Telephone Company Concerning Certain of its Filed Rates and Charges*, Docket No. 79-1185-TP SLF, on behalf of Ohio Council of Retail Merchants, Armco, Inc., General Electric Company, Direct Testimony filed March 17, 1980, cross-examination March 26, 1980.

**Michigan Public Service Commission**, *Application of Michigan Bell Telephone Company for authority to file Tariff MPSC No. 80 to provide for the offering of Republican National Convention Service and for the authority to withdraw Tariff MPSC No. 80 on or before October 1, 1980*, Docket No. U-6327, on behalf of Committee of Arrangement of the Republican National Convention, ABC, Inc., CBS, Inc., NBC, Inc., Direct Testimony filed January 25, 1980.

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**Louisiana Public Services Commission**, *Application of South Central Bell Telephone Company of Louisiana for authority to restructure and reprice its private line service rates*, Docket No. U-14252, on behalf of Alarm Association of Louisiana, Direct Testimony filed December 24, 1979, cross-examination January 17, 1980.

**Arizona Corporation Commission**, *Mountain States Telephone and Telegraph Company*, Docket No. 9981-E-1051, on behalf of Sears, Roebuck and Company, filed December 7, 1979, cross-examination March 16, 1980.

**Minnesota Public Service Commission**, *Petition of Northwestern Bell Telephone Company Minneapolis Minnesota for Authority to Change its Schedule of Telephone Rates for Customers within the state of Minnesota*, Docket No. P-421/GR-79-388 (Rate Design), on behalf of Participating Department Staff of the Minnesota Department of Public Services, Direct Testimony filed August 28, 1979.

**Texas Public Utilities Commission**, *Application of Southwestern Bell Telephone Company for a Statewide Rate Increase*, Docket No. 2673, on behalf of Texas Retailers Association, Direct Testimony filed August 27, 1979, cross-examination September 19, 1979.

**Minnesota Public Service Commission**, *Petition of Northwestern Bell Telephone Company Minneapolis Minnesota for Authority to Change its Schedule of Telephone Rates for Customers within the state of Minnesota*, Docket No. P-421/GR-79-388 (Business Information Systems), on behalf of Participating Department Staff of the Minnesota Department of Public Services, Direct Testimony filed August 24, 1979, Surrebuttal Testimony filed October 10, 1979, cross-examination September 12, 1979.

**Maryland Public Service Commission**, *Application of the Chesapeake and Potomac Telephone Company of Maryland for Authority to increase and restructure its schedule of rates and charges*, Case Nos. 7305/7335, on behalf of Banking and Savings Institute, Mayor and City Council of Baltimore, Hospital Association, Maryland Industrial Business Group, Maryland Association of Realtors, Greater Balto Board of Realtors, Montgomery, Anne, Arundel Harford, Howard, Prince George's County Board of Realtors Inc., Direct Testimony filed August 20, 1979, cross-examination September 4, 1979.

**Pennsylvania Public Utilities Commission**, *Pennsylvania Public Utility Commission et al v. The Bell Telephone Company of Pennsylvania*, Docket No. 719, on behalf of Pennsylvania Retailers Association, et al., General Electric Company, Westinghouse Electric Corporation, Manufacturers Association of Beaver County, Bethlehem Steel Corporation, Statement filed June 15, 1979, cross-examination June 21, 1979.

**New York Public Service Commission**, *Proceeding on motion of the Commission as to the rates, charges, rules, and regulations of the New York Telephone Company for telephone service*, Case No. 27469, on behalf of CBS, Inc., ABC, Inc., General Electric Company, New York State Council of Retail Merchants, Direct Testimony filed May 1, 1979, Rebuttal Testimony filed May 22, 1979, Surrebuttal Testimony filed June 6, 1979, cross-examination May 18, 1979, June 4 and 12, 1979.

**Michigan Public Service Commission**, *Application of Michigan Bell Telephone Company for authority to revise its tariff MPSC No.2 to provide for the offering of the Dimension 100 PBX System, Dimension 2000 PBX System, Dimension 100 PBX Service, Dimension 400 PBX Service, and Dimension 2000 PBX Service*, Docket Nos. U-5197, U-5330, U-4742, U-5753, U-5754, on behalf of Michigan Telephone Users Committee, Direct Testimony filed March 2, 1979.

**Pennsylvania Public Utilities Commission**, *Pennsylvania Public Utility Commission et al v. The Bell Telephone Company of Pennsylvania*, Docket No. 719, on behalf of Pennsylvania Retailers Association, et. al., General Electric Company, Westinghouse Electric Corporation, filed March 1, 1979, cross-examination March 1, 1979.

## 1978

**California Public Utilities Commission**, *Application of the Pacific Telephone and Telegraph Company for authority to increase certain intrastate rates and charges applicable to telephone services furnished within the State of California*, Application No. 58223, on behalf of California Retailers Association, Direct Testimony filed November 20, 1978, cross-examination December 12, 1979.

**Federal Communications Commission**, *American Telephone and Telegraph Company, Revisions to Tariff FCC Nos. 258 and 267, Transmittal No. 12478, Revisions to Tariff FCC No. 268, Transmittal No. 12500, Revisions to Tariff FCC No. 267, Transmittal No. 12853*, Docket No. 20690, on behalf of Hearing Division of the Common Carrier Bureau, filed November 6, 1978, cross-examination January 29-31, 1979.

**Virginia State Corporation Commission**, *Application of Chesapeake and Potomac Telephone Company of Virginia for authority to withdraw one-party business flat rate service, to time all message rates services, and to freeze offering of multi-party business service*, Docket No. 19994, on behalf of Virginia Business Committee for Equitable Telephone Rates, et. al, Direct Testimony filed October 16, 1978, cross-examination January 11, 1979.



**Oregon Public Utilities Commission**, *Revised Centrex Service Tariff Filed by Pacific Northwest Bell Telephone Company (on the Commissioner's Own Motion)*, Docket No. UF 3342; *Introduction of ESSX Telephone Service Schedules and the Elimination of New Centrex-CO Service Filed by Pacific Northwest Bell Telephone Company (on the Commissioner's Own Motion)*, Docket No. UF 3343, on behalf of General Electric Company, Georgia Pacific Company, Preliminary Direct filed December 2, 1977, Supplemental Direct filed September 22, 1978, cross-examination October 19, 1978.

**New York Public Service Commission**, *Proceeding on motion of the Commission as to the rates, charges, rules and regulations of the New York Telephone Company for telephone service.*, Case No. 27350, on behalf of ABC., Inc., CBS, Inc., General Electric Company, New York State Council of Retail Merchants, Direct Testimony filed September 8, 1978, cross-examination September 26, 1978.

**New Jersey Department of Energy**, *Petitions of New Jersey Telephone Company for Approval of Increases in Rates for Telephone Services*, Docket Nos. 7711-1136, 784-278, 784-279, on behalf of New Jersey Retail Merchants Association, Direct Testimony filed August 10, 1978.

**Federal Communications Commission**, *AT&T Charges for Private Line Services Revision of Tariff FCC No. 260 (Series 2000/3000)*, Docket No. 20814, on behalf of Ad Hoc Telecommunications Users Committee, Direct Testimony filed July 10, 1978, cross-examination August 25, 1978.

**California Public Utilities Commission**, *Investigation on the Commission's own motion into the rates, tariffs, costs, and practices of Centrex service by any or all of the telephone corporations listed in the investigation*, Application No. 10191, on behalf of California Retailers Association, California Manufacturers Association, Direct Testimony filed July 8, 1977, cross-examination July 26-27, 1977; Supplemental Direct Testimony filed February 1, 1978, cross-examination February 9, 1978; Second Supplemental Direct Testimony filed June 19, 1978, cross-examination October 24 and 26, 1978.

**Illinois Commerce Commission**, *Illinois Bell Telephone Company Proposed general increase in telephone rates applicable in all exchanges of the Company in Illinois*, Docket No. 78-0034, on behalf of Illinois Retail Merchants Association, Direct Testimony filed June 9, 1978, cross-examination July 10, 1978.

**Minnesota Public Service Commission**, *Petition of Northwestern Bell Telephone for Authority to Change Certain of its Rates for the Telephone Service Furnished to Customers in the State of Minnesota*, Docket No. P-421/GR-77-1509, on behalf of Participating Department Staff of the Minnesota Department of Public Services, Direct Testimony filed June 2, 1978, Supplemental Direct Testimony filed July 17, 1978, cross-examination June 20, 1978, July 27, 1978.

**Michigan Public Service Commission**, *Application of Michigan Bell Telephone Company for Authority to Revise its Tariff MPSC Nos. 1, 3, and 5*, Docket No. U-5719, on behalf of Michigan Business Telecommunication Users Committee, Direct Testimony filed May 22, 1978, cross-examination June 1, 1978.

**Texas Public Service Commission**, *Application of Southwestern Bell Telephone Company for a Statewide Rate Increase*, Docket No. 1704, on behalf of Texas Retailers Association, Direct Testimony filed May 12, 1978, cross-examination June 2, 1978.

**Washington Utilities and Transportation Commission**, *Washington Utilities and Transportation Commission v. Pacific Northwest Bell Telephone Company*, Docket No. U-77-50 U-77-51 U-77-52, on behalf of The Boeing Company, Sears, Roebuck and Company, Direct Testimony filed April 14, 1978, cross-examination April 25, 1978.

**Illinois Commerce Commission**, *Illinois Bell Telephone Company Proposed rates and regulations for Direct Inward Dialing Service for the Company-owned or Customer-provided PBX dial switchboards, applicable to all exchanges of the Company*, Docket No. 77-0511, on behalf of Spiegel, Inc., Sears, Roebuck and Company, Carle Foundation Hospital, Brunswick Corporation, Lord, Bessell & Brook, Direct Testimony filed March 23, 1978, cross-examination April 5, 1978.

**Federal Communications Commission**, *American Telephone and Telegraph Company (Long Lines Department), Wide Area Telecommunications Services (WATS)*, Docket No. 21402, on behalf of National Retail Merchants Association, filed January 17, 1978.

## 1977

**Oregon Public Utilities Commission**, *Revised Centrex Service Tariff Filed by Pacific Northwest Bell Telephone Company (on the Commissioner's Own Motion)*, Docket No. UF 3342, on behalf of General Electric Company, Georgia Pacific Company, filed November 30, 1977, cross-examination December 2, 1977.

**Michigan Public Service Commission**, *Application of Michigan Bell Telephone Company for Authority to Revise its Schedule of Rates and Charges*, Docket No. U-5125 - Reopening, on behalf of Michigan Business Telephone Users Committee, Direct Testimony filed October 17, 1977.

**Nevada Public Service Commission**, *Nevada Bell Telephone Company*, Docket No. 1180, on behalf of J C Penney, Direct Testimony filed October, 1977, cross-examination October 6, 1977.

**Pennsylvania Public Utilities Commission**, *Westinghouse Electric Corporation, Pennsylvania Retailers' Association et al; The Pennsylvania State University v. The Bell Telephone Company of Pennsylvania*, Docket Nos. 22188, 22185, 22184, on behalf of Westinghouse Electric Corporation, Pennsylvania Retailers Association, et. al., Pennsylvania State University, Direct Testimony filed June 20, 1977, cross-examination July 6, 1978.

**New York Public Service Commission**, *New York Telephone Company- Optional Single Message Unit Timing*, Case No. 27079; *Terminal Equipment and Intrastate Toll Rates*, Case No. 27089; *Telephone Rates*, Case No. 27100, on behalf of New York State Council of Retail Merchants, Direct Testimony filed May 16, 1977, cross-examination June 7, 1977, Rebuttal Testimony filed July 15, 1977, cross-examination July 20, 1977.

**Indiana Public Service Commission**, *Indiana Bell Telephone Company*, Cause No. 34809, on behalf of Indiana Retail Council, Direct Testimony filed May 2, 1977, cross-examination May 9, 1977.

**Florida Public Service Commission**, *Petition of Southern Bell Telephone and Telegraph Company for Consent to Place into Effect Certain Rate Schedules*, Docket No. 760842-TP, on behalf of General Services Administration, filed March 21, 1977, cross-examination May 18-19, 1977.

**Maryland Public Service Commission**, *Application of the Chesapeake and Potomac Telephone Company of Maryland for authority to increase and restructure its schedule of rates and charges*, Case No. 7025, on behalf of Retail Merchants Association of Baltimore, Inc., Direct Testimony filed March 7, 1977, cross-examination March 16, 1977.

**Missouri Public Service Commission**, *Cost of Service Study of Southwestern Bell Telephone Company*, Docket No. 18309, on behalf of Missouri Retailers Association, filed February 16, 1977, cross-examination March 9, 1977.

**Illinois Commerce Commission**, *Illinois Bell Telephone Company Proposed general increase in telephone rates applicable to all exchanges of the Company in Illinois*, Docket No. 76-0409, on behalf of Illinois Retail Merchants Association, Direct Testimony filed January 1977, cross-examination January 30, 1977.

## 1976

**Texas Public Utilities Commission**, *Application of Southwestern Bell Telephone Company for Statewide Rate Increase*, Docket No. 78, on behalf of Texas Retail Federation, Direct Testimony filed October 26, 1976, cross-examination November 17-18, 1976.

**California Public Service Commission**, *Application of the Pacific Telephone and Telegraph Company, a corporation, for telephone service rate increases to cover increased costs in providing telephone service*, Application No. 55492, on behalf of California Retailers Association, California Manufacturers Association, Direct Testimony filed October 11, 1976, cross-examination October 27, 1976.

**Michigan Public Service Commission**, *Application of Michigan Bell Telephone Company for Authority to Revise its Schedule of Rates and Charges*, Docket No. U-5125, on behalf of Michigan Business Telephone Users Committee, Direct Testimony filed October 11, 1976, cross-examination November 4-5, 1976.

**Illinois Commerce Commission**, *Illinois Bell Telephone Company Proposed rate increase for Private Line and Mileage Services, revisions and increases for Telephone Answering Service Equipment and Services applicable to all exchanges of the company in Illinois*, Docket No. 76-0200, on behalf of Illinois Retail Merchants Association, Direct Testimony filed October 1976, cross-examination November 10, 1976.

**Missouri Public Service Commission**, *Southwestern Bell Telephone Company of St. Louis Missouri for authority to file tariffs reflecting an increase in rates for telephone service provided to customers in the Missouri service area of the Company*, Docket Nos. 18660, 18661, on behalf of Missouri Retailers Association, Direct Testimony filed September 1, 1976, cross-examination October 14, 1976.

**New Jersey Public Utilities Commission**, *Petition Filed by New Jersey Bell Telephone Company Increasing its Rates, Message Toll Rates and Charges for Certain Items of Equipment, Facilities, and Service in the State of New Jersey*, Docket No. 7512-1251, on behalf of New Jersey Retail Merchants Association, Direct Testimony filed May 17, 1976, cross-examination June 16, 1976.

**Minnesota Public Utilities Commission, Office of Administrative Hearings**, *Petition of Northwestern Bell Telephone Company for an Increase in Rates for Telephone Service in the State of Minnesota*, Hearing Docket No. PSC-76-013-BS, Agency Docket No. P-421/GR-75-496 (U-75-496), on behalf of Minnesota Retail Federation, Direct Testimony filed May 3, 1976, cross-examination May 17, 1976.

**Ohio Public Service Commission**, *Application of the Ohio Bell Telephone Company for authority to increase and adjust its Rates and Charges and to Change Regulations and Practices Affecting its Rates and Charges in each of its Duly Filed Intrastate Tariffs*, Docket No. 74-761-TP-AIR, on behalf of Ohio Counsel of Retail Merchants, Direct Testimony filed March 5, 1976, cross-examination March 18, 1976.

## 1975

**Florida Public Service Commission**, *Petition of Central Telephone Company of Florida and Florida Central Telephone Company for Authority to Increase their Rates and Charges to Rates and Charges that are Fair and Reasonable*, Docket No. 750320-TP, on behalf of State of Florida, Direct Testimony filed November 21, 1975, cross-examination December 17, 1975.

**New Mexico State Corporation Commission**, *Mountain States Telephone and Telegraph Company*, Docket No. 673, on behalf of New Mexico Retail Association, Direct Testimony filed October 30, 1975, cross-examination November 3-4, 1975.

**North Carolina Utilities Commission**, *Application of Southern Bell Telephone and Telegraph Company for Authority to Increase its Local Exchange Rates and Charges Throughout its Franchised Areas in North Carolina*, Docket No. P-55 Sub 742, on behalf of North Carolina Retail Merchants Association, Direct Testimony filed September 23, 1975, cross-examination October 16, 1975.

**Illinois Commerce Commission**, *Illinois Bell Telephone Company proposed general increases in telephone rates applicable to all exchanges of the company in Illinois*, Docket No. 59666, on behalf of Illinois Retail Merchants Association, Direct Testimony filed September 10, 1975, cross-examination September 29-30, 1975.

**Oklahoma Corporation Commission** *Application of Southwestern Bell Telephone Company to Establish New Intrastate Rates, Tolls and Charges Applicable to Certain Intrastate Telephone and Telecommunications Services Furnished within the State of Oklahoma and to Authorize Directory Assistance Charges*, Docket No. 25444, on behalf of Oklahoma Retailer Merchants Association, Direct Testimony filed August 20, 1975, cross-examination waived.

**Florida Public Service Commission**, *Petition of Southern Bell Telephone and Telegraph Company under Section 364.05, Florida Statutes for Consent to Place in Effect Certain New Rate Schedules*, Docket No. 74805-TP, on behalf of Florida Retail Federation, Direct Testimony filed July 11, 1975, July 18, 1975, cross-examination June 30, 1975, July 29, 1975, October 8, 1975.

**Florida Public Service Commission**, *Petition of General Telephone Company of Florida under Section 364.05, Florida Statutes, that Consent be Given to the Placing in Effect of the New Rate Scheduled filed herewith to Accomplish an Increase in the Rates and Charges for Intrastate Telephone Services Rendered by Said Company to the Level of Reasonable Compensation for such Services and in the Alternative for Partial Relief on an Interim Basis*, Docket No.74792-TP , on behalf of Florida Retail Federation, Direct Testimony filed June 18, 1975, July 18, 1975, cross-examination June 30, 1975, July 29, 1975.

**Massachusetts Department of Public Utilities**, *Investigation by the Department on its own motion as to the Propriety of the Rates and Charges set forth in Revised Pages of its Tariffs Filed by the New England Telephone and Telegraph Company*, Docket No. 18210, on behalf of The Foxboro Company, Sears, Roebuck and Company, Jordan Marsh Company, Position Paper submitted May 29, 1975, Direct Testimony filed July 18, 1975, cross-examination August 29, 1975.

**Arizona Corporation Commission**, *Request of Mountain States Telephone and Telegraph Company for the Commission to Determine the Earnings of the Company and the Valuation of all of the Company's Properties and a Fair Rate of Return.*, Docket No. 9981-E-1051, on behalf of Sears, Roebuck and Company, J C Penney Company, Inc., Montgomery Ward and Company, Carter Hawley Hale Stores, Inc., Levy's, Direct Testimony filed February 11, 1975, cross-examination February 20, 1975.

**Missouri Public Service Commission**, *Filing by Southwestern Bell Telephone Company of New Intrastate Rates, Tolls, and Charges Applicable to Intrastate Telecommunication Services Furnished Within the state of Missouri*, Docket No. 18138, on behalf of Missouri Retailers Association, Direct Testimony filed January 21, 1975.

**1974**

**Colorado Public Utilities Commission**, *Mountain States Telephone and Telegraph Company*, Docket No. 867, on behalf of Sears, Roebuck and Company, J C Penney Company, Inc., filed November, 1974, cross-examination November 18, 1974.

**Georgia Public Service Commission**, *Application for an adjustment in the Scheduled of Rates and Charges for the Intrastate Service Furnished by Southern Bell Telephone and Telegraph Company of Georgia*, Docket No. 2632U, on behalf of Georgia Retailers Association, Direct Testimony filed October 2, 1974, cross-examination October 30, 1974.

**District of Columbia Public Service Commission**, *Complaint and Application of the Chesapeake and Potomac Telephone Company for Hearing and Investigation Regarding Its Current Level of Earnings and Level of Rates*, Docket No. 595, on behalf of General Services Administration and the District of Columbia Department of Highways and Traffic, Direct Testimony filed September 5, 1974, cross-examination September 12, 1974.

**Oklahoma Corporation Commission**, *Southwest General Telephone Company*, Docket No. 25048, on behalf of Oklahoma Retail Merchants Association, Direct Testimony filed February 18, 1974, cross-examination February 20, 1974.

### **1973**

**New Mexico State Corporation Commission**, *Application of Mountain States Telephone and Telegraph Company for an Adjustment in Rates and Charges for Intrastate Telephone Service Furnished by it Within the State of New Mexico*, Docket No. 567, on behalf of New Mexico Retailers Association, Direct Testimony filed October 3, 1973, cross-examination October, 1973.

**New Mexico State Corporation Commission**, *Review of General Telephone Company of the Southwest Proposed Rates and Tariff*, Docket No. 533; and *Complaint of JC Penney Company and Sears Roebuck and Company Re: General Telephone Company of the Southwest's General Exchange Tariff Section 40- Access Charge Service*, Docket No. 566, on behalf of J C Penney Company, Inc., Sears, Roebuck and Company, Direct Testimony filed July 25, 1973, Supplemental Direct Testimony filed December 19, 1973, cross-examination January 8, 1974.

**Attachment 2**

**"Arbitration Everywhere, Stacking the Deck of Justice"**  
*The New York Times, October 31, 2015*

**"In Arbitration, a Privatization of the Justice System"**  
*The New York Times, November 1, 2015.*



# DealB%k WITH FOUNDER ANDREW ROSS BORKIN

BEWARE THE FINE PRINT | PART I

## Arbitration Everywhere, Stacking the Deck of Justice

By JESSICA SILVER-GREENBERG and ROBERT GEBELOFF OCT. 31, 2015

On



Alan Carlson, a restaurant owner and chef, was involved in a 2003 class-action suit against American Express. A decade later, a Supreme Court ruling enabled American Express to prevent merchants

from bringing class actions. Jason Henry for The New York Times

Page 5 of a credit card contract used by American Express, beneath an explainer on interest rates and late fees, past the details about annual membership, is a clause that most customers probably miss. If cardholders have a problem with their account, American Express explains, the company “may elect to resolve any claim by individual arbitration.”

Those nine words are at the center of a far-reaching power play orchestrated by American corporations, an investigation by The New York Times has found.

By inserting individual arbitration clauses into a soaring number of consumer and employment contracts, companies like American Express devised [a way to circumvent the courts](#) and bar people from joining together in class-action lawsuits, realistically the only tool citizens have to fight illegal or deceitful business practices.

Over the last few years, it has become increasingly difficult to apply for a credit card, use a cellphone, get cable or Internet service, or shop online without agreeing to private arbitration. The same applies to getting a job, renting a car or placing a relative in a nursing home.

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## BEWARE THE FINE PRINT

*This is the first installment in a three-part series examining how clauses buried in tens of millions of contracts have deprived Americans of one of their most fundamental constitutional rights: their day in court.*

[Read Part II](#) | [Read Part III](#)

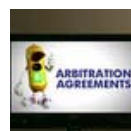
Among the class actions thrown out because of the clauses was one brought by

Time Warner customers over charges they said mysteriously appeared on their bills

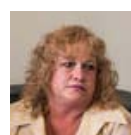
and another against a travel booking website accused of conspiring to fix hotel prices. A top executive at Goldman Sachs who sued on behalf of bankers claiming sex discrimination was also blocked, as were

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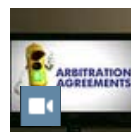
### RELATED COVERAGE



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[Beware the Fine Print](#) NOV. 1, 2015



African-American employees at Taco Bell restaurants who said they were denied promotions, forced to work the worst shifts and subjected to degrading comments.

Some state judges have called the class-action bans a “get out of jail free” card, because it is nearly impossible for one individual to take on a corporation with vast resources.

Patricia Rowe of Greenville, S.C., learned this firsthand when she initiated a class action against AT&T. Ms. Rowe, who was challenging a \$600 fee for canceling her phone service, was among more than 900 AT&T customers in three states who complained about excessive charges, state records show. When the case was thrown out last year, she was forced to give up and pay the \$600. Fighting AT&T on her own in arbitration, she said, would have cost far more.

By banning class actions, companies have essentially disabled consumer challenges to practices like predatory lending, wage theft and discrimination, court records show.

“This is among the most profound shifts in our legal history,” William G. Young, a federal judge in Boston who was appointed by President Ronald Reagan, said in an interview. “Ominously, business has a good chance of opting out of the legal system altogether and misbehaving without reproach.”

## What an Arbitration Clause Looks Like

American Express is one of a growing number of companies that include arbitration clauses in their consumer contracts. The section on arbitration can be found toward the end of the contract, which contains several thousand words of legal language.

**Member Agreement: Part 1 of 2** As of 08/08/2011

American Express® Green Card  
Issued: American Express Cardmember Bank

Fees Table	
<b>Annual Membership Fee</b>	\$55
<b>Transaction Fees</b>	2.3% of each transaction after connection to US debit.
<b>Penalty Fees</b>	<ul style="list-style-type: none"> <li>• Late Payment: Up to \$30. However, if your account does not have a Play Card™ Time Balance or Balance and you do not pay for late billing periods in time, your fee will be \$30 or 2.0% of the past due amount, whichever is greater.</li> <li>• Returned Payment: Up to \$30.</li> </ul>

**How Rates and Fees Work**

Penalty APR for new transactions	Penalty APR for existing balances
<ul style="list-style-type: none"> <li>• Penalty APR applies to new transactions if you do not pay the Minimum Payment Due by the Closing Date of the billing period (which is 25 days after the billing period is issued) by your bank.</li> <li>• If you do not pay the Minimum Payment Due by the Closing Date of the billing period, we will charge you the Penalty APR for new transactions during the billing period.</li> </ul>	<ul style="list-style-type: none"> <li>• Penalty APR for existing balances applies to the amount of any late payment you do not pay by the Closing Date of the billing period, or to the amount of any late payment you do not pay by the Closing Date of the billing period, or to the amount of any late payment you do not pay by the Closing Date of the billing period.</li> </ul>
<b>Annual Membership Fee</b>	<ul style="list-style-type: none"> <li>• This fee is the fee for the Green Card and is charged to your card on the first day of the billing period.</li> <li>• You may be charged this fee if you do not pay the Minimum Payment Due on your card by the Closing Date of the billing period.</li> <li>• Your fee will be \$55.</li> <li>• If you do not pay the Minimum Payment Due on your card by the Closing Date of the billing period, your fee will be \$55 or 2.0% of the past due amount, whichever is greater.</li> </ul>
<b>Late Payment</b>	<ul style="list-style-type: none"> <li>• Your fee will be \$30.</li> <li>• If you do not pay the Minimum Payment Due on your card by the Closing Date of the billing period, your fee will be \$30 or 2.0% of the past due amount, whichever is greater.</li> <li>• If you do not pay the Minimum Payment Due on your card by the Closing Date of the billing period, your fee will be \$30 or 2.0% of the past due amount, whichever is greater.</li> </ul>
<b>Returned Payment</b>	<ul style="list-style-type: none"> <li>• Up to \$30. However, if your account does not have a Play Card™ Time Balance or Balance and you do not pay for late billing periods in time, your fee will be \$30 or 2.0% of the past due amount, whichever is greater.</li> <li>• If you do not pay the Minimum Payment Due on your card by the Closing Date of the billing period, your fee will be \$30 or 2.0% of the past due amount, whichever is greater.</li> </ul>
<b>Account Reopening</b>	<ul style="list-style-type: none"> <li>• \$55. Your account is considered closed if you do not pay the Minimum Payment Due on your card by the Closing Date of the billing period.</li> <li>• If you do not pay the Minimum Payment Due on your card by the Closing Date of the billing period, your fee will be \$55 or 2.0% of the past due amount, whichever is greater.</li> </ul>
<b>Foreign Transaction</b>	<ul style="list-style-type: none"> <li>• 2.3% of the amount of the transaction in U.S. dollars.</li> <li>• If you do not pay the Minimum Payment Due on your card by the Closing Date of the billing period, your fee will be \$30 or 2.0% of the past due amount, whichever is greater.</li> </ul>

Part 1, Part 2 and any supplements or amendments make up your Member Agreement.

**Member Agreement: Part 2 of 2** As of 08/08/2011

**How Your American Express Account Works**

**Introduction**

**About your Cardmember**

**Changing the Agreement**

**What we use in the Agreement**

**About using your card**

**Using the card**

**Arbitration**

**Disputed transactions**

**How to Pay Over Time**

**How to pay**

**Declined transactions**

**How to Pay Over Time**

**How to pay**

**Declined transactions**

**How to Pay Over Time**

**About your payments**

**When you first pay**

Payment of the Minimum is due upon receipt of your statement of account. Payment of the Minimum is due on the 15th day of the month following the month in which you received the statement of account. Payment of the Minimum is due on the 15th day of the month following the month in which you received the statement of account.

**How to make payments**

Make payment to: **U.S. Dollar**

- Payment to the Minimum is due upon receipt of your statement of account.
- Payment to the Minimum is due on the 15th day of the month following the month in which you received the statement of account.
- Payment to the Minimum is due on the 15th day of the month following the month in which you received the statement of account.

**When we charge payments and credits**

Payments are made to the Minimum. Payment of the Minimum is due on the 15th day of the month following the month in which you received the statement of account.

**About your Minimum Payment Due**

The Minimum Payment Due is the amount you must pay to avoid late charges and penalties. Payment of the Minimum is due on the 15th day of the month following the month in which you received the statement of account.

**When we calculate interest**

Interest is calculated on the amount of your unpaid balance. Payment of the Minimum is due on the 15th day of the month following the month in which you received the statement of account.

**When we calculate interest**

Interest is calculated on the amount of your unpaid balance. Payment of the Minimum is due on the 15th day of the month following the month in which you received the statement of account.

**Other important information**

Other important information regarding your account. Payment of the Minimum is due on the 15th day of the month following the month in which you received the statement of account.

**Changing your card or billing address**

Changes to your card or billing address must be reported to us. Payment of the Minimum is due on the 15th day of the month following the month in which you received the statement of account.

**Changing your billing address**

Changes to your billing address must be reported to us. Payment of the Minimum is due on the 15th day of the month following the month in which you received the statement of account.

**Changing your Account**

Changes to your account must be reported to us. Payment of the Minimum is due on the 15th day of the month following the month in which you received the statement of account.

**Consenting or waiving your Account**

By using this service, you consent to the terms and conditions of this agreement. Payment of the Minimum is due on the 15th day of the month following the month in which you received the statement of account.

**Account details**

Details regarding your account, including account type, terms, and conditions. Payment of the Minimum is due on the 15th day of the month following the month in which you received the statement of account.

**Collections costs**

Costs associated with collections, including attorney fees, and other charges. Payment of the Minimum is due on the 15th day of the month following the month in which you received the statement of account.

**Credit reports**

Information regarding your credit reports and how they are used. Payment of the Minimum is due on the 15th day of the month following the month in which you received the statement of account.

**Dispute resolution**

Information regarding dispute resolution, including arbitration and mediation. Payment of the Minimum is due on the 15th day of the month following the month in which you received the statement of account.

**Waiving your rights**

Information regarding the waiver of your rights and the consequences thereof. Payment of the Minimum is due on the 15th day of the month following the month in which you received the statement of account.

**Insurance products**

Information regarding insurance products and how they are provided. Payment of the Minimum is due on the 15th day of the month following the month in which you received the statement of account.

**How we handle complaints**

Information regarding how we handle complaints and the process for doing so. Payment of the Minimum is due on the 15th day of the month following the month in which you received the statement of account.

**Privacy Act of 1974 notice**

Notice regarding the Privacy Act of 1974 and how it applies to your information. Payment of the Minimum is due on the 15th day of the month following the month in which you received the statement of account.

**Changing the Agreement**

Information regarding changes to the agreement and how they are implemented. Payment of the Minimum is due on the 15th day of the month following the month in which you received the statement of account.

**Arbitration clause**

This clause provides for the resolution of disputes through arbitration. Payment of the Minimum is due on the 15th day of the month following the month in which you received the statement of account.

**Waiving your right to sue**

By using this service, you waive your right to sue and instead resolve disputes through arbitration. Payment of the Minimum is due on the 15th day of the month following the month in which you received the statement of account.

**Notice to Oregon Residents**

Notice regarding the rights of Oregon residents and how they are protected. Payment of the Minimum is due on the 15th day of the month following the month in which you received the statement of account.

**Notice to residents of Washington State**

Notice regarding the rights of Washington state residents and how they are protected. Payment of the Minimum is due on the 15th day of the month following the month in which you received the statement of account.

**Claims Resolution**

Information regarding the claims resolution process and how it is handled. Payment of the Minimum is due on the 15th day of the month following the month in which you received the statement of account.

**Arbitration clause**

This clause provides for the resolution of disputes through arbitration. Payment of the Minimum is due on the 15th day of the month following the month in which you received the statement of account.

**Waiving your right to sue**

By using this service, you waive your right to sue and instead resolve disputes through arbitration. Payment of the Minimum is due on the 15th day of the month following the month in which you received the statement of account.

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**Claims Resolution**

Information regarding the claims resolution process and how it is handled. Payment of the Minimum is due on the 15th day of the month following the month in which you received the statement of account.

“You or we may elect to resolve any claim by individual arbitration. Claims are decided by a neutral arbitrator.”

Read the full contract »

More than a decade in the making, the move to block class actions was engineered by a Wall Street-led coalition of credit card companies and retailers, according to interviews with coalition members and court records. Strategizing from law offices on Park Avenue and in Washington, members of the group came up with a plan to insulate themselves from the costly lawsuits. Their work culminated in two Supreme Court rulings, in 2011 and 2013, that enshrined the use of class-action bans in contracts. The decisions drew little attention outside legal circles, even though they upended decades of jurisprudence put in place to protect consumers and employees.

One of the players behind the scenes, The Times found, was John G. Roberts Jr., who as a private lawyer representing Discover Bank unsuccessfully petitioned the Supreme Court to hear a case involving class-action bans. By the time the Supreme Court handed down its favorable decisions, he was the chief justice.

Corporations said that class actions were not needed because arbitration enabled individuals to resolve their grievances easily. But court and arbitration records show the opposite has happened: Once blocked from going to court as a group, most people dropped their claims entirely.

The Times investigation was based on thousands of court records and interviews with hundreds of lawyers, corporate executives, judges, arbitrators and plaintiffs in 35 states.

Since no government agency tracks class actions, The Times examined federal cases filed between 2010 and 2014. Of 1,179 class actions that companies sought to push into arbitration, judges ruled in their favor in four out of every five cases.

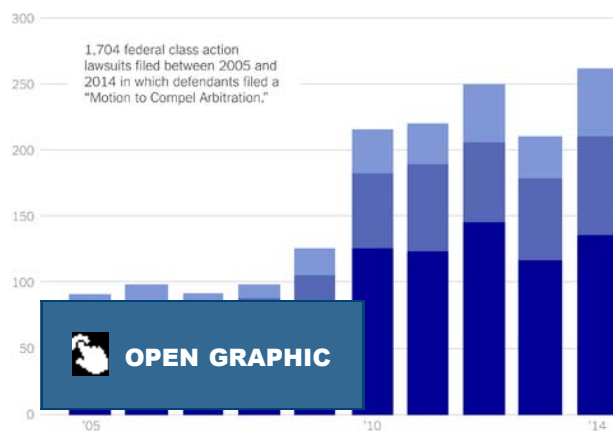
In 2014 alone, judges upheld class-action bans in 134 out of 162 cases.

Some of the lawsuits involved small banking fees, including one brought by Citibank customers who said they were duped into buying insurance they were never eligible to use. Fees like this, multiplied over millions of customers, amount to billions of dollars in profits for companies.

GRAPHIC

## Removing the Ability to Sue

A New York Times study of the increasing use of arbitration clauses in contracts, which has effectively forced millions of people to sign away their right to go to court.



The data provides only part of the picture, since it does not capture the people who were dissuaded from filing class actions.

A spokeswoman for American Express said that over the last few years,

banking regulators have examined the company's business practices, largely obviating the need for class actions. The regulators "have required significant remediations and large fines to address issues they found, with very little loss in value to the consumer," said the spokeswoman, Marina H. Norville.

Law enforcement officials, though, say they have lost an essential tool for uncovering patterns of corporate abuse. In a letter last year to the Consumer Financial Protection Bureau, attorneys general in 16 states warned that "unlawful business practices" could flourish with the proliferation of class-action bans.

In October, the bureau outlined rules to prevent financial firms from banning class actions. Almost immediately, the U.S. Chamber of Commerce galvanized forces to stop the move.

Andrew J. Pincus, a law partner at Mayer Brown in Washington who has represented companies that use arbitration, said class actions yielded little relief for plaintiffs. "Arbitration provides a way for people to hold companies accountable without spending a lot of money," Mr. Pincus said. "It's a system that can work."

Support for that assertion has been anecdotal, since there is no central database of arbitrations. But by assembling records from arbitration firms across the country, The Times found that between 2010 and 2014, only 505 consumers went to arbitration over a dispute of \$2,500 or less.

Verizon, which has more than 125 million subscribers, faced 65 consumer arbitrations in those five years, the data shows. Time Warner Cable, which has 15 million customers, faced seven.

One federal judge remarked in an opinion that "only a lunatic or a fanatic sues for \$30."

Daniel Dempsey of Tucson admits he might be both. He has spent three years and \$35,000 fighting Citibank in arbitration over a \$125 late fee on his credit card. Mr. Dempsey, who previously worked in Citi's investment bank, said the erroneous charge ruined his credit score, and he vowed to continue until he was awarded damages.

The odds are not in his favor. Roughly two-thirds of consumers contesting credit card fraud, fees or costly loans received no monetary awards in arbitration, according to The Times's data.

The Supreme Court's rulings amounted to a legal coup for a group of corporate lawyers who figured out how to twin arbitration clauses with class-action bans. The lawyers represented clients that had paid billions of dollars to resolve class actions over the years. The lawsuits, companies said, were driven by plaintiffs' lawyers who stood to make millions of dollars. They said they had no choice but to settle even those cases that were without merit.

"These lawsuits were not about protecting consumers but about plaintiffs' lawyers," said Duncan E. MacDonald, a former general counsel for Citibank who was part of the group. "These were nuclear weapons aimed at companies."

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## Who Has Arbitration Clauses?

Many of the companies and brands you interact with have arbitration clauses built into their terms of service. Here are several:

**NETFLIX**



**TimeWarner**

**T-Mobile**



Consumer advocates disagreed. A class action, they argued, allowed people who lost small amounts of money to join together to seek relief. Others exposed wrongdoing, including a case against auto dealers who charged minority customers higher interest rates on car loans.

The consequences of arbitration clauses can be seen far beyond the financial sector. Even lawsuits that would not have been brought by a class [have been forced out of the courts](#), according to the Times investigation. Taking Wall Street's lead, businesses — including obstetrics practices, private schools and funeral homes — have employed arbitration clauses to shield themselves from liability, interviews and arbitration and court records show.

Thousands of cases brought by single plaintiffs over fraud, wrongful death and rape are now being decided behind closed doors. And the rules of arbitration largely favor companies, which can even steer cases to friendly arbitrators, interviews and records show.

The sharp shift away from the civil justice system has barely registered with



Americans. F. Paul Bland Jr., the executive director of Public Justice, a national consumer advocacy group, attributed this to the tangle of bans placed inside clauses added to contracts that no one reads in the first place.

“Corporations are allowed to strip people of their constitutional right to go to court,” Mr. Bland said. “Imagine the reaction if you took away people’s Second Amendment right to own a gun.”

## A POWERFUL COALITION FORMS

At Italian Colors, a small restaurant tucked in an Oakland, Calif., strip mall, crayons and butcher paper adorn the tables, and a giant bottle of wine signed by the regulars sits in the entryway.

The laid-back vibe matches that of the restaurant’s owner and chef, Alan Carlson, who prides himself on running an establishment that not only serves great food — one crowd-pleaser is the spaghetti Bolognese — but also doesn’t take itself too seriously.

### Do You Read the Fine Print?

The reporters behind our series on arbitration answered reader questions on The Times’s Facebook page on Wednesday.

“I’ve been a ski bum, a line cook at a Greek diner and owned restaurants, and it’s all been about having fun,” Mr. Carlson said.

Somewhat of a libertarian, Mr. Carlson said he used to associate big lawsuits with “ambulance chasers.” But that was before he needed one.

In 2003, he sued American Express on behalf of small businesses over steep processing fees. The fees — 30 percent higher than Visa’s or MasterCard’s — were hurting profits, but the restaurants could not afford to turn away diners who used American Express corporate cards.

It was a classic antitrust case: A big company was accused of using its

monopoly power to charge unfair prices. But as *Italian Colors v. American Express* wended its way through the courts over the next 10 years, it became something far more momentous.

When the case was filed, the alliance of corporate interests, including credit card companies, national retailers and carmakers, had already been strategizing on how to eliminate class actions.

The effort was led by a lawyer at Ballard Spahr, a Philadelphia firm that represented big banks. The only thing the lawyer, Alan S. Kaplinsky, had in common with Mr. Carlson was a first name. Laser-focused and admirably relentless, Mr. Kaplinsky preferred his polo shirts buttoned up and tucked in.



Alan Kaplinsky, a corporate lawyer, first brought companies and lawyers together in 1999 to strategize on how to promote the use of individual arbitration clauses in contracts. Stephanie Diani for The New York Times

Among his clients were Alabama money lenders accused of duping customers into taking out credit cards. Settlements were costly; trying the cases in front of sympathetic juries was worse.

Mr. Kaplinsky was searching for solutions when he remembered helping, as a young lawyer, a mutual savings and loan association draft an arbitration clause, he said in an interview. Banks could take it a step further, he thought, by writing class-action bans into the clauses.

“Clients were telling me they were getting killed by frivolous lawsuits and asking me what on earth could be done about it,” Mr. Kaplinsky said.

He soon joined forces with lawyers at WilmerHale, a firm that had represented big banks. The group invited corporate legal teams in July 1999 to the law firm’s New York offices to strategize about arbitration.

Attendees included representatives from Bank of America, Chase, Citigroup, Discover, Sears, Toyota and General Electric. At a subsequent teleconference, participants dialed in remotely using an easy-to-remember code: a-r-b-i-t-r-a-t-i-o-n.

Details of the meetings, and of more than a dozen others over the next three years, were culled from court records filed in a federal lawsuit in Manhattan and corroborated in interviews with lawyers who attended.

The records and interviews show that lawyers for the companies talked about arbitration clauses as a means to an end. The goal was to kill class actions and send plaintiffs’ lawyers to the “employment lines.”

Of the companies participating, only American Express and First USA had adopted an arbitration clause banning class actions; months later, Discover Bank added its own. By the time the meetings concluded, many of the companies had followed suit.

To keep track of whether judges upheld or rejected the class-action bans, Mr. Kaplinsky set up a scorecard. In the positive column were courts in Pennsylvania and Georgia, which upheld a clause used by some companies that gave consumers a small window to opt out of arbitration.

On the negative side were courts in California and one in Massachusetts, which struck down a class-action waiver in a Comcast cable contract. The judge found that the ban would shield the company “even in cases where it has violated the law.”

Many judges across the country did not object to companies’ requiring consumers to use arbitration. But they bridled at preventing those consumers from banding together to bring a case.

State law guaranteed citizens a means to defend their rights, and contracts that tried to take that away were “unconscionable,” many judges said. In other words, class-action bans were unfair.



## PETITIONING THE HIGHEST COURT

The push by Mr. Kaplinsky's group coincided with the Chamber of Commerce's own campaign against class actions, which they called a scourge on companies.

In particular, the chamber pointed to an Illinois judge who had ordered Philip Morris to pay more than \$10 billion for playing down risks associated with light cigarettes.

At the other end of the spectrum, the chamber also criticized so-called coupon lawsuits that generated big paydays for lawyers and little money for consumers. In one, against a television manufacturer accused of selling sets with fuzzy pictures, plaintiffs each received \$25 or \$50 coupons while their lawyers collected \$22 million.

"It's not like the class-action system is a land of milk and honey," said Matthew Webb, a senior vice president at the Institute for Legal Reform, a chamber affiliate.

Once a state or federal judge certifies plaintiffs as a class, the suits are often unstoppable, the chamber has said — even if no one has been harmed. It has also said that plaintiffs' lawyers have brought cases in jurisdictions that were known to be friendly to class actions.

The chamber scored a victory when Congress passed the Class Action Fairness Act in 2005, which allowed companies to move cases into federal court and out of state courts considered hostile to corporate defendants.

Brian T. Fitzpatrick, a former clerk to Justice Antonin Scalia who teaches law at Vanderbilt University, said criticizing class actions for small awards was misleading. By their very nature, the lawsuits are intended to help large groups of people get back small individual amounts, Mr. Fitzpatrick said.

"Without a class action, if someone loses \$500, they will not be able to do anything about it," he said.

Walter Hackett, who worked as a banker until 2007, said the real threat was cases that force companies to abandon lucrative billing practices.

"When banks make mistakes or do bad things, they tend to do them

many times and to many people,” said Mr. Hackett, who switched sides and became a consumer lawyer.

With state courts still blocking their efforts, Mr. Kaplinsky’s group focused on getting a case to the Supreme Court.

Success hinged on the justices’ applying the Federal Arbitration Act, a dusty 1925 law that formalized the use of arbitration for disagreements between businesses. Since the mid-1980s, the court had expanded the scope of the law to cover a range of disputes between companies and their employees and customers.

In fact, when Congress passed the act, lawmakers specifically emphasized that it was meant for businesses. Some raised concerns that companies would one day twist the law to impose arbitration on their workers, according to minutes from a congressional hearing.

The Supreme Court had never taken a case that centered on whether the Federal Arbitration Act allowed plaintiffs to form a class action.

A lawsuit in California’s courts looked promising. The defendant, Discover Bank, was accused of charging unfair fees. A lower court upheld the bank’s class-action ban, but the state’s Court of Appeals negated it, accusing Discover of trying to grant itself a “license to push the boundaries of good business practices to their furthest limits.”

Discover, one of the companies involved with Mr. Kaplinsky’s group, then petitioned the Supreme Court to intervene. Representing the company was John G. Roberts Jr., at the time a prominent corporate defense lawyer.

With much at stake, Mr. Kaplinsky said, he spoke with Mr. Roberts and offered input on the brief Mr. Roberts was drafting to the Supreme Court. “He was a really nice guy,” Mr. Kaplinsky said.



As a private lawyer, John G. Roberts Jr. unsuccessfully petitioned the Supreme Court to hear a case involving class-action bans. During his tenure as chief justice, the Supreme Court has ruled in favor of the bans.  
Chip Somodevilla/Getty Images

In the subsequent petition, Mr. Roberts wrote that the California appeals court had overstepped its bounds in violation of the Federal Arbitration Act. Allowing consumers to bring a case as a class, he wrote, would violate the “core purpose of the Arbitration Act: to enforce arbitration agreements according to their terms.”

In essence, companies were using the law to push disputes out of court, and then imposing conditions that made it impossible to pursue those disputes in arbitration.

The Supreme Court declined to take up the case.

## A VICTORY FOR CORPORATIONS

Determined, businesses sweetened the terms of arbitration to try to tempt the Supreme Court to wade into the fray, according to interviews. A clause drafted for AT&T, for example, promised to award certain customers who prevailed in arbitration at least \$7,500 and to pay them double their legal fees.

In 2010, the Supreme Court agreed to hear a case. In *AT&T v. Concepcion*, customers said the company had promised them a free phone if they signed up for service, and then charged them \$30.22 anyway.

Once again, the ruling involved the California courts and their rejection of a class-action ban as “unconscionable.” By then, Mr. Roberts was chief justice.

Lawyers for both sides focused on the power of state courts.

Mr. Pincus, the Mayer Brown partner, represented AT&T and said that the Federal Arbitration Act superseded state law. In his main argument, Mr. Pincus accused state courts of making up special rules to discriminate against arbitration.

Deepak Gupta, who at age 34 was already known as a skilled appellate lawyer, worked for the plaintiffs. Mr. Gupta countered that the state courts should be free to enforce their own laws.

“We thought we had a fighting chance if we argued the case was about the importance of states’ rights,” Mr. Gupta said in an interview.

Sitting in the gallery during opening arguments, Mr. Kaplinsky had a different take on the Roberts court, which seemed to favor arbitration. “We were pretty sure we had his vote,” Mr. Kaplinsky said.

When the court ruled 5-4 in favor of AT&T, it largely skipped over Mr. Pincus’s central argument.

“Requiring the availability of classwide arbitration,” Justice Scalia wrote for the majority, “interferes with fundamental attributes of arbitration.” The main purpose of the Federal Arbitration Act, he wrote, “is to ensure the enforcement of arbitration agreements according to their terms.”

It was essentially the same argument Mr. Roberts had made as a lawyer in the *Discover* case.

With the Supreme Court marginalizing state law, the only option left for consumer advocates was to use a federal law to fight back.

Enter Mr. Carlson, the owner of Italian Colors, who was still fighting with American Express. After the company won the first round, Mr. Carlson’s lawyers appealed, saying the class-action ban prevented

merchants from exercising their federal rights to fight a monopoly.

“In a contest between just me — a restaurant in Oakland — and American Express, who do you think wins?” Mr. Carlson said.

Individually, none of the merchants could pay for a case that could cost more than \$1 million in expert analysis alone.

The United States Court of Appeals for the Second Circuit, which included Sonia M. Sotomayor, ruled in the plaintiffs’ favor in 2009.

American Express appealed again, and the case ultimately went to the Supreme Court. By the time the court heard it, in 2013, Ms. Sotomayor was a justice and recused herself.

The case centered on the Sherman Act, a muscular antitrust law that empowered citizens to take on monopolistic entities. Conservatives and liberals on previous Supreme Courts had consistently found that Americans should be guaranteed a way to exercise that right.

On June 20, 2013, the justices abandoned the precedent and ruled in favor of American Express.

Arbitration clauses could outlaw class actions, the court said, even if a class action was the only realistic way to bring a case. “The antitrust laws do not guarantee an affordable procedural path to the vindication of every claim,” Justice Scalia wrote.

Within hours, critics from across the political spectrum registered their disbelief on legal blogs. “No one thinks they got it right,” Judge Young of Boston wrote later in a decision.

The most withering criticism came from Justice Elena Kagan, who wrote the dissenting opinion. “The monopolist gets to use its monopoly power to insist on a contract effectively depriving its victims of all legal recourse,” she wrote. She went on to say that her colleagues in the majority were effectively telling those victims, “Too darn bad.”

Back in Oakland, Mr. Carlson got the news from his lawyer. The restaurateur said he had no choice but to continue accepting American Express. About a third of his customers use it, including many who run up bigger tabs because the cards are tied to expense accounts.



“In a contest between just me — a restaurant in Oakland — and American Express, who do you think wins?” Mr. Carlson said. Jason Henry for The New York Times

Mr. Carlson did make one change, though. He added a special bourbon cocktail to the menu. “I call it the Scalia,” he said. “It’s bitter and tough to swallow.”

## A CLAUSE FOR ALL OCCASIONS

Signs posted in a theater in Los Angeles and a hamburger joint in East Texas informed guests that, simply by walking in, they had agreed to arbitration. Consumer contracts with Amazon, Netflix, Travelocity, eBay and DirecTV now contain arbitration clauses. Even Ashley Madison, the online site for adulterers, requires that clients agree to them.

It is virtually impossible to rent a car without signing an agreement like Budget’s, which reads, “Arbitration, No Class Actions.” The same goes for purchasing just about anything online, which makes adding the clauses even easier.

The “birth of a thousand clauses,” as one corporate lawyer put it, has caught millions of Americans by surprise.

James Pendergast had no idea he had agreed to arbitration until a

class-action suit he filed on behalf of Sprint customers in Miami was thrown out of court. They had sued the company after noticing that their monthly bills contained roaming charges incurred in their homes.

The cost of arbitration was far more than the \$20 charges Mr. Pendergast was contesting. And his lawyer, Douglas F. Eaton, advised him that winning would require high-tech experts at a six-figure bill.

If he lost, Mr. Pendergast might even have to pay for Sprint's lawyers. "Why would anyone risk that?" Mr. Eaton said.

The data on consumer arbitration obtained by The Times shows that Sprint, a company with more than 57 million subscribers, faced only six arbitrations between 2010 and 2014.

"Just imagine how many customers Sprint can take money from because of arbitration," Mr. Pendergast said.

Sprint declined to comment.

Few industries more keenly understood the potential of arbitration clauses than financial firms. A particularly bruising set of lawsuits starting in 2009 revealed an accounting device that more than a dozen banks employed on debit card transactions. Customers accused the banks of deducting big payments like monthly rent before taking out smaller charges like those for a pack of gum — even if the customer bought the gum first.

Changing the order of transactions, the lawsuits said, allowed the banks to increase the number of times they could charge overdraft fees, typically \$35 a pop. Forced into court, the banks settled the cases for more than \$1 billion.

At least seven of the banks in the overdraft cases have since added arbitration clauses, The Times found.

A lot is at stake. Since regulations prompted by the 2008 financial crisis crimped profits from trading and other risky activities, revenue from fees has become crucial to banks' profits.

Together, the three largest banks in the country — JPMorgan Chase, Bank of America and Wells Fargo — made more than \$1 billion through overdraft fees in the first three months of 2015, according to the Federal Deposit Insurance Corporation.

In interviews, corporate executives and defense lawyers predicted that consumers would use arbitration once it became more familiar. They added that people could also get relief in small claims court, an option often not covered by arbitration clauses. But much like arbitration, few people go to small claims court, according to court data and interviews with judges.

While many companies also include an opt-out provision on arbitration — typically between 30 and 45 days — few consumers take advantage of it because they do not realize they have signed a clause to begin with, or do not understand its consequences, according to interviews with lawyers and plaintiffs.

Companies noted in interviews that arbitration incentivized them to resolve many customer disputes informally.

Matthew Kilgore, of Rohnert Park, Calif., had no such luck.

A bread truck driver, Mr. Kilgore had dreamed of being a helicopter pilot ever since his father, who was in the Navy, took him to an air show when he was a child.

At 28, after his first daughter was born, he enrolled at Silver State Helicopters, a for-profit school in Oakland, taking out a \$55,950 loan from Key Bank to pay for the program.





Matt Kilgore, pictured with his wife and daughters. Jason Henry for The New York Times

Less than halfway into training, Mr. Kilgore got a call from his flight instructor, who said Silver State was bankrupt. In disbelief, he drove to Oakland the next day to find the school's doors padlocked.

Key Bank and Student Loan Xpress, the school's preferred lenders, demanded that students pay back their loans for degrees they never received. About 2,700 students, including Mr. Kilgore, joined in class actions against the two lenders, accusing them of ignoring financial signs that the school was in trouble.

Student Loan Xpress, whose contracts did not have an arbitration clause, agreed to settle and forgave more than \$100 million in student loans. Key Bank, whose contracts did, used the clause to get Mr. Kilgore's lawsuit dismissed in 2013.

Key Bank declined to comment on Mr. Kilgore's case, but said the bank had forgiven a portion of many students' loans.

Mr. Kilgore has not been able to pay back his loan, which with interest has swelled to \$110,000. With his credit ruined, he and his wife cannot buy a house and he has abandoned his dream of becoming a pilot.

"It's the worst decision I ever made," he said.

## BARGAINING POWER FADES

A hunter whose trophies are mounted on the walls of his chambers in Philadelphia's federal courthouse, Judge Berle M. Schiller prefers to use a bow to catch his prey. He has stalked deer through the Pennsylvania woods, tracked caribou in Quebec and pursued fleet-footed impala through South Africa.



Judge Berle Schiller reluctantly enforced a class-action ban in Applebee's employment contracts in 2013, noting the "lamentable" state of legal affairs. Mark Makela for The New York Times

Hunting with a rifle is “not a fair fight,” said Judge Schiller, 71, who applies the same philosophy to his courtroom. Or at least he did until December 2013, when he had to rule on a lawsuit against the owner of 39 Applebee’s restaurants in Pennsylvania.

The class action was brought by a former waiter on behalf of other low-wage employees. The waiter, Charles Walton, said Applebee’s made workers sweep floors, stock silverware, scrub booths and empty trash cans, but did not pay them a fair wage for the extra tasks. The Applebee’s employees, who relied on tips, often ended up making less than minimum wage. Employment lawyers said these practices were widespread in the restaurant industry.

The Rose Group, which owned the restaurants, defended its practices and urged Judge Schiller to dismiss the lawsuit since Mr. Walton signed an employee contract that included “a mutual promise to resolve claims by binding arbitration.”

The request troubled Judge Schiller. “It is just these kinds of cases where it’s important to have a jury,” he said.

Applebee's franchises, run by different owners, have faced similar class actions in Alabama, Florida, Illinois, Kentucky, Missouri, New York, South Carolina and Rhode Island.

In 2014, Ronnie Del Toro brought a case while working as a waiter in the Bronx. Once again, Applebee's sought to have it thrown out.

In the meantime, Mr. Del Toro said the restaurant's owner and two hulking men, including one who went by "Big Drew," confronted him on the job. They warned him to "stop being a little bitch" and withdraw his lawsuit, according to an application for a restraining order that Mr. Del Toro filed in a Bronx court.

"I didn't wait to hear anymore," said Mr. Del Toro, who moved to Brooklyn and got the restraining order.



Ronnie Del Toro brought a case against Applebee's while working as a waiter for the company in the Bronx. Applebee's sought to have it thrown out.

Uli Seit for The New York Times

Apple-Metro Inc., which owns the Bronx Applebee's, did not return requests for comment.

Mr. Del Toro now works at P.F. Chang's, another restaurant chain. He had to sign an employment contract with an arbitration clause to get the job.

Class-action bans are also widely included in the employment policies of retailers, including Macy's, Kmart and Sears.

Even some N.F.L. cheerleaders have had to agree to them. When a group of cheerleaders sued the Oakland Raiders over working conditions, they discovered that Roger Goodell, the N.F.L. commissioner, would preside over the arbitration. The Raiders later agreed to use someone else.

The use of class-action bans is spreading far beyond low-wage industries to Silicon Valley and Wall Street, where banks like Goldman Sachs require some executives to sign contracts containing the clauses.

Civil rights experts worry that discriminatory labor practices will go unchecked as class actions disappear.

Cases brought by African-American employees against Nike in 2003 and Walgreens in 2005, for example, led the companies to change their policies. The drug company Novartis paid \$175 million to settle a class action brought by female employees over promotions and pay.

Jenny Yang, chairwoman of the Equal Employment Opportunity Commission, said arbitration allowed "root causes" to persist. Part of the problem, Ms. Yang said, is that arbitration keeps any discussion of discriminatory practices hidden from other workers "who might be experiencing the same thing."

The point was not lost on Judge Schiller in Philadelphia, who has handled many employment cases in his 15 years on the bench. Once an arbitrator himself for disputes between companies, the judge said he had nothing against the forum, as long as both sides wanted to go.

Among thousands of employees at Applebee's franchises, only four took the company to arbitration between 2010 and 2014, according to The Times's review of arbitration data.

When lawyers for Applebee's argued before Judge Schiller to have the lawsuit thrown out, they assured him that Mr. Walton, who brought the suit, could have turned down the job and not agreed to the arbitration clause.

Judge Schiller was not persuaded. "To suggest that he had bargaining power because he could wait tables elsewhere ignores reality," the judge wrote in court papers. The Applebee's workers, the judge wrote, must "chew on a distasteful dilemma" of whether to "give up certain

rights or give up the job.”

Despite his own objections, Judge Schiller said he was bound by the Supreme Court decisions. In his ruling, he noted the “lamentable” state of legal affairs and dismissed the case.

With no other option, Mr. Walton took his case to arbitration. In April, he lost.

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Michael Corkery contributed reporting.

A version of this article appears in print on November 1, 2015, on page A1 of the New York edition with the headline: Arbitration Everywhere, Stacking Deck of Justice .

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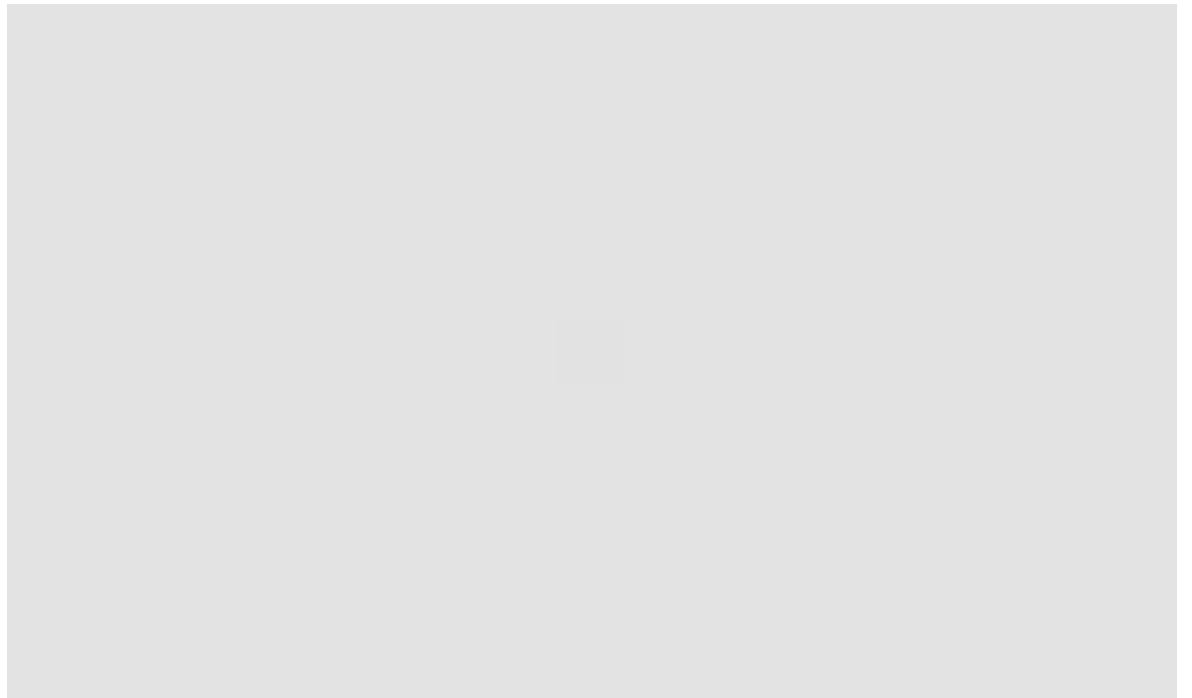
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Deborah L. Pierce, an emergency room doctor in Philadelphia, was optimistic when she brought a sex discrimination claim against the medical group that had dismissed her. Respected by colleagues, she said she had a stack of glowing evaluations and evidence that the practice had a pattern of denying women partnerships.

She began to worry, though, once she was blocked from court and forced into private arbitration.

Presiding over the case was not a judge but a corporate lawyer, Vasilios J. Kalogredis, who also handled arbitrations. When Dr. Pierce showed up one day for a hearing, she said she noticed Mr. Kalogredis having a friendly coffee with the head of the medical group she was suing.

During the proceedings, the practice withheld crucial evidence, including audiotapes it destroyed, according to interviews and documents. Dr. Pierce thought things could not get any worse until a doctor reversed testimony she had given in Dr. Pierce's favor. The reason: Male colleagues had "clarified" her memory.

When Mr. Kalogredis ultimately ruled against Dr. Pierce, his decision contained passages pulled, verbatim, from legal briefs prepared by lawyers for the medical practice, according to documents.

"It took away my faith in a fair and honorable legal system," said Dr. Pierce, who is still paying off \$200,000 in legal costs seven years later.

If the case had been heard in civil court, Dr. Pierce would have been able to appeal, raising questions about testimony, destruction of evidence and potential conflicts of interest.

But arbitration, an investigation by The New York Times has found, often bears little resemblance to court.

Over the last 10 years, thousands of businesses across the country — from big corporations to storefront shops — have [used arbitration to create an alternate system of justice](#) There, rules tend to favor businesses, and judges and juries have been replaced by arbitrators

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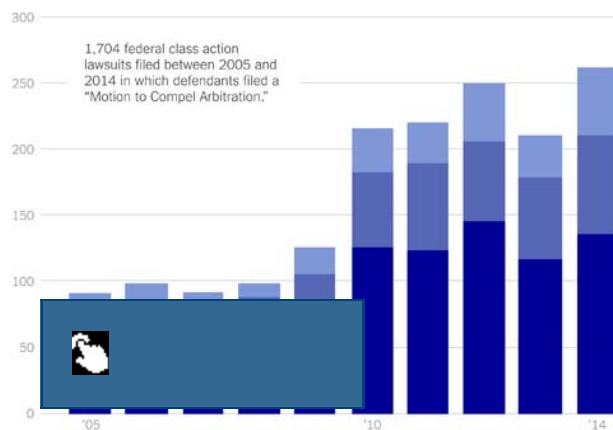
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GRAPHIC

## Removing the Ability to Sue

A New York Times study of the increasing use of arbitration clauses in contracts, which has effectively forced millions of people to sign away their right to go to court.



California said it could not overturn arbitrators' decisions even if they caused "substantial injustice."

Unfettered by strict judicial rules against conflicts of interest, companies can steer cases to friendly arbitrators. In turn, interviews and records show, some arbitrators cultivate close ties with companies to get business.

Some of the chumminess is subtler, as in the case of the arbitrator who went to a basketball game with the company's lawyers the night before the proceedings began. (The company won.) Or that of the man overseeing an insurance case brought by Stephen R. Syson in Santa Barbara, Calif. During a break in proceedings, a dismayed Mr. Syson said he watched the arbitrator and defense lawyer return in matching silver sports cars after going to lunch together. (He lost.)



Stephen R. Syson, who lost an insurance case in arbitration.

Jeff Clark for The New York Times

Other potential conflicts are more explicit. Arbitration records obtained by The Times showed that 41 arbitrators each handled 10 or more cases for one company between 2010 and 2014.

"Private judging is an oxymoron," Anthony Kline, a California appeals court judge, said in an interview. "This is a business and arbitrators have an economic reason to decide in favor of the repeat players."



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DISCOVER



## FROM CRADLE TO GRAVE

An ob-gyn's office in Tampa, Fla., now informs expectant mothers that if problems arise — a botched vaginal delivery, a flawed C-section — the patients cannot take their grievances to court. Neither can the families of loved ones who are buried at Evergreen Cemetery outside Chicago, which also requires disputes to be resolved privately.

From birth to death, the use of arbitration has crept into nearly every corner of Americans' lives, encompassing moments like having a baby, going to school, getting

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a job, buying a car, building a house and placing a parent in a nursing home.

The first contact point can arise prenatally, when obstetricians seek to limit liability by requiring patients to sign agreements containing arbitration clauses as a condition of treating them.

Leydiana Santiago of Tampa was devastated when her baby was born in November 2011 with vision and hearing loss and thumbs that needed to be amputated. Ms. Santiago blamed her doctor at Lifetime Obstetrics and Gynecology for the problems. She said her doctor mistakenly determined that she had miscarried, court records show. As a result, Ms. Santiago resumed taking medication for lupus — medication that can cause birth defects.

Women's Care Florida, which owns Lifetime, declined to comment on the case.

In April 2014, a Florida appeals court upheld a decision to force Ms. Santiago into arbitration. "I obey what appears to be the rule of law without any enthusiasm," wrote one of the judges, Chris Altenbernd, adding that he feared "I have disappointed Thomas Jefferson and John

Adams.”

Students from high school to graduate school can likewise find themselves caught in the gears. Lee Caplin discovered this when he enrolled his 15-year-old son at Harvard-Westlake, a private school in Los Angeles.

His son said he was bullied and harassed, and received graphic and profane death threats, including some that came from school computers. Among the threats, court records show, were, “I’m going to pound your head with an ice pick” and “I am looking forward to your death.”

Harvard-Westlake declined to comment on the case, but said that it “takes allegations of bullying very seriously.”

Afraid for his life, the teenager dropped out and the family relocated. When Mr. Caplin sued the school for failing to protect his son, he learned that even civil rights cases can be blocked from court.

The arbitrator ruled in favor of Harvard-Westlake, saying the plaintiff did not sufficiently prove that the school was “negligent.”

“It’s not a system of justice; it’s a rigged system of expediency,” Mr. Caplin said.

Many companies give people a window — typically 30 to 45 days — to opt out of arbitration. Few people actually do, either because they do not realize they have signed a clause, or do not understand its consequences, according to plaintiffs and lawyers.

Cliff Palefsky, a San Francisco lawyer who has worked to develop fairness standards for arbitration, said the system worked only if both sides wanted to participate. “Once it’s forced, it is corrupted,” he said.

Graduates entering the job market can confront even more challenging terrain. For many people, when the choice is between giving up the right to go to court or the chance to get a job, it is not a choice at all.

That is why a housekeeper in suburban Virginia said she had to sign an employment agreement with an arbitration clause that her employer had printed from the Internet. She said she regretted it later when he sexually harassed her and she had no legal recourse in court.

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Circumstances are not any easier on the

## Do You Read the Fine Print?

The reporters behind our series on arbitration answered reader questions on The Times's Facebook page on Wednesday.

home front, where residents like Jordan and Bob Fogal of Houston can become stuck with a construction nightmare.

Not long after they moved into their townhouse, more than 100 gallons of water crashed through their dining room ceiling.

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The couple won when they took their builder to arbitration, but they ended up with only \$26,000, about a fifth of what they needed to make repairs. Unable to come up with the rest of the money and sickened from pervasive mold, the Fogals moved out.

The perils of using a secretive system can be even more acute in old age, as illustrated by numerous cases involving nursing homes.

Daniel Deneen said he was incredulous when he got a fax from a nursing home in McLean, Ill., about a client for whom he was a legal guardian.

The client, a 90-year-old woman with dementia, needed prompt care for bed sores. Unless Mr. Deneen agreed to arbitration, he said, doctors working at the nursing home would not treat her there.

"It was the most obnoxious, unfair document I have ever been presented with in over 30 years of practicing law," Mr. Deneen said.

Once contracts with arbitration clauses are signed, nursing homes can also use them to force civil cases involving sexual assault and wrongful death out of the courts.

In May 2014, a woman with Alzheimer's was sexually assaulted twice in two days by other residents at the Bella Vista Health Center, a nursing home in Lemon Grove, Calif., according to an investigation by the state's department of public health. The investigation also found that the nursing home "failed to protect" the woman.

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From the California  
Department of Public Health  
Investigation

A lawyer for Bella Vista, William C. Wilson, said the company disputed the state's findings and that the staff "makes the health and safety of its patients their top priority."

After unsuccessfully fighting to have the

"The facility staff demonstrated a pattern of inadequate resident supervision for Resident 1 who was dependent on staff for personal safety."

arbitration clause in their agreement voided, the woman's family settled with Bella Vista.

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Between 2010 and 2014, more than 100 cases against nursing homes for wrongful death, medical malpractice and elder abuse were pushed into arbitration, according to The Times's data.

Roschelle Powers said she found her mother, Roberta, who had diabetes and dementia, vomiting and disoriented one day in May 2013 at a Birmingham, Ala., nursing home. Ms. Powers said she alerted the home, Greenbriar at the Altamont, specifically mentioning pills she had found in her mother's hand, according to a deposition.

A few days later, Roberta Powers's son, Larry, said he called 911 after finding her alone and unresponsive.

A day after the ambulance took his mother to the hospital, she was dead. An autopsy showed that the 83-year-old Mrs. Powers had more than 20 times the recommended dose of metformin, a diabetes medication, in her blood.

During arbitration, the nursing home acknowledged the blood test results but said they had been the result of renal dysfunction. The arbitrator ruled in favor of Greenbriar. "There was no evidence to support the allegation that Ms. Powers somehow gained access to, and then took, more than her prescribed amount of metformin," Joseph L. Reese Jr., a lawyer for the nursing home, said.

Perry Shuttlesworth, the family's lawyer, said that "it was only because of forced arbitration that the nursing home got away with this." He added that "a jury would not have let this happen. "

Even when plaintiffs prevail in arbitration, patterns of wrongdoing at nursing homes are kept hidden from prospective residents and their families.

Recognizing the issue, 34 United States senators have asked the federal government to deny [Medicare](#) and [Medicaid](#) funding to nursing homes that employ arbitration clauses. "All too often, only after a resident has suffered an injury or death," the senators [wrote in a letter](#) in September, "do families truly understand the impact of the arbitration

agreement they have already signed.”

Sometimes, even death provides no escape.



Willie K. Hamb stands in the cemetery where she wanted her husband to be buried in a simple plot. David Kasnic for The New York Times

Willie K. Hamb was at the funeral for her husband at Evergreen Cemetery outside Chicago when she discovered that his coffin would not be buried in the shady plot she said she had requested.

Instead, the cemetery informed Mrs. Hamb that it would place the coffin in a wall crypt until the more than \$56,000 marble mausoleum they said she had agreed to in a contract was complete.

Mrs. Hamb, 72 and retired, said all she could afford for her husband, known to his friends as Pudden, was the simple plot and service she had already paid \$12,461 to arrange.





Mrs. Hamb's husband, known to his friends as Pudden.

David Kasnic for The New York Times

## A CRASH COURSE

Debbie Brenner enrolled in the surgical technician program at Lamson College near Phoenix in her 40s with high hopes of reinventing herself. She spent hours learning about the tools used in surgical procedures as if mastering the movements of the waltz, each handoff in graceful succession: scalpel, retractor, clamp, sutures.

Whether the instruments featured in lessons were real, or just depictions in photographs, depended on what teachers could round up on any given day. Lamson students became accustomed to empty

surgical trays and anatomical mannequins missing their plastic replicas of organs. One enterprising instructor fashioned hearts, livers and kidneys out of felt and string.

Students considered that instructor to be one of Lamson's better faculty members, more than a dozen of them said in interviews. Some teachers routinely disappeared from class, leaving tests conspicuously on the desks to be copied, they said.

Ms. Brenner, a devout Christian, said she prayed that the program's shortcomings would not diminish her job prospects. She said the enrollment officer who persuaded her to sign up for the \$24,000-a-year program had promised her she would easily find a job after graduation.



Debbie Brenner, whose fraud case against a for-profit school chain was forced into arbitration and left her nearly bankrupt. Nick Cote for The New York Times

When Ms. Brenner completed the program with high marks in 2009, she said, Lamson failed to find her an internship. She was volunteering at Maricopa County Hospital when, she said, a surgical technician told her that most hospitals refused to hire Lamson students because they were so poorly trained. According to students, some did not even know how to properly sterilize their hands before surgery.

"It was a joke," Ms. Brenner said. "The school's brochure was all about

making our dreams come true, but this was a nightmare.”

Soon after, Lamson shut down the program when it was unable to place enough of its students in internships. In March 2011, Ms. Brenner and other students filed a lawsuit against the school and its owner, Delta Career Education Corporation, accusing them of fraud. The case was promptly dismissed because of an arbitration clause in the students' enrollment agreements.

Ms. Brenner, confident she could prevail in arbitration, persuaded her husband to withdraw \$12,000 from his retirement account to put toward legal fees.

By the time her case was heard in March 2013, the attorney general of Arizona had sued another Delta school for defrauding students in a criminal justice program. And a federal class-action lawsuit in Michigan had accused a Delta school of defrauding students out of millions of dollars in [student loans](#). The company did not admit wrongdoing, but settled both lawsuits for a total of more than \$8 million.

Arbitration would prove to be more advantageous for the company, records and interviews show.

Ms. Brenner's case was conducted in the Phoenix office of Gordon & Rees, one of two big law firms defending Lamson and Delta. The arbitrator, Dennis Negrón, was a corporate lawyer and real estate broker who had written papers on how to limit liability because “last on your list of desires is to be sued.”

As in most arbitrations, lawyers for both sides chose Mr. Negrón from a list provided by an arbitration firm, in this case the American Arbitration Association.

Lawyers for Ms. Brenner and four other students grouped into the same arbitration said they anticipated victory because they believed that the evidence was overwhelmingly in their favor.

Even the school's former head of admissions, Jeff Bing, testified that he had been instructed by his superiors at Delta to increase enrollment at all costs.

Mr. Bing said it was widely known that the admissions staff, whose compensation was tied to the number of students recruited, was “overpromising” on jobs. He testified that the job placement rate for

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—Dennis Negron, arbitrator

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## An Excerpt From Ms. Brenner's Arbitration Decision

"It is my experience that explaining our court system or arbitration to sophisticated transaction attorneys and businessmen is in many circumstances as difficult as building a hurricane proof home with Jell-O."

—Dennis Negron, arbitrator

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## REPEAT BUSINESS

Fearful of losing business, some arbitrators pass around the story of Stefan M. Mason as a cautionary tale. They say Mr. Mason ruled in favor of an employee in an age discrimination suit, awarding him \$1.7 million, and was never hired to hear another employment case.

While Mr. Mason's experience was rare, more than 30 arbitrators said

in interviews that the pressure to rule for the companies that give them business was real.

Companies can even specify in contracts with their customers and employees that all cases will be handled exclusively by one arbitration firm. Big law firms also bring repeat business to individual arbitrators, according to documents and interviews with arbitrators. Jackson Lewis, for example, had 40 cases with the same arbitrator in San Francisco over a five-year period.

The JAMS arbitrator in an employment case brought by Leonard Acevedo of Pomona, Calif., against the short-term lender CashCall simultaneously had 28 other cases involving the company, according to documents disclosed by JAMS during the proceedings.

"This whole experience burst my bubble," said Mr. Acevedo, a 57-year-old veteran, who lost his case in October 2014. His lawyer, James Cordes, offered a more critical take. "It clearly appears that the arbitrator was working for the company," Mr. Cordes said. "And he disregarded evidence to hand a good result to his client."

JAMS denied that its arbitrator had been influenced by CashCall.

Linda S. Klibanow, an employment arbitrator in Pasadena, Calif., acknowledged the potential for conflicts of interest but said she thought most arbitrators, many of whom are retired judges, could remain fair.

"I think that most arbitrators put themselves in the place of a jury as the fact finder and try to render a fair decision," Ms. Klibanow said.

Elizabeth Bartholet, an arbitrator in Boston who has handled more than 100 cases, agreed that many arbitrators had good intentions, but she said that the system made it challenging to remain unbiased. Ms. Bartholet recalled that after a company complained that she had scheduled an extra hearing for a plaintiff, the arbitration firm she was working with canceled it behind her back.

A year later, she said, she was at an industry conference when she overheard two people talking about how an arbitrator in Boston had almost cost that firm a big client. "It was a conference on ethics, if you can believe it," said Ms. Bartholet, a law professor at Harvard.

Deborah Pierce, the doctor in Philadelphia, said she did not expect to confront in arbitration the very problem she was suing her employer

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**Robert Gebeloff contributed reporting.**

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