

Dear Members of Congress,

I have learned that Congress is undertaking an important process with updating the Communications Act, which affects all entrepreneurs, innovators and small business people working in information technology.

I founded a company, [Abledbody.com](http://abledbody.com), which is a based consumer website for assistive tech and disability innovations. [Abledbody.com](http://abledbody.com) helps inform people with disabilities, or people who are engaged with the disabled community, by providing news and information on different innovations and technologies to address the issues many of them face in society. The page has over 7,000 viewers a month and is a trusted resource in the disability community.

Companies like mine and others in the telehealth space have all benefitted from the remarkable private investment in Internet infrastructure. Last year I wrote an op-ed in the Connecticut Post, where I acknowledged the Progressive Policy Institute's 2013 U.S. Investment Heroes, which found that Internet providers invested more than \$50 billion in the American economy in the past year -- higher than any other sector in the U.S.

This investment has created more competition in online health platforms and services. Any new updates to the Communications Act should encourage this competition. I look forward to assisting this process if you are further invested in views from the medical care community.

Sincerely,

Suzanne Robitaille
Darien, Connecticut
<http://abledbody.com/>

<http://www.ctpost.com/opinion/article/Internet-access-is-part-of-the-cure-4968052.php?cmpid=twitter>

Internet access is part of the cure

Published 3:04 pm, Friday, November 8, 2013

While the debate in Washington over health care policy and the Affordable Care Act is apparently unending, people in the real world need ways to improve their health care now.

The good news is that there are private-sector solutions. Health care services providers, managed health care companies and other companies are regularly developing new digital health care tools, all of which are enabled by the investments made in America's broadband networks.

From simple innovations like apps that allow people to monitor their heart rate to transformative advances like telemedicine -- which connects health care providers and patients over the Internet -- health care is being revolutionized.

But for all Americans -- and Connecticut residents in particular -- to benefit from these technological advances, Internet companies must help increase broadband adoption in our most vulnerable communities.

Whether a person lives in a big city or small, rural town, they can easily consult with a top specialist in any field if they have access to Internet-based voice and video communications. For disabled or severely ill patients who have difficulty traveling long distances, this remote connectivity can be life changing.

Broadband Internet has also allowed for non-traditional health care improvements like online support and information groups, meaning that people no longer have to face health challenges alone.

If a person has migraines, is deaf or has any number of health problems, they can now connect online with a community of people dealing with the same issue. Together they can share their collective knowledge, discover new resources and learn solutions and coping mechanisms for their ailments.

By crowdsourcing information and connecting with doctors remotely, individuals are also reducing the frequency with which they need to visit a doctor. As a result, telemedicine has significantly reduced patient expenses and cut emergency rooms visits.

The common thread behind all of these innovations has been the explosion of high-speed broadband access. Whereas in the year 2000 nearly 90 percent of Americans still used dial-up Internet, broadband is

now nearly universally available across the country. This increase in speed has enabled the virtual connections that have ended the era of needing to be in the same physical location as a doctor. Like these health care innovations, the rapid expansion of broadband availability comes primarily from Internet providers--telecommunications companies, data carriers, wireless communications providers, cable companies and the like --that have invested more than \$1.2 trillion since 1996 to build America's wired and wireless broadband network.

The [Progressive Policy Institute](#) released its U.S. Investment Heroes of 2013 report last month, choosing telecom giants AT&T and Verizon as the top-ranked heroes in their field. Collectively, telecommunications and cable companies, the report says, invested more than \$50 billion in the American economy last year-- higher than any other sector in the U.S. This investment should be encouraged to support more jobs and workforce training in the health IT practice.

While these investments have led to expanded access and speeds, adoption is still lagging. Twenty percent of all Americans -- and more than 50 percent of seniors -- still don't have a broadband connection at home or a smartphone that can access the Internet wirelessly.

While the numbers are slightly better in Connecticut, a recent study by the [Connecticut Academy of Science and Engineering](#) showed 13 percent of our state's residents still don't use the Internet. The lack of adoption was especially prevalent in low-income households that were less likely to have the necessary computer hardware.

It's imperative that policy makers help focus on closing the digital adoption gap; otherwise, thousands of Connecticut residents and millions of Americans will not be able to reap innovations in health care. The need is especially prevalent for seniors and the disabled, who would benefit most from remote health care services.

Once all Americans are online, they will be able to access these life-changing technologies and reduce their health care expenses.

[Suzanne Robitaille](#), of Darien, is the founder of [Ablebody.com](#) and author of The Illustrated Guide to [Assistive Technologies & Devices](#).

COMPETITION POLICY AND THE ROLE OF THE FEDERAL COMMUNICATIONS COMMISSION

QUESTIONS FOR STAKEHOLDER COMMENT

RESPONSES OF THE AMERICAN CABLE ASSOCIATION June 13, 2014

Introduction

In its January 31, 2014 comments to the Committee, ACA set forth the following as principles upon which communications policymaking should be based –

1. Regulatory intervention in a relevant product and geographic market is warranted when –
 - i. There is an exercise of substantial market power or unfair or deceptive acts or practices;
 - ii. Competition or consumers are harmed in a manner contrary to the “public interest;”
 - iii. Smaller or more rural providers are disproportionately disadvantaged compared to other industry participants; and
 - iv. There are specific social objectives to achieve that markets will not deliver, such as ensuring vital communications services remain viable during emergencies and related events and available to all consumers, including those with special needs.
2. Any regulatory intervention should be applied in a competitively and technologically neutral manner.
3. Any regulatory intervention should be precisely targeted to avoid imposing excessive costs; exemptions and special considerations should be afforded to smaller and rural providers where appropriate.

The Committee, in its most recent White Paper and series of questions, focused on one of these principles – the need to develop and sustain competition in communications markets. ACA wholeheartedly agrees that communications policymaking, as the Committee notes, should reflect “the competitive conditions of the market it is addressing,” especially given “the convergence and evolution of services in the modern digital era.” In fact, since the 1970s, Congress and at the Federal Communications Commission (FCC) have sought increasingly to interpret and amend the Communications Act so that policies and regulations pivot from a monopoly mindset to promoting robust competition. This shift in regulatory philosophy was due in large measure to cable operators, competitive telecommunications providers, wireless carriers, equipment vendors, and many other entrepreneurs that wanted to enter – and then did enter – the communications business to offer innovative goods and services.

As policymakers saw the great benefits of competition, especially in comparison to the stagnant investment and innovation produced by monopolists, they gravitated toward a regulatory paradigm that facilitates the growth of competition and then eases the level of regulation where there is evidence that competition is present. In examining competition and determining whether regulation is necessary, Congress and the FCC have relied on the time-tested competition analysis used in our century-old antitrust laws: identify relevant product and geographic markets, identify firms in a market and their share, and then assess whether there is excessive market concentration enabling a firm to raise price

above competitive levels or otherwise engage in anticompetitive behavior and whether there is a realistic opportunity for new entry to offset this harm.

From this well-established intellectual base, the key aspects of the communications regulatory paradigm, incorporated over time by Congress and the FCC into the Communications Act, have been established: (1) permit rapid entry into (and exit from) all sectors of the business; (2) remove barriers that inhibit investment in infrastructure, services, and products; (3) ensure to the maximum extent that any social obligations do not undermine or distort competition; and (4) lessen regulation in specific markets where there is a demonstration that market power does not exist. This model permits generic regulation where there is evidence of industry-wide concerns about competition, provides for regular review of these generic regulations, and enables individual firms to seek relief in specific markets.

From the viewpoint of ACA's members, who are small and medium-sized cable operators, the current regulatory paradigm embedded into much of the Communications Act has significant value, providing certainty and enabling their participation in the regulatory process. At the same time, parts of the Communications Act need to be updated, including to reflect this paradigm, and ACA in its previous submission to the Committee recommended improvements: Congress needs to review regularly and amend legislation such as the 1992 Cable Act; Sec. 10-type forbearance authority should be provided for Title VI and other provisions; and the Commission needs to consider the aggregate effect of its regulations, which can inhibit competition, on small firms. Within that context, ACA responds to the Committee's questions and welcomes the opportunity for further discussion.

Responses to Questions

1. Question: How should Congress define competition in the communications marketplace? How can we ensure that this definition is flexible enough to accommodate this rapidly changing industry?

Congress has sought to bring about competition in the communications industry for over three decades, and, over this time, it has developed a relatively well-refined definition of competition, as well as a paradigm for transitioning the industry from monopoly to competition. In essence, Congress has defined competition based upon the traditional market power test and analysis used by the two federal antitrust agencies, the Department of Justice and the Federal Trade Commission.¹ This approach also has been adopted by numerous regulatory bodies, including the FCC, to determine the extent to which a market is competitive. The FCC, for instance, considers market power analysis fundamental to its forbearance analysis, noting that a "market power analysis was designed to identify when competition is sufficient to constrain carriers from imposing unjust, unreasonable, or unjustly or unreasonably discriminatory rates, terms, and conditions, or from acting in an anticompetitive manner."²

Under a market power analysis, relevant product and geographic markets are first defined and market participants identified. Next, market concentration (market share) is determined, and the potential for new entry that could ameliorate any market power is evaluated. The final step in the analysis is to determine, should there be excessive market concentration and no realistic opportunity for new entry, whether a firm can raise prices significantly or otherwise engage in anticompetitive behavior.

¹ *Horizontal Merger Guidelines*, U.S. Department of Justice and the Federal Trade Commission (Aug. 19, 2010), available at: <http://www.justice.gov/atr/public/guidelines/hmg-2010.html>.

² *Petition of Qwest Corporation for Forbearance Pursuant to 47 U.S.C. § 160© in the Phoenix, Arizona Metropolitan Statistical Area*, Memorandum Opinion and Order, (FCC 10-113), WC Docket No. 09-135, ¶ 37 (rel. June 22, 2010) ("Qwest Phoenix Forbearance Order").

A rigorous market power analysis based on current data about the market accounts for the dynamism of a market and enables the regulator to have the flexibility to reflect the current state of the industry in its policies. The forbearance process undertaken pursuant to Section 10 of the Communications Act provides an example of how this market power analysis comes into play. Under the construct of Title II, the Commission can adopt a general industry rule based on existing market conditions and then permit a carrier to file a forbearance petition seeking relief based in part on new market conditions.³

2. Question: What principles should form the basis of competition policy in the oversight of the modern communications ecosystem?

Competition policy needs to be based on whether in the relevant market a firm can price at supracompetitive levels or otherwise engage in anticompetitive acts. Where firms in a relevant market cannot engage in such activities, competition policy cannot support the imposition of traditional economic regulation – although as discussed in the introduction, there may be other bases for such regulation.

3. Question: How should intermodal competition factor into an analysis of competition in the communications market?

Firms are present in a market – and should be included in the analysis of competition – if they provide consumers in the relevant area with service in a commercially reasonable amount of time and the services are substitutable. Thus, for instance, wireless and wireline broadband (intermodal) providers should be considered competitors if they generally offer service in the same territory and their services are considered by consumers to be substitutes.

4. Question: Some have suggested that the FCC be transitioned to an enforcement agency, along the lines of the operation of the Federal Trade Commission, rather than use broad rulemaking authority to set rules a priori. What role should the FCC play in competition policy?

In its January 31, 2014 responses, ACA cautioned against making wholesale changes in the authority and structure of the FCC because it would create substantial and prolonged uncertainty. In addition, while restricting the FCC to engaging only in enforcement actions may have appeal to larger, incumbent firms, such a change would disadvantage smaller firms. Larger firms have sufficient resources to protect their interests in the market using “litigation-like” proceedings and the means to properly defend themselves when necessary. In contrast, smaller firms largely do not have the time and resources to pursue case-by-case actions and can be easily overwhelmed if under investigation. Moreover, smaller firms cannot rely upon enforcement agencies, which have limited resources to investigate problems affecting their concerns. In contrast, general rulemakings, where the FCC acts more as legislator than judge, enables greater participation by smaller firms and the agency to account for their concerns as a group. Thus, ACA opposes making the FCC into an FTC-type enforcement agency.

At the same time, ACA believes refinements to the Communications Act are warranted. The Commission must have the appropriate processes, such as forbearance under Title VI, that will enable it to respond to market changes. Moreover, rather than imposing “indirect” regulations on firms over

³ Pursuant to Section 10 of the Communications Act, a forbearance inquiry also involves an evaluation of whether consumers will be protected if forbearance is granted (Section 10(a)(2)) and whether forbearance is in the public interest (Section 10(a)(3)). This analysis is consistent with the principles that ACA believes should underlie communications policymaking.

which it has jurisdiction to control the actions of firms outside its jurisdiction, the Commission should have authority to impose regulations directly over firms to address effectively the problems they cause. For instance, ACA has proposed that the Commission have additional direct authority over video programming owners so that it can directly and more efficiently impose select obligations, rather than making cable operators responsible in the first instance.

5. Question: What, if any, are the implications of ongoing intermodal competition at the service level on the Commission's authority? Should the scope of the Commission's jurisdiction be changed as a result?

Whether a service outside of the Commission's jurisdiction is a substitute for a service subject to the Commission's authority – and should be included in a market power analysis – is a factual issue. However, just because an “unregulated” service is a substitute does not necessarily mean it should be subject to the Communications Act's regulatory regimes. Rather, if the presence of these “unregulated” services is sufficient to indicate competition exists, then, as a general rule, the Commission should reduce its oversight of providers subject to regulation. Today, for Title II of the Communications Act, the Commission can use its forbearance authority to undertake this process.

Although expansion of the Commission's jurisdiction may be warranted in select instances, ACA is especially concerned that any substantial change in jurisdiction – particularly one resulting in new regulations being imposed – will create uncertainty, harming investment and innovation. For instance, for decades the Commission has worked diligently to ensure that its telecommunications regulatory regime in Title II does not sweep in information services, which are subject to its Title I and Section 706 authority. Although the line between a telecommunications and information service has shifted somewhat, which is not surprising in a dynamic market, it has largely held fast. As a result, providers know the rules of the game and can plan and invest. There is little doubt that the nearly decade-old *Brand X* decision, which correctly subjected cable provided broadband Internet access service to a more minimal regulatory regime, has fostered – and continues to foster – robust broadband investment by ACA members.

6. Question: What, if any, are the implications of ongoing intermodal competition on the role of the FCC in spectrum policy?

While ACA members have traditionally provided only wireline based services, they are increasingly using their networks to provide community hotspots over unlicensed spectrum. Over time, because of ease of access to spectrum and relatively low cost of installation, ACA members plan to expand their wireless hotspot coverage substantially. In effect, these cable operators have the potential to provide greater intermodal portable wireless competition. As noted, a key reason for ACA members entering into this business is easy access to unlicensed spectrum, and thus ACA recommends that in adopting any “pro-competitive” spectrum policy, the Committee allocate sufficient spectrum for unlicensed use.

7. Question: What, if any, are the implications of ongoing intermodal competition at the service level on the FCC's role in mergers analysis and approval?

In exercising its authority to review and approve mergers, the Commission examines whether the transaction is in the public interest, which includes an evaluation of whether there is harm to competition. In undertaking the analysis of competitive harm, the Commission should include all firms in the relevant market, regardless of their regulatory status, that provide a service that is a substitute for the service offered by the merging parties.

8. *Question: Competition at the network level has been a focus of FCC regulation in the past. As networks are increasingly substitutes for one another, competition between services has become even more important. Following the Verizon decision, the reach of the Commission to regulate “edge providers” on the Internet is the subject of some disagreement. How should we define competition among edge providers? What role, if any, should the Commission have to regulate edge providers – providers of services that are network agnostic?*

It is increasingly clear that some edge providers have the incentive and ability to engage in practices that block or degrade a consumer’s ability to access lawful content over the Internet. At the moment, Viacom is selectively blocking access to freely available parts of its website by customers of ISPs whose affiliated MVPD has opted not to renew its video programming carriage agreement with Viacom. Even customers of the ISP who do not subscribe to the MVPD service are blocked. In the past, other edge providers engaged in similar actions. News Corp. blocked access by Cablevision subscribers; CBS blocked access by Time Warner Cable and Bright House subscribers.

Not only should policymakers be troubled that edge providers are engaging in Internet blocking, they should be concerned that edge providers will seek to impose a per-subscriber charge on all consumers of an ISP even if a consumer never visits a provider’s website. ACA understands that a website may charge a fee for a consumer to access its content, but there is no reason to demand fees from ISPs based upon broadband subscribers that never accesses the website’s content.

Consequently, open Internet regulations should not be imposed on ISPs by the Commission without parallel requirements being imposed on edge providers. This will ensure that consumers can reach the lawful Internet content of their choice. It also will avoid altering the bargaining relationship between edge providers and MVPDs/ISPs.

9. *What regulatory construct would best address the changing face of competition in the modern communications ecosystem and remain flexible to address future change?*

First, ACA believes Congress should periodically review and update provisions of the Act. In its initial submission to the Committee, ACA outlined various provisions in Title VI that are based on the outdated premise that larger cable operators have sufficient market power to increase consumer rates and leverage programmers unfairly. Because these outdated provisions are inhibiting cable operators from investing and competing, Congress should address them promptly. ACA also cited other sections of the Act, including the pole attachments provisions, that need to be revised to encourage network deployment.

To address future changes in technology and the market, in updating the Act, Congress should focus on providing the proper framework for the Commission’s authority based on fundamental principles. As discussed in the Introduction, ACA suggests the following –

1. Regulatory intervention in a relevant product and geographic market is warranted when –
 - i. There is an exercise of substantial market power or unfair or deceptive acts or practices;
 - ii. Competition or consumers are harmed in a manner contrary to the “public interest;”
 - iii. Smaller or more rural providers are disproportionately disadvantaged compared to other industry participants; and
 - iv. There are specific social objectives to achieve that markets will not deliver, such as ensuring vital communications services remain viable during emergencies and related events and available to all consumers, including those with special needs.

2. Any regulatory intervention should be applied in a competitively and technologically neutral manner.
3. Any regulatory intervention should be precisely targeted to avoid imposing excessive costs; exemptions and special considerations should be afforded to smaller and rural providers where appropriate.

In addition, ACA recommends that the Act extend the reach of the current forbearance provisions (Section 10) to include any provision of the Act.

10. Given the rapid change in the competitive market for communications networks and services, should the Communications Act require periodic authorization by Congress to provide opportunity to evaluate the effectiveness of and necessity for its provisions?

ACA appreciates the need for regular examination of regulatory requirements because of changes in the market. It has long noted, for instance, that many of the provisions in the 1992 Cable Act need to be reviewed and updated. ACA thus encourages Congress to review the Act regularly, and it believes that the Commission should have forbearance authority. In select instances, it also may be appropriate to incorporate sunset provisions.

That said, ACA does not support periodic authorization for the Act as a whole. This would create uncertainty for providers. It also would cause smaller firms to expend substantial resources to be engaged in the process. Rather, as discussed above, this same objective can be achieved through regular oversight by Congress and by a mechanism that forces the Commission to consider whether changes in the market warrant deregulation.



**NEW YORK
LAW SCHOOL**

June 13, 2014

The Honorable Fred Upton
2183 Rayburn House Office Building
Washington, DC 20515

The Honorable Greg Walden
2182 Rayburn House Office Building
Washington, DC 20515

**Re: Competition Policy and the Role of the Federal Communications
Commission – Response to White Paper #3**

Dear Chairman Upton and Chairman Walden,

The Advanced Communications Law & Policy Institute (ACLP) at New York Law School respectfully submits the following comments in response to the Committee's white paper titled, "Competition Policy and the Role of the Federal Communications Commission." We appreciate the opportunity to make this submission and commend the Committee for continuing forward with its inquiry into updating the nation's telecommunications laws.

Should you or your staff have any questions, please do not hesitate to contact us.

Respectfully submitted,

/s/ Charles M. Davidson
CHARLES M. DAVIDSON, DIRECTOR

/s/ Michael J. Santorelli
MICHAEL J. SANTORELLI, DIRECTOR

To: The Honorable Chairman Upton and the Honorable Chairman Walden, Energy & Commerce Committee, U.S. House of Representatives

From: Charles M. Davidson & Michael J. Santorelli, ACLP at New York Law School

Re: Foundational Principles for Modernizing Competition Policy and Recalibrating the Role of the Federal Communications Commission

Date: June 13, 2014

The House Energy & Commerce Committee is to be commended for its continuing efforts to update the nation's communications laws. The present inquiry is critical to these efforts. As the white paper correctly notes, "regulatory policy should reflect the competitive conditions of the market it is addressing."¹ An important corollary to this maxim is that regulation is best seen as a last resort for bolstering underperforming markets. In other words, where competition is healthy and viable, regulation should be minimized. Creating the parameters for objectively determining whether competition exists is at the heart of U.S. competition policy. As discussed in more detail below, there is ample opportunity, and increasing need, for Congress to (a) reformulate the parameters of competition policy and analysis in the communications space and (b) recast the role of the FCC vis-à-vis implementing new policy imperatives – all in an effort to better align the regulatory apparatus with the realities of the emergent and vibrantly competitive broadband ecosystem.

To these ends, we respectfully submit the following set of foundational principles, which we hope will inform the Committee's efforts:

1. To better inform efforts around modernizing competition policy and recalibrating the FCC's role, Congress should embrace an expansive, non-silo view of the relevant marketplace to which new policies will be applied. (p. 2)
2. Reform efforts should be informed by the successes of minimalist regulatory policies in the modern communications space. (p. 5)
3. Precision in relevant federal statutes is essential to clearly articulating goals for new competition policies and analytical frameworks and for minimizing unintended consequences like regulatory creep or broad interpretations of vague grants of authority. (p. 10)

¹ See *Competition Policy and the Role of the Federal Communications Commission*, at 2, May 19, 2014, Energy & Commerce Committee, U.S. House of Representatives, available at <http://energycommerce.house.gov/sites/republicans.energycommerce.house.gov/files/analysis/CommActUpdate/20140519WhitePaper-Competition.pdf> ("Competition Policy White Paper").

4. Congress should make clear that modern competition policy, and the oversight and enforcement that might stem from it, will be driven by objective data and analytical frameworks. (p. 12)
5. In order to make the regulatory process more efficient and responsive to market developments, Congress should provide clearer delegations of authority to all relevant regulatory entities in this space, recalibrate roles around these entities' core competencies, eliminate overlapping authority, and experiment with alternative regulatory approaches. (p. 15)

Each principle is expanded upon below.

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PRINCIPLE #1

To better inform efforts around modernizing competition policy and recalibrating the FCC's role, Congress should embrace an expansive, non-silo view of the relevant marketplace to which new policies will be applied.

The white paper accurately notes that, “[b]y dividing the overall regulatory scheme into separate titles based on specific network technologies and services, the Communications Act fails to contemplate or address the convergence and evolution of services in the modern digital era and the impact on the state of competition in the communications ecosystem.”² Consequently, a critical first step toward modernizing competition policy will be to adopt a more modern view of the market to which new laws and policies might be applied.

A similar effort was undertaken in the late 1990s and early 2000s, when commercial broadband services were gaining in popularity and when federal regulators were considering how to shape new regulatory frameworks. The schematic that emerged was a “layered” model for the Internet.³ This model was developed in reaction to widespread acknowledgement that the horizontal “siloes” around which communications law and regulatory policy had been developed was no longer applicable to a service that defied such easy categorization.⁴ In the context of modernizing communications regulation, the

² *Id.* at 2.

³ See, e.g., Kevin Werbach, *A Layered Model for Internet Policy*, 1 J. Telecomm. & High Tech. L. 37 (2002) (summarizing the evolution and contours of this model) (“*Layered Model for Internet Policy*”); LAWRENCE LESSIG, *THE FUTURE OF IDEAS: THE FATE OF THE COMMONS IN A CONNECTED WORLD* 23-25 (2002) (same) (“*FUTURE OF IDEAS*”).

⁴ Although the general notion of discrete layers in the delivery of Internet services was evident for years, many attribute its application in the Internet regulation context to Yochai Benkler. See Yochai Benkler, *From*

primary virtue of the layered model was that it separated the various vertical components of Internet service – physical or transport layer; logical layer; services layer; content layer – into discrete elements, which was framed as an optimal way for identifying those aspects that were amenable to formal regulation.⁵ To that end, the layered model isolated the physical layer as the one in which regulation was thought most essential in order to preserve certain transport ideals (*i.e.*, those that undergird modern calls for network neutrality rules).⁶

Although a step in the right direction, the “layered” model has become outdated and unworkable because of the rigidities inherent in its hierarchy and its inability to contemplate a blurring of the bright lines that separate the components of the broadband user experience. As such, the continued use of this model as a touchstone for recalibrating competition policy, revisiting FCC jurisdiction, and engaging in regulatory decision-making is problematic for several reasons.⁷ First and foremost, the market conditions that initially informed the “layered” model have shifted profoundly over the last decade. At the time of its development, there was much uncertainty about the extent to which new broadband platforms – *i.e.*, DSL and cable – would be capable of sustaining notions of “openness,” owing largely to disparate regulatory regimes and the potential for ISPs to exert “control” over other layers.⁸ Over time, however, intermodal competition among an array of firms and platforms has emerged, challenging these core notions.⁹

In addition, the ideological underpinnings of the layered model supported the development of an asymmetric regulatory model in the modern broadband space.¹⁰ Indeed, the primary

Consumers to Users: Shifting the Deeper Structures of Regulation, 52 Fed. Comm. L. J. 561 (2000) (“*From Consumers to Users*”).

⁵ *Layered Model for Internet Policy* at 57-59 (identifying these four layers). The “right” number of layers has ranged from three to as many as seven. *See, e.g.*, FUTURE OF IDEAS at 25, n. 13 (identifying three layers and citing to four and seven layer models); Yochai Benkler, *From Consumers to Users: Shifting the Deeper Structures of Regulation*, 52 Fed. Comm. L. J. 561 (2000) (identifying three layers).

⁶ *See, e.g.*, *Layered Model for Internet Policy* at 60 (“A vertically-layered communications policy would focus on these issues as they apply to all physical infra- structures, starting with the concept that where a physical network owner has market power, regulation may be the only way to ensure an open platform that fosters the beneficial dynamics of competitive markets.”).

⁷ The layered model has been the subject of much debate. *See, e.g.*, Douglas C. Sicker & Lisa Blumensaadt, *Misunderstanding the Layered Model(s)*, 4 J. Telecomm. & High Tech. L. 299, 300, n. 1 (2006) (collecting citations to critiques and counter-proposals).

⁸ FUTURE OF IDEAS at 25.

⁹ *See, e.g.*, Charles M. Davidson & Michael J. Santorelli, *Response to Congressional White Paper #1*, at 3-6, ACLP at New York Law School (Jan. 31, 2014), available at [http://energycommerce.house.gov/sites/republicans.energycommerce.house.gov/files/analysis/CommActUpdate/WP1 Responses 1-20.pdf](http://energycommerce.house.gov/sites/republicans.energycommerce.house.gov/files/analysis/CommActUpdate/WP1%20Responses%201-20.pdf) (providing relevant data and analysis). *See also* Daniel F. Suplber & Christopher S. Yoo, *Rethinking Broadband Internet Access*, 22 Harv. J. L. & Tech. 1 (2008) (discussing this evolution and its policy implications).

¹⁰ *Cf.* Lawrence B. Solum & Minn Chung, *The Layers Principle: Internet Architecture and the Law*, 79 Notre Dame L. Rev. 815, 866-868 (2004) (arguing that the “layers principle is grounded on arguments that transcend particular ideologies and interests.”).

focus of the regulatory responses emanating from this model was trained from the beginning on the physical/transport layer, *i.e.*, Internet access services provided by ISPs.¹¹ Consequently, this particular element of the broadband user experience has long been framed as a conduit for passively channeling content; efforts to undermine this ideal (*e.g.*, via network management) were seen as presumptively contrary to the ideals underlying the layered model.¹² The result has been a very narrow focus on regulating ISPs, which means that this “layer” is the only one potentially subject to any type of active regulation.¹³ Conversely, while firms in other “layers,” like content and device firms, are subject to a number of legal regimes – including relevant intellectual property, antitrust, and general consumer protection laws – these generally operate in an *ex post* manner; potential new rules for ISPs would be *ex ante* and “prophylactic” in nature.¹⁴ Some have argued that such a myopic focus on ISPs has encouraged conduct in other segments of the market that has actually undermined consumer welfare.¹⁵

In light of new market contours, it is respectfully submitted that policy should no longer be informed, explicitly or implicitly, by the antiquated “layered” model of the Internet.¹⁶ As the asymmetry of regulatory outcomes that flowed from this particular model demonstrates, metaphors matter in communications policymaking. Accordingly, policymakers should embrace more expansive and inclusive conceptions of the modern marketplace in order to reflect the realities of the user experience and not theoretical notions of Internet architecture. Such an approach could yield a more neutral approach to regulation, one that applies evenly to firms across the space regardless of what layer they might operate on or segment of the market in which they compete. Ultimately, such a model is essential in recognition of continued technological convergence and the many efforts by firms to compete across sectors.

¹¹ See, *e.g.*, Brett M. Frischmann, *An Economic Theory of Infrastructure and Commons Management*, 89 Minn. L. Rev. 917, 1005 (2005) (noting that “As the structure of [the layered] model implies, the physical and logical infrastructure are the foundational layers upon which the Internet environment we experience has been built.”)

¹² See, *e.g.*, YOCHAI BENKLER, *THE WEALTH OF NETWORKS: HOW SOCIAL PRODUCTION TRANSFORMS MARKETS AND FREEDOM* 393 (2006) (discussing the need for a “core common infrastructure” to preserve the “networked information economy.”).

¹³ See, *e.g.*, *In the Matter of Protecting and Promoting the Open Internet*, Notice of Proposed Rulemaking, para. 6-10, GN Docket No. 14-28, FCC 14-61 (May 15, 2014) (explaining how ISPs have a variety of economic incentives for limiting Internet openness) (“*Protecting and Promoting the Open Internet*”). But see *Verizon v. FCC*, 740 F.3d 623 (D.C. Cir. 2014) (suggesting that a provision of the Communications Act – section 706 – could be used to regulate other firms in the ecosystem).

¹⁴ *Protecting and Promoting the Open Internet*.

¹⁵ See, *e.g.*, Christopher S. Yoo, *Protocol Layering and Internet Policy*, 161 U. Pa. L. Rev. 1707, 1752-1755 (2013).

¹⁶ Although the FCC rarely cites specifically to the layered model, its general framework has informed many of the recent efforts around network neutrality regulation, especially vis-à-vis the Commission’s reluctance to extend regulation to non-ISPs. See generally *Protecting and Promoting the Open Internet*.

The “ecosystem” concept that has been in vogue in recent years offers a useful starting point for developing this new model.¹⁷ “Ecosystem” connotes intimate interconnectivity among the full array of players in a given space. Positive and negative events in one sub-segment reverberate throughout the entire ecosystem. This inverts the hierarchical nature of the layered model and eschews subjective norms about Internet architecture and presumptions about certain kinds of behaviors by firms based on their place in the hierarchy, all of which supports more holistic assessments of real, as opposed to theoretical, outcomes in the marketplace. Embracing this type of mindset would thus orient competition policy and resulting regulatory actions around *actual* harmful practices regardless of the segment in which they occur.

PRINCIPLE #2

Reform efforts should be informed by the successes of minimalist regulatory policies in the modern communications space.

Reforming competition policy in the advanced communications arena should embrace and further principles of regulatory minimalism, a bipartisan approach that has played a critically important role in supporting robust competition and innovation throughout the modern broadband space. The following provides a brief overview of: (1) the evolution of this light-touch approach; (2) its impact on the communications market; and (3) its viability going forward.

Evolution. The development and implementation of minimalist regulatory policies in the communications space had its genesis in the responses of federal policymakers to the emergence of an array of new telecommunications and computing technologies in the 1960s and 1970s. Over the course of the following decades, continued innovation and competition in the provision of long-distance and data computing services, along with the rise of new communications platforms like mobile telephony and high-speed Internet access, made clear that fresh regulatory approaches were needed to foster growth in these nascent markets.¹⁸ The contours of this new framework encompassed more than just a

¹⁷ The FCC popularized this concept in its National Broadband Plan. More specifically, it observed:

Networks, devices and applications drive each other in a virtuous cycle. If networks are fast, reliable and widely available, companies produce more powerful, more capable devices to connect to those networks. These devices, in turn, encourage innovators and entrepreneurs to develop exciting applications and content. These new applications draw interest among end users, bring new users online and increase use among those who already subscribe to broadband services. This growth in the broadband ecosystem reinforces the cycle, encouraging service providers to boost the speed, functionality and reach of their networks.

See Connecting America: The National Broadband Plan, at 15-16, FCC (2010).

¹⁸ These efforts dovetailed with broader efforts by policymakers to reassess traditional regulatory approaches in sectors like the trucking, airline, and railroad industries, which were undertaken in an effort to introduce competition into what some observed to be a stagnant U.S. economy. *See, e.g.*, PAUL A. LONDON, THE COMPETITION SOLUTION 78-81 (AEI Press 2005) (explaining that “after [World War II] ended people began to complain that limits on competition involved a lot of red tape and some obvious waste. By the 1960s, the idea began to take root...that cheaper and better service might be available if regulation could be streamlined and, perhaps in some areas, replaced by competition”).

“hands off” approach to emerging services – they also highlighted a clear policy choice by policymakers to begin shifting away from the rigidities of the common carrier regulatory model for communications services.

In the first half of the 20th century, policymakers were more likely to defer to the monopoly provider of telephone service and maintain barriers to entry in an effort to preserve the market structure that undergirded the common carriage approach to universal telephony.¹⁹ However, beginning in the 1950s, policymakers acknowledged that competition was possible in certain segments of the communications market.²⁰ Over time, this became increasingly evident as start-up firms worked to circumvent the monopoly market for basic telephony by harnessing new technologies and new methods for delivering familiar services.²¹ Consequently, regulators in the latter part of the 20th century realized that it was increasingly futile and contrary to the interests of consumers to keep new entrants out.²² Thus, Congress, the FCC, and other federal policymakers worked on two fronts to promote even the faintest signs of competition in the provision of long-distance service and data processing via communications networks: they began the complex process of divesting the AT&T monopoly, while on a parallel track they developed new, more minimalist regulatory approaches for competitive services.²³

Although the FCC, via its Computer Inquiries, demonstrated an ability to think beyond the strictures of common carriage for communications services, the conditions that resulted in a full embrace of regulatory minimalism are best seen in how Congress and the FCC reacted to the rise of new platforms in the 1990s and early 2000s. In general, the regulatory paradigm for these and other competitive new services has tended to move quickly from a modified version of common carriage (or some other historical model that tended to be more maximalist in nature) to a more minimalist approach. Two examples from the recent past illustrate how this paradigm evolved and how it has succeeded in fostering the growth of cross-platform competition.

First, in the context of mobile communications services, the FCC had initially taken a very hands-on approach to apportioning spectrum and otherwise guiding early development of the wireless marketplace.²⁴ Similarly, a number of state utility commissions extended, as a

¹⁹ See, e.g., Harry M. Trebing, *Common Carrier Regulation – The Silent Crisis*, 34 *Law & Contemporary Problems* 299 (1969) (discussing efforts by firms like MCI to enter protected markets like long-distance) (“*Common Carrier Regulation – The Silent Crisis*”).

²⁰ See, e.g., GERALD W. BROCK, *THE SECOND INFORMATION REVOLUTION* (2003) (providing an overview of technological advancements made in the middle part of the 20th century).

²¹ *Common Carrier Regulation – The Silent Crisis*.

²² *Id.*

²³ See, e.g., Charles M. Davidson & Michael J. Santorelli, *Federalism in Transition: Recalibrating the Federal-State Regulatory Balance for an All-IP World*, 29 *Berkeley Tech. L. J.* (forthcoming, summer 2014) (“*Federalism in Transition*”).

²⁴ Charles M. Davidson & Michael J. Santorelli, *Seizing the Mobile Moment: Spectrum Allocation Policy for the Wireless Broadband Century*, 19 *CommLaw Conspectus* 1, 29-31 (2011) (discussing this early “command and control” approach) (“*Seizing the Mobile Moment*”).

matter of course, common carrier rules to new wireless telephone service providers, reasoning that intrastate voice communications of any kind naturally fell within their regulatory ambit.²⁵ However, once it became evident that these new services were viable – both from a technological and a consumer standpoint – and that the piecemeal state-federal approach to regulating the service, a hallmark of the traditional regulatory model for basic telephony, was harmful to continued growth, a bipartisan Congress in the early 1990s acted to clarify what the framework should look like. This entailed the development of a national model that freed service providers from the “dual... regulatory jurisdictional system designed to regulate the monopol[istic]” telephone industry.²⁶ Many aspects of state regulatory authority over wireless were significantly curtailed by the resulting federal statute.²⁷ Congress’s explicit embrace of regulatory minimalism, coupled with concomitant changes to federal spectrum allocation policy, provided carriers with substantial regulatory certainty and facilitated the rapid deployment of competitive nationwide wireless services.²⁸

Second, in the context of high-speed Internet access services, the initial regulatory response tilted towards maximalism for certain providers. More specifically, when offered by incumbent telephone companies, high-speed Internet access like DSL fell under the regulatory regime for data services that grew out of the Computer Inquiries, which required these providers to make available the underlying basic transmission component on a nondiscriminatory basis to competitors.²⁹ However, firms operating outside the common carrier market for telephony – notably cable companies – were not subject to these rules for their cable modem service.³⁰ Such a bifurcated regulatory approach raised concerns among some, who argued that, in the absence of uniform maximalist policies, cable companies and other firms not subject to strictures like “open access” rules would be free to “impose whatever conditions they desire[d] on their customers” and exert too much control over the content flowing through their networks.³¹ Others, however, voiced

²⁵ See, e.g., Babette E.L. Boliek, *Wireless Net Neutrality Regulation and the Problem with Pricing: An Empirical, Cautionary Tale*, 16 Mich. Telecomm. & Tech. L. Rev. 1, 28–32 (2010) (“[T]wenty-nine states had not banned regulation, either by law or by de facto bans on [wireless] regulation promulgated by their public utility commissions”).

²⁶ See Leonard J. Kennedy & Heather A. Purcell, *Section 332 of the Communications Act of 1934: A Federal Framework That is “Hog Tight, Horse High, and Bull Strong,”* 50 Fed. Comm. L.J. 547, 550 (1998).

²⁷ According to the statute, “no State or local government shall have any authority to regulate the entry of or the rates charged by any commercial mobile service or any private mobile service, except that this paragraph shall not prohibit a State from regulating the other terms and conditions of commercial mobile services.” See *Omnibus Budget Reconciliation Act of 1993*, Pub. L. No. 103-66, § 6002(b), 107 Stat. 312, 392, 394 (codified in relevant part at 47 U.S.C. § 332(c)(3)(A) (20012)).

²⁸ *Seizing the Mobile Moment* at 31–40.

²⁹ See, e.g., James B. Speta, *Handicapping the Race for the Last Mile?: A Critique of Open Access Rules for Broadband Platforms*, 17 Yale J. on Reg. 40, 61–69 (2000) (discussing the regulatory treatment of these access services).

³⁰ *Id.*

³¹ See Mark A. Lemley and Lawrence Lessig, *The End of End-to-End: Preserving the Architecture of the Internet in the Broadband Era*, 48 UCLA L. Rev. 925, 927 (2001) (“*End of End-to-End*”).

concerns around the need for achieving regulatory parity and fostering a competitive environment in what was at that time a rapidly growing market.³²

Regulators were thus presented with a clear policy choice: impose maximalist “open access” requirements on all broadband providers in an effort to assure parity that mirrored common carrier regulation, or implement minimalist policies along the lines of those first espoused decades prior when the FCC acknowledged that certain “enhanced” services required such an approach. The FCC ultimately opted for the latter approach, and between 2002 and 2007, it developed and successfully defended in court a minimalist light-touch regulatory framework for every type of broadband Internet access service.³³

Impact. The impact of regulatory minimalism on advanced communications services, including mobile communications services, broadband, and IP-enabled services like VoIP, has been remarkable. As has been documented extensively elsewhere, there is significant evidence to demonstrate a causal relationship between the implementation of a deregulatory model in each of these segments and increases in investment, competition, and innovation.³⁴

³² See, e.g., William Kennard, Chairman, FCC, *Connecting the Globe: A Regulator’s Guide to Building a Global Information Community*, at IX-2 (1999), available at <http://www.fcc.gov/connectglobe/regguide.pdf> (observing that “Government policy can have a profound impact on Internet development; it can either foster it or hinder it. To date, the Internet has flourished in large part due to the absence of regulation. A “hands-off” approach allows the Internet to develop free from the burdens of traditional regulatory mechanisms.”); Michael K. Powell, Chairman, FCC, *The Great Digital Broadband Migration*, Remarks before the Progress & Freedom Foundation (Dec. 8, 2000), available at <http://transition.fcc.gov/Speeches/Powell/2000/spmkgp003.html> (“Convergence is radically altering economic assumptions and underlying cost structures. It is changing the game of capital formation and altering business models. The culmination of these changes is what I am referring to by the Broadband Digital Migration. The challenge for us is to make a similar leap from analog-rooted regulations to ones that are applicable and relevant to the digital environment.”).

³³ See *Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities*, 17 F.C.C.R. 4798 (2002), *aff’d Nat’l Cable & Telecomm. Ass’n v. Brand X Internet Serv.*, 545 U.S. 967 (2005); *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities*, 20 F.C.C.R. 14,853 (2005); *Classification of Broadband Over Power Line Internet Access Service as an Information Service*, 21 F.C.C.R. 13281 (2006); *In the Matter of Appropriate Regulatory Treatment for Broadband Access to the Internet Over Wireless Networks*, 22 F.C.C.R. 5901 (2007).

³⁴ See, e.g., James Speta, *Deregulating Telecommunications in Internet Time*, 61 Wash. & Lee L. Rev. 1063, 1147 (2004) (assessing the pro-competitive impacts of preventing municipalities from entering communications markets); Thomas Hazlett et al., *Sending the Right Signals: Promoting Competition through Telecommunications Reform*, a Report to the U.S. Chamber of Commerce (Sept. 2004), available at http://www.uschamber.com/sites/default/files/reports/0410_telecommstudy.pdf (comparing and contrasting the regulatory frameworks for telephone and broadband services and finding that the exacting regulatory approach for the former would hinder, rather than advance, competition and innovation in the market for the latter) (“*Sending the Right Signals*”); Robert Crandall & Hal Singer, *The Economic Impact of Broadband Investment*, *Broadband for America* (Feb. 2010), available at http://www.broadbandforamerica.com/sites/default/themes/broadband/images/mail/broadbandforamerica_crandall_singer_final.docx (finding that “In a largely deregulatory climate, broadband penetration skyrocketed to nearly 65 percent penetration by the end of the decade as absolute and quality-adjusted prices fell, and first-generation technologies—cable modem, DSL, and 3G wireless—individually covered approximately 90 percent of all U.S. households and collectively covered even more.” *Id.* at 1)

Another indicator of the success of regulatory minimalism in the broader communications space is the critical role that this framework has played in fostering the creation of an ecosystem of firms that spans discrete but related segments (*i.e.*, ISPs, content providers, device manufacturers). Unlike under common carriage, which for many years focused on preserving a narrow set of market conditions (*i.e.*, regulated monopolies) to the ultimate detriment of would-be competitors and collaborators, deregulation created the conditions under which such cross-sector partnerships have thrived. In short, the bright lines that once separated discrete segments of the communications space – and that were once enforced by maximalist rules – have begun to disappear as a result of regulatory minimalism. This dynamic is best illustrated by the rapid evolution of the modern wireless space.

Cross-sector partnerships in the wireless space have long existed (*e.g.*, between handset developers and service providers), but, for the most part, firms tended to focus mostly on competing within their immediate market.³⁵ Over the last few years, however, these lines have begun to blur, and are increasingly disappearing. The rapid rise of smartphones powered by operating systems that enable a universe of cutting-edge add-ons, the use of which can be monetized in numerous ways, along with the deployment of next-generation mobile broadband networks, which support faster and more reliable Internet connectivity, has fundamentally altered the nature of competition and innovation in what is now an interconnected ecosystem.³⁶ Numerous firms now compete across sectors for the attention – and dollars – of consumers as they seek to position themselves as the primary facilitator of the mobile experience.

This dynamic, which is evident throughout the broadband space, did not stem from a particular set of regulatory provisions, legal obligations or prescriptive competition policy. Rather, it evolved organically out of the conditions created and fostered by the minimalist approach to regulation enshrined by Congress in federal statutes and implemented by the FCC.³⁷ Those who argue in favor of a policy reversal and call for a return to more maximalist policies oftentimes fail to account for these kinds of positive spillovers from regulatory minimalism.³⁸ The practical result of such convergence is that effective policymaking in this space has by necessity become less insular than it once was under common carriage and the general “siloes” approach to regulation.

³⁵ See, *e.g.*, Thomas Hazlett, *Modular Confines of Mobile Networks: Are iPhones iPhony?*, 19 Sup. Ct. Econ. Rev. 67 (2011) (providing an overview of how the ecosystem has developed).

³⁶ See, *e.g.*, Thomas Hazlett, David Teece and Leonard Waverman, *Walled Garden Rivalry: The Creation of Mobile Network Ecosystems*, George Mason University Law and Economics Research Paper Series 11-50 (Nov. 2011), available at http://www.law.gmu.edu/assets/files/publications/working_papers/1150WalledGardenRivalry.pdf

³⁷ See, *e.g.*, *Seizing the Mobile Moment* (discussing this dynamic in the wireless space).

³⁸ Many make these arguments by asserting that broadband platforms should only be seen – and thus regulated – as vehicles for transporting information to and from end-users. This notion stems from early advocacy around the notion of a “stupid” network. See, *e.g.*, *End of End-to-End*.

Viability. Congress on several occasions over the last few decades has made clear that regulators should follow a minimalist path for new services like wireless and broadband. These actions recognize that the regulation of markets requires a delicate balancing act by policymakers since their actions send crucial signals to market participants. How stakeholders interpret these signals is principally impacted by the rationale underlying regulations, how those regulations are implemented, and whether the policies are consistently applied by regulators.³⁹ In the context of developing sustainable regulatory policies in the modern communications space, the many positive impacts of regulatory minimalism provide powerful evidence about the continued viability of this approach. More specifically, its inherent flexibility and adaptability has accommodated growth and innovation in ways that maximalism could never allow.⁴⁰ This augurs well for what many expect will be even more rapid and more disruptive change in the coming years.⁴¹ As such, the minimalist model should inform any effort to modernize competition policy and otherwise reform the nation’s communications laws.

PRINCIPLE #3

Precision in relevant federal statutes is essential to clearly articulating goals for new competition policies and analytical frameworks and for minimizing unintended consequences like regulatory creep or broad interpretations of vague grants of authority.

Legislative reform efforts should seek to be as precise as possible in new or revised statutory grants of authority in order to assure desired outcomes vis-à-vis the implementation of new competition policies and analytical frameworks. There are several

³⁹ Shane Greenstein has noted that “private firms benefit from knowing how to anticipate the norms and standards employed by regulators to recognize the signs of health and unhealthy behavior in a situation that is changing so much [*i.e.*, the broadband ecosystem].” This interplay between innovator and regulator is essential to encouraging “innovative health.” See Shane Greenstein, *Glimmers and Signs of Innovative Health in the Commercial Internet*, 8 J. on Telecomm. & High Tech. L. 25, 34 (2010).

⁴⁰ See, e.g., LARRY DOWNES & PAUL NUNES, *BIG BANG DISRUPTION: STRATEGY IN THE AGE OF DEVASTATING INNOVATION* 72 (2014) (“...industries regulated as public utilities...must first obtain permission just to experiment with new technologies. They also need approval to pass the cost of research and development projects along to ratepayers...The degree of government oversight often translates to limits on the methods regulated industries employ to pursue disruptive innovation.”) (“BIG BANG DISRUPTION”); Charles M. Davidson & Michael J. Santorelli, *Realizing the Smart Grid Imperative: A Framework for Enhancing Collaboration Between Energy Utilities and Broadband Service Providers* (2011), available at http://www.twcresearchprogram.com/pdf/TWC_Davidson.pdf (comparing and contrasting the capacity of firms to innovate in the heavily regulated utility sector with that of firms in the broadband space).

⁴¹ See, e.g., *BIG BANG DISRUPTION* (discussing major trends and noting the potential for profound disruption in many sectors via the use new and emerging technologies); ERIK BRYNJOLFSSON & ANDREW MCAFEE, *THE SECOND MACHINE AGE: WORK, PROGRESS, AND PROSPERITY IN A TIME OF BRILLIANT TECHNOLOGIES* (2014) (discussing how technology will likely disrupt nearly every facet of the economy). See also Howard A. Shelanski, *Adjusting Regulation to Competition: Toward a New Model for U.S. Telecommunications Policy*, 24 Yale J. on Reg. 55 (2007) (discussing the relative merits of minimalism in the context of accommodating growth in the broadband space).

possible routes for achieving such precision in the interpretation and implementation of new delegated authority while also providing sufficient flexibility and adaptability.

First, it is respectfully submitted that Congress should more precisely define the contours of FCC authority in this highly dynamic sector. Specificity in the statute, of course, does not automatically assure regulatory certainty (see, for example, the extended legal and regulatory battles that emerged in the aftermath of the 1996 Act, especially in the context of FCC implementation of Congressional mandates regarding telephone network access by competitive providers). Even so, precision in statutory grants of authority is increasingly essential in a highly dynamic marketplace because broad “catchall” provisions could eventually be used in ways that contravene Congressional intent. The recent kerfuffle over the legality of the FCC’s network neutrality rules offers an illustrative example of how vague or seemingly innocuous provisions could blossom into broad regulatory power.

The Commission’s latest attempt to justify imposition of network neutrality rules hinges on a broad reading of section 706 of the Telecommunications Act.⁴² Although an appeals court vacated parts of an initial set of rules, it also interpreted section 706 as possibly authorizing nearly limitless authority by the FCC to regulate broadband services.⁴³ Key to this reading was a controversial determination by the FCC that broadband was not being deployed in a “reasonable and timely” manner.⁴⁴ According to the court, this conclusion is likely sufficient to support broad interventions into the marketplace, so long as those interventions constitute “immediate action to accelerate deployment of [broadband] capability.”⁴⁵ Previously, the FCC had rarely invoked section 706 except as the basis for issuing reports on the deployment status of “advanced telecommunications services.” The current interpretation – first advanced by the FCC and subsequently accepted by the appeals court – not only broadens significantly the prevailing understanding of the meaning of this provision, it is also contrary to well over a decade of regulatory restraint by an agency that, for many years, grounded its approach in what it interpreted as a clear call by Congress to exercise caution in the regulation of dynamic services.⁴⁶

At a time when the courts are increasingly deferential to agency interpretations of the outer bounds of their jurisdiction,⁴⁷ precision in any Congressional grant of authority to an

⁴² A previous attempt by the FCC to implement similar rules was struck down by a federal court because the Commission failed to justify that the Communications Act granted it authority to carry out its proposed censure of a broadband service provider. See *Comcast v. FCC*, 600 F.3d 642 (D.C. Cir. 2010).

⁴³ *Verizon v. FCC*.

⁴⁴ *Id.*

⁴⁵ *Id.* (citing 47 U.S.C. § 1302 (b)).

⁴⁶ See, e.g., *Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities*, 17 FCC Rcd 4798 (2002), *aff’d Nat’l Cable & Telecomm. Ass’n v. Brand X Internet Serv.*, 545 U.S. 967 (2005). See also *supra*, Principle #2.

⁴⁷ In *City of Arlington v. FCC*, 133 S. Ct. 1863 (2013), the Supreme Court held that courts should defer to an agency’s interpretation of its own jurisdiction so long as that interpretation is reasonable. This adds to a long line of case law around judicial deference to agencies when interpreting their enabling statutes. The landmark case here was *Chevron v. Natural Resources Defense Council*, 467 U.S. 837 (1984).

entity, including the FCC, which operates in a sector undergoing constant creative destruction, is critical. To the extent possible, Congress should thus specify the FCC's reach on key issues like regulating broadband and IP-enabled services. As discussed above, an optimal path forward would be formalizing the regulatory framework that fostered such incredible growth in this space over the last decade.

Second, more precise and narrower statutory grants of authority should be supplemented with greater reliance on laws of general applicability (e.g., antitrust). A key component of this undertaking will be an examination of the efficacy of continuing to locate primary oversight authority for broadband and IP-enabled services at the FCC. Some have argued in favor of eliminating or sharply reducing FCC authority in this space and replacing it with antitrust enforcement by federal authorities like the FTC.⁴⁸ Others have called for systemic deregulation in light of current market forces and dynamics in the broadband ecosystem.⁴⁹ A middle ground approach would be to narrow FCC authority along the lines discussed above, focus it on core competencies like spectrum allocation,⁵⁰ and supplement it with laws of general applicability (e.g., antitrust principles and consumer protection laws) that are enforced in appropriate venues (e.g., the FTC).

Third, Congress should also explore the feasibility of using more sunset clauses in certain parts of a revised Communications Act. Doing so would encourage policymakers to reevaluate provisions on a rolling basis, providing them with built-in opportunities for amending policies to better reflect new market dynamics. Congress should also explore the efficacy of integrating “triggers” into new statutes in certain well-defined instances. These kinds of provisions could lead to self-executing changes (e.g., the grant or removal of certain regulatory powers based on criteria being met or unmet), or they could help to speed up the process by which Congress is required to reauthorize particular sections of the Communications Act. Properly framed, such an approach could serve as both a “carrot” and a “stick” for guiding regulatory entities towards realizing specific Congressional imperatives around broadband and other IP-enabled services.

PRINCIPLE #4

Congress should make clear that modern competition policy, and the oversight and enforcement that might stem from it, will be driven by objective data and analytical frameworks.

To the extent possible, data should inform efforts by Congress to modernize competition policy and undergird any effort by regulatory entities to implement and enforce new

⁴⁸ See, e.g., Jonathan E. Nuechterlein, *Antitrust Oversight of an Antitrust Dispute: An Institutional Perspective on the Net Neutrality Debate*, 7 J. on Telecomm. & High Tech. L. 19 (2009) (discussing the need for antitrust enforcement in the context of net neutrality disputes).

⁴⁹ See, e.g., Christopher S. Yoo, *Deregulation vs. Reregulation of Telecommunications: A Clash of Regulatory Paradigms*, 36 J. Corp. L. 847, 866-867 (2011).

⁵⁰ For additional discussion, see *infra*, Principle #5.

policies. Data should be objective and evaluated in an impartial manner in order to assure integrity throughout analytical and rulemaking processes.

Currently, the communications laws empower the FCC to collect a range of data and require it to produce an array of reports on discrete topics. In addition, the statute grants the Commission significant authority to interpret the means (*i.e.*, analyses of the data) and ends (*i.e.*, interpretation of the analyses) of these inquiries. Without additional guidance, there may be incentives to subordinate data and the resulting analyses and reports as just another set of tools for realizing particular regulatory outcomes. Two examples from recent years illustrate how such vagueness in the statute supports subjective outcomes that are nominally grounded in data.⁵¹

First, as noted above, there has been much recent discussion about the scope and application of section 706 of the Telecommunications Act of 1996. In reviewing the FCC's most recent set of network neutrality rules, the D.C. Circuit opined that the Commission has potentially sweeping authority to regulate broadband under this provision, especially if the agency finds that advanced telecommunications services (*i.e.*, broadband) are not being deployed in a "reasonable and timely" manner.⁵² That such broad regulatory authority can simply be unlocked by a new interpretation of data regarding broadband availability in the U.S. raises important questions about data gathering and analytical techniques at the FCC – questions that are ripe for examination during the present Congressional inquiry. Indeed, in the absence of specific guidance regarding the parameters of its ability to collect, analyze, and interpret relevant data in this context, the FCC, in theory, is free to adopt its own performance benchmarks that would support an even more dire assessment of the U.S. broadband space.⁵³ This, in turn, could provide a sturdier foundation for new rules meant to accelerate broadband deployment.⁵⁴ Checks and balances are available under

⁵¹ Of course, this is not a new dynamic. Indeed, numerous FCC rulings have been challenged in court as being arbitrary and capricious and not supported by substantial evidence. Another illustrative example is the FCC's ongoing struggles around updating and reforming its media ownership rules. Beginning in the early 2000s, the Commission has attempted numerous times to use data to justify a range of changes to these rules. On several occasions, however, federal courts have remanded the rules back to the agency for further analysis. For an overview, see *In the Matter of 2014 Quadrennial Regulatory Review – Review of the Commission's Broadcast Ownership Rules and Other Rules Adopted Pursuant to Section 202 of the Telecommunications Act of 1996*, Further Notice of Proposed Rulemaking and Report and Order, at para. 9-14, MB Docket No. 14-50, FCC 14-28 (rel. April 15, 2014).

⁵² *Verizon v. FCC*, 740 F.3d at 640-643.

⁵³ See, e.g., Daniel Frankel, *FCC Looks to Redefine Broadband, Raise Speed Threshold Above 10 Mbps*, June 2, 2014, Fierce Cable, available at <http://www.fiercecable.com/story/fcc-looks-redefine-broadband-raise-speed-threshold-above-10-mbps/2014-06-02> ("A higher standard would also significantly impact policy debates and how the FCC regulates Internet service providers. With the greater benchmark, the commission could argue more stridently that ISPs aren't offering consumers a true broadband experience.").

⁵⁴ *Verizon v. FCC* 740 F.3d at 641 ("We think it quite reasonable to believe that Congress contemplated that the Commission would regulate this industry, as the agency had in the past, and the scope of any authority granted to it by section 706(b)—limited, as it is, both by the boundaries of the Commission's subject matter jurisdiction and the requirement that any regulation be tailored to the specific statutory goal of accelerating broadband deployment—is not so broad that we might hesitate to think that Congress could have intended such a delegation.").

other statutes (*i.e.*, administrative procedure rules), but more precise Congressional guidance would help to avoid protracted rulemakings and litigation on these issues.

The second “vagueness” example stems from recent FCC efforts to determine whether there is “effective competition” in the U.S. mobile marketplace. In 2010, the Commission, for the first time in six years, found that data did not support a finding of effective competition in the market for mobile services.⁵⁵ It reached a similar conclusion in two subsequent reports.⁵⁶ Criticism of this reversal has focused on the policy implications that such a sudden change in measuring competition could have on firms throughout the marketplace. Some interpreted this development as further evidence that the Commission remains ill-equipped to fully comprehend the mountains of “direct market evidence” evincing a new competitive landscape in the wireless ecosystem.⁵⁷ Others have criticized the FCC for a sloppy and confused analysis – one that put forward a large amount of compelling evidence that seemingly indicated the presence of at least “effective” levels of competition, but that ultimately failed to adopt that label.⁵⁸ Critics have also faulted the FCC’s current rubric for assessing competition on an array of other, more technical grounds, including an inability to identify the relevant market and thus properly contextualize the analysis.⁵⁹

The FCC has defended its new approach to assessing wireless competition as a direct consequence of undertaking a more “expansive and detailed analysis of the entire mobile wireless industry,” including voice, messaging, and broadband.⁶⁰ As a result, it is wary of attaching a label of “effectively competitive” to this space “because such an assessment would be incomplete and possibly misleading in light of the variations and complexities [it] observe[s].”⁶¹ This reasoning seems specious, though, especially considering the large

⁵⁵ See *In the Matter of Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993 Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services*, Fourteenth Report, 25 FCC Rcd 11407, 11411 (2010).

⁵⁶ See *In the Matter of Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993 Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services*, Fifteenth Report, 26 FCC Rcd 9664, 9691 (2011) (“15th CMRS Report”); Sixteenth Report, 28 FCC Rcd 3700, 3704 (2013).

⁵⁷ See, e.g., Gerald R. Faulhaber, Robert W. Hahn, and Hal J. Singer, *Assessing Competition in U.S. Wireless Markets: Review of the FCC’s Competition Reports*, 64 Fed. Comm. L. J. 320, 321 (2012) (hereinafter “*Assessing Competition*”).

⁵⁸ See, e.g., Thomas W. Hazlett, *The Federal Communications Commission’s Excellent Mobile Competition Adventure*, George Mason University Mercatus Center Working Paper No. 11-46 (Nov. 2011), available at http://mercatus.org/sites/default/files/publication/FCC_Hazlett.pdf.

⁵⁹ See, e.g., Harold Furchtgott-Roth, *Searching for Competition in the FCC’s Mobile Competition Report*, May 30, 2012, Fierce Wireless, available at <http://www.fiercewireless.com/story/furchtgott-roth-searching-competition-fccs-wireless-competition-report/2012-05-30> (“Even more troubling, the wireless competition reports never address whether wireless and wireline services might be part of a larger communications market.”).

⁶⁰ 15th CMRS Report at 9687.

⁶¹ *Id.* at 9691-9692.

amount of data suggesting high levels of intense cross-sector competition in the wireless space.

Both examples demonstrate a compelling need for additional Congressional guidance around data collection, analysis, and interpretation.⁶² While it would be a tedious and ultimately counterproductive task for Congress to attempt to spell out in detail the exact data and analytical techniques that the FCC – or any administrative agency – should use, there are many ways Congress could be more precise in its delegations around data collection and the production of reports. For example, Congress could temporarily relieve the FCC of its many data collection and reporting obligations until a more expert entity developed objective standards to guide the Commission’s efforts. This could happen via a formal standard-setting process (*e.g.*, one led by NIST), a separate expert entity convened by the FCC for these purposes (*e.g.*, something similar to its Technical Advisory Council), or a collaborative multi-stakeholder forum.

PRINCIPLE #5

In order to make the regulatory process more efficient and responsive to market developments, Congress should provide clearer delegations of authority to all relevant regulatory entities in this space, recalibrate roles around these entities’ core competencies, eliminate overlapping authority, and experiment with alternative regulatory approaches.

In an effort to promote continued growth of the broadband ecosystem and preserve consumer welfare gains and protections, it will be essential for Congress to not only modernize competition policy, but also recalibrate the roles of the regulatory entities that will be charged with implementing any new policies that might result. This will entail a wholesale reexamination of the underpinnings of federal legislative frameworks and resulting delegated authority to the array of regulatory entities at the federal, state, and local levels.⁶³ Recalibration of this magnitude is already occurring in a piecemeal manner – the FCC is addressing key aspects of regulatory federalism in the context of the IP transition and universal service reform, among other proceedings. These efforts are essential and long overdue, but in the absence of a more comprehensive undertaking led by Congress, the result will be continued tension between regulatory entities that share – or think they share – jurisdiction over certain services and segments of the communications space.⁶⁴

⁶² The portion of the statute that guides FCC efforts in the mobile context has not been updated since 1993; section 706 hasn’t been updated since being adopted in 1996. Most other sections of the Act that require data collection and/or require the submission of a report to Congress interpreting this data have also not been revisited in many years.

⁶³ Over the last decade, there have been numerous similar undertakings by Congress and other stakeholders in the communications space to overhaul federal law. *See, e.g.*, Kyle D. Dixon & Philip J. Weiser, *A Digital Age Communications Act Paradigm for Federal-State Relations*, 4 J. Telcomm. & High. Tech. L. 321 (2004) (discussing several of these types of initiatives).

⁶⁴ *See, e.g., Federalism in Transition. See also* Michael J. Santorelli, *Regulatory Federalism in the Age of Broadband: A U.S. Perspective*, 2 Policy & Internet 99 (2010) (discussing the need for federal-state

Effective reapportionment of regulatory authority will hinge on a number of factors. Foremost among these will be the extent to which Congress can provide clearer legislative guidance about the reach of federal and state law vis-à-vis broadband and IP-enabled services. Although Congress has long empowered the FCC with the authority to classify these services for regulatory purposes, the Commission has demonstrated a tendency to prevaricate in these determinations. The unresolved question of the proper regulatory classification of VoIP, which has been pending before the FCC for more than a decade, is illustrative of this dynamic.⁶⁵ In the absence of clear guidance, numerous states have attempted to impose traditional telecommunications regulation on this borderless service.⁶⁶ In short, while administrative law recognizes that expert agencies are well positioned to fill in any gaps that might emerge when fulfilling their delegated duties,⁶⁷ the many gaps in the communications laws have been widened further by the disruptive and ceaseless nature of innovation throughout the ecosystem, further underscoring the need for Congress to update and clarify its mandates.⁶⁸

Another major factor impacting recalibration will be the extent to which the FCC and other relevant regulatory agencies embrace a new model for conceptualizing the Internet and the reach and structure of possible regulatory responses. A broader conception, along the lines of the one proposed above (in Principle #1), would likely necessitate more vigorous application of laws of general applicability, including antitrust and consumer protection rules. Accordingly, other expert agencies (*e.g.*, the FTC), along with the federal courts,

recalibration to facilitate continued use of broadband in key sectors like healthcare, education, and energy) (*“Regulatory Federalism in the Age of Broadband”*).

⁶⁵ See *In the Matter of IP-Enabled Services*, Notice of Proposed Rulemaking, 19 FCC Rcd. 4863 (2004). This official rulemaking proceeding grew out of an array of earlier inquiries made by the Commission into the proper regulatory approach to VoIP service. *see, e.g., See The Provision of Interstate and International Interexchange Telecommunications Service via the “Internet” by Non-Tariffed, Uncertified Entities, America’s Carriers Telecommunications Association (“ACTA”) Petition for Declaratory Ruling, Special Relief, and Institution of Rulemaking Against VocalTec, Inc.; Internet Telephone Company; Third Planet Publishing Inc.; Camelot Corporation; Quarterdeck Corporation; and Other Providers of Non-tariffed, and Uncertified Interexchange Telecommunications Services*, RM No. 8775 (Mar. 4, 1996) (asking for clarification of the regulatory treatment of VoIP); *In the Matter of Federal-State Joint Board on Universal Service*, Report to Congress, 13 FCC Rcd. 11501 (1998) (exploring the array of different kinds of Internet telephony and identifying possible regulatory treatments).

⁶⁶ *Federalism in Transition* (discussing various attempts and responses by the FCC).

⁶⁷ See, *e.g., Chevron U.S.A. v. Natural Resources Defense Council*, 467 U.S. 837 (1984).

⁶⁸ The Supreme Court in 1999 observed that: “It would be a gross understatement to say that the 1996 Act is note a model of clarity. It is in many important respects a model of ambiguity or indeed even self-contradiction. That is most unfortunate for a piece of legislation that profoundly affects a crucial segment of the economy worth tens of billions of dollars.” *AT&T Corp. v. Iowa Utils. Bd.*, 525 U.S. 366, 397 (1999). *But see* Randy J. Kozel & Jeffrey A. Pojanowski, *Administrative Change*, 59 U.C.L.A. L. Rev. 112, 118-122 (2011) (discussing the mechanics of judicial review of agency interpretations and noting the willingness of courts to provide agencies with broad discretion to interpret their enabling statutes).

would likely see their roles expand in the context of policing the behavior of firms throughout the broadband ecosystem in an *ex post* manner.⁶⁹

Yet another factor influencing recalibration will be the extent to which policymakers opt for designing new regulatory roles that can effectively harness and leverage core competencies. Indeed, a key part of any legislative update should be a bolstering of authority over issues that are seen as remaining within the reasonable purview of the entity. For example, there is little debate that the FCC should retain exclusive authority over the management of spectrum resources for commercial mobile services.⁷⁰ Indeed, in recent years there have been efforts to *expand* this authority in an effort to facilitate the allocation of additional spectrum for mobile broadband purposes.⁷¹ Further expanding this authority will be essential to accommodating continued growth of the mobile broadband space. However, there is much less agreement that the FCC should retain a major role in merger review, for example, highlighting yet another opportunity for Congress to more clearly express its intent vis-à-vis the contours of FCC actions in this and similar contexts. At other levels of government, recalibration efforts will likely result in much narrower regulatory authority for state PUCs and municipalities.⁷² Even so, these entities would remain uniquely positioned to play key roles in enhancing broadband connectivity at the state and local levels.⁷³

These efforts could be supplemented by alternative regulatory and governance platforms. Exploring the feasibility of these types of approaches will be a valuable exercise by policymakers. An animating force of these efforts would be a desire to streamline regulatory processes and make them more responsive to rapid changes in the marketplace. Indeed, new market dynamics require platforms that can reduce, rather than heighten, complexity and bureaucracy in the resolution of time-sensitive matters. To these ends, policymakers should explore whether and to what extent they might require regulatory agencies to adapt alternative dispute resolution (ADR) techniques for use in resolving commercial disputes. The virtues of well-designed ADR platforms are many and include: the ability to centralize complex, multi-jurisdictional matters in a single forum; ensuring that dispute resolution is driven largely by the parties, which helps to insulate proceedings from larger policy or political discussions; empowering parties to select impartial expert

⁶⁹ The literature on the viability of more expansive application of antitrust in the communications space has grown significantly in recent years. For a representative sampling of these works see, e.g., *Antitrust Oversight of an Antitrust Dispute; Information, Innovation, and Competition Policy for the Internet*; Geoffrey A. Manne & Joshua D. Wright, *Innovation and the Limits of Antitrust*, 6 J. Competition L. & Econ. 153 (2010); Salil K. Mehra, *Paradise is a Walled Garden? Trust, Antitrust, and User Dynamism*, 18 Geo. Mason L. Rev. 889 (2011); Babette E.L. Boliek, *FCC Regulation Versus Antitrust: How Net Neutrality is Defining the Boundaries*, 52 B.C. L. Rev. 1627 (2011).

⁷⁰ See, e.g., *Seizing the Mobile Moment* at 28-50 (detailing the history of FCC spectrum policy).

⁷¹ See, e.g., *See Middle Class Tax Relief and Job Creation Act of 2012*, Pub. L. No. 112-96, 126 Stat. 156 (2012) (empowering the FCC with the authority to engage in incentive auctions).

⁷² See, e.g., *Federalism in Transition* (detailing the range of antiquated regulatory activities that will likely be preempted during the IP transition).

⁷³ *Id.* See also *Regulatory Federalism in the Age of Broadband*.

mediators; creating a dynamic where resolution of a particular dispute is final, thus reducing lengthy appeals processes; and the ability to assure adequate levels of transparency and confidentiality depending on the matter at issue.⁷⁴

Forums that embody ADR principles already exist at the FCC for settling disputes involving program carriage arrangements.⁷⁵ Something similar has been proposed in the context of addressing violations of possible new network neutrality rules.⁷⁶ Going forward, federal policymakers should continue exploring the efficacy of such multi-stakeholder processes and platforms so long as they prove to be effective in hastening the fair resolution of commercial disputes. To this end, policymakers might support small-scale pilot programs to test the effectiveness of various models in resolving discrete business-to-business matters throughout the ecosystem.⁷⁷ Over the long term, successful models could be adapted for use in any number of other contexts.

⁷⁴ See, e.g., *Efficient ADR for Intellectual Property Disputes*, World Intellectual Property Organization, available at <http://www.wipo.int/export/sites/www/amc/en/docs/euro.pdf> (excerpting from THE HANDBOOK OF EUROPEAN INTELLECTUAL PROPERTY MANAGEMENT, 2nd ed. (Adam Jolly & Jeremy Philpott, eds.) (2009)).

⁷⁵ See, e.g., *Time Warner Cable v. FCC*, 729 F.3d 137, 145-149 (2d Cir. 2013) (discussing this framework).

⁷⁶ *Protecting and Promoting the Open Internet* at para. 170-176.

⁷⁷ Initial issues to explore in this manner might include disputes regarding: interconnection; patent enforcement; copyright infringement claims; and digital privacy.

June 13, 2014

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Re: Comments on Communications Act Modernization¹

In response to your May 19, 2014 request for further public comment, I want to add my support to the January 31, 2014 submission by several scholars at the American Enterprise Institute's Center for Internet, Communications, and Technology Policy, on your white paper "Modernizing the Communications Act." I am currently a visiting scholar at the American Enterprise Institute and have served in the past as Deputy Undersecretary of Defense for Industrial Policy, as a congressional staffer in both the House and Senate, and in various positions in the defense industry. My expertise is primarily in the areas of national security and government management and oversight.

My colleagues have addressed the importance of getting communications regulation right because of the great benefits that market forces can accrue to the "well-being of all Americans, and indeed, for people throughout the world." I couldn't agree more with this conclusion, but I also want to raise the importance that smart regulation can have on U.S. national security.

The provision of defense capabilities has a long and intertwined history with the communications and information technology sectors. 1950s and 1960s acquisition programs and research and development by the Department of Defense and NASA firmly established U.S. dominance in these industries. In the subsequent decades, as these technologies spread to the private sector, market forces drove the development of commercial technologies that far exceeded DOD capabilities in many of these areas.

¹ The views expressed here in response to a request for comment by the House Energy and Commerce Committee are those of the author alone and do not necessarily represent those of the American Enterprise Institute.

This emerging market dynamic was recognized by former Hewlett-Packard co-founder and former Deputy Secretary of Defense, David Packard in the 1986 President's Blue Ribbon Commission on Defense Management report. As the capability gap widened between defense and commercial technologies, Congress responded by passing the Federal Acquisition Streamlining Act of 1994 and Clinger-Cohen Act of 1996 to radically change DOD's and the federal government's acquisition practices to be better able to obtain commercial-based information technologies and services.

But this process of commercial technology development did not end in 1996 and was furthered along by the 1996 Telecommunications Act approach to broadband and the Internet. The specific advancements made by the IT industry in response to this largely deregulated space were unpredictable at the time but have resulted in significant new capability options for the DOD and have saved billions of dollars in unnecessary federal R&D.

The pace of rapid commercial technology change has sometimes exceeded the ability of DOD's acquisition process and culture to obtain the best from the commercial IT industry.² Still, DOD has been able to eventually (although slower and more costly than necessary) take advantage of many of the commercial advances made by Internet and broadband communications companies. What is critical to emphasize is DOD has the opportunity to do that more easily and faster when these advances occur here in the United States.

For that reason, I cannot stress how important it is for the U.S. to remain the world leader in IT and communications technology. Since the Department of Defense is no longer leading that technology except in very narrow niches, it is important for the U.S. commercial industry and market to lead the world so DOD can leverage this expertise. Without Congressional leadership on a regulatory strategy that provides an environment similar to that provided under the 1996 Telecommunications Act for the Internet (but applied to the larger communications sector), engineering and entrepreneurial talent will flow offshore to where the regulatory structure is most favorable to this type of market dynamism and competition. This is not a result that is favorable to our national security interests. The right regulatory approach to the communications industry can not only makes American economically strong but also can enhance our national security.

With regards to the specific comments to your request made by my AEI colleagues, these were based upon two foundational points: 1) that a historical silo-based

² You may be interested in a recent article I wrote that appeared in Wired on May 8, 2014, "How Dumb Policies Scare Tech Giants Away From Federal Projects," as an example of how the culture in the government can sometimes get in the way of understanding or taking advantage of rapid commercial advances. This same culture could inhibit effective regulation if proper congressional guidance and oversight is not applied.

approach to communications regulation is no longer appropriate to the modern communications system; and 2) that there is a large regulatory overlap and duplication between agencies. It is here where I see many similarities between the regulation of the U.S. defense industry through the defense acquisition process and the regulation of the telecommunications industry. Regulatory and oversight stovepipes often lead to excessive bureaucratic inefficiencies within government and a compliance mentality, poor performance and lack of innovation in the regulated industry. This is the current situation in the highly regulated defense industry and must not become the status quo in the commercial IT and communications industry. Periodically, these government stovepipes need to be broken down and replaced, leading to new ways of doing business and greater efficiencies and innovation in the regulated industries. A silo-based approach whether in defense acquisition or telecommunications can lead to missing out on these opportunities and a stagnating industry.

We cannot afford another country taking away our lead in communications technologies. To guard against that happening, I therefore agree with my colleagues that Congress should revise the approach taken by the Communications Act, eliminate the silo-based structure and replace it with a technology-neutral, competition-oriented approach. I applaud the efforts of the House Energy and Commerce Committee for initiating this process and I hope it will consider as it moves forward with its deliberations the national security implications of its actions.

Sincerely,

William C Greenwalt
Visiting Fellow
American Enterprise Institute

ATTACHMENT

How dumb policies scare tech giants away from federal projects

William C. Greenwalt | Wired

May 08, 2014

Regardless of political persuasion, few who ever visited or tried to use HealthCare.gov after its launch would argue that the Obamacare website was anything other than a colossal acquisition failure. The site wasn't openly bid. It was limited to companies "pre-qualified" to do IT business for the feds. But the HealthCare.gov fiasco is only the visible tip of the iceberg that is federal government procurement, and notwithstanding the titanic disaster of that experience, neither Congress nor the administration is trying to fix it.

What has not been emphasized is that the woes of the Obamacare website were far from a one-off, but rather, the standard for federal information technology (IT) procurement.

There have been, and continue to be, a multitude of failed IT acquisitions all meticulously documented by the Government Accountability Office (GAO) and agency inspectors general over the years. Just a few weeks ago, the GAO revealed even more troubling details, issuing a report on 15 large Department of Defense IT projects that found 11 of these projects had cost increases (one with an increase of 2,333 percent); 13 had schedule slippages (one with a six year increase); and only three met system performance goals.

Despite some initially promising reforms in the early 1990s, the IT acquisition problem has gotten worse and the government continues to trail the private sector in its effective use of new technologies and approaches. Nor is the \$500 billion annual federal acquisition problem limited to IT; it transcends major defense systems, research and development, construction, services contracting and commodities. A one-size fits all, rules based, Rube-Goldberg machine ensures that procurement failures are magnified and not left to chance.

The great mystery in all of this is why the federal government is failing in its IT programs when some of the best IT talent resides in U.S. The answer is that Silicon Valley is not involved in government contracting. According to a recent study by the University of Maryland (full disclosure: I was a contributor), many of the most dynamic, innovative, successful, commercial firms will not bid on a standard government contract because of the costs of complying with federal acquisition rules and the limited returns associated with federal procurement. Limited? Think under ten percent for government contractors, versus returns of 20 percent and above in the commercial world.

How did we get to this point? The IT industry owes much of its start to investments made by the Defense Department in the 1950s to miniaturize electronic components to support missile and space programs. That goal was met in the early 1960s and for the next 30 years the Pentagon and computer companies went their separate ways. By the mid-1980s senior defense officials like Hewlett-Packard co-founder David Packard—who had served as U.S. Deputy Secretary of Defense from 1969 to 1971—recognized that commercial IT developments had outstripped what was being produced by the Defense Department. Commercial technology, available to the public, was not making its way into the hands of soldiers, sailors, airman and marines because of the government's procurement process which was cumbersome, full of outdated requirements and regulations.

Reforms made in the Federal Acquisition Streamlining Act of 1994 and the Clinger Cohen Act of 1996 made it easier to sell to the federal government, and for a while, commercial firms tiptoed into the federal market. However these reforms did not go far enough for many commercial companies. For example, the changes failed to remove the requirements to comply with unique government accounting standards, they failed to protect commercial intellectual property rights, and failed to stop arbitrary government audits. With the passage of time and without senior leadership support, bureaucratic inertia set in and resulted in the re-imposition of old requirements, in the creation of new barriers to doing business with the government, and in a *de facto* preference for government-unique rather than commercial solutions. So Silicon Valley did what it does best: ignore the government and make a lot of money elsewhere.

Despite, the fact that commercial tech companies had turned away from going after federal contracts, the government was very much in need of help from the corporate IT world — as was seen with HealthCare.gov. The dirty secret, epitomized by, but in no way limited to, the Obamacare website is that the needed improvements were made by bypassing the acquisition system. Individuals working for Silicon Valley firms who would normally refuse to do business with the government were brought in to try and fix the site. It is, however, against the law for these types of experts to work for gratis for the government, so instead, they were made employees of an existing contractor (at the behest of the frantic Obama administration).

The trouble is that what may appear to be a bold workaround opens the door to a new 21st century spoils system. It sets a horrible precedent for the potential hiring of future politically connected government contractors.

Still, the need to circumvent the acquisition system—as the godfathers of HealthCare.gov did—is becoming increasingly essential if agencies want something innovative, fast, cheap or functional. Congress has responded over the years with a complicated set of one-off waivers, exceptions, and carve-outs to acquisition rules to acquire commercial items or meet wartime needs. Indeed, these authorities might have been used for the Obamacare website to attract a competent and experienced Internet commerce firm, but a combination of anti-market, anti-reform agendas

along with a muddled sense of the job resulted in the decision to use the wrong type of company.

Theoretically, one course of reform is to expand on exceptions and allow the thicket of regulations to die on the vine. But as any government official can tell you, regulations never die. Worse yet, companies set up to navigate the existing system have a vested interest in seeing it continue. In other words, the current system encourages collusion between favored contractors and the anti-market fans of the status quo within the ranks of government.

Another reform option proposed by the Defense Business Board– which provides a private sector perspective to the Secretary of Defense–essentially eliminates all acquisition regulations and re-builds a new system from scratch, requiring any new regulation to be justified based on efficiency and effectiveness. This approach has the potential to bring market-oriented flexibility and life back to a moribund acquisition process. It could be expanded to apply to all acquisition laws, rules, regulations and practices.

How would it work? The reality is it has taken over 50 years to create the current procurement problem, and it will take more than one Congressional session to fix it. First, it is necessary to force action. Step one is to enact a legislative sunset of procurement laws and regulations that would require Congress and the Administration to review the existing system in its entirety rather than just add to it. Get rid of the old to make room for the new.

Step two is to construct a new commercial-like acquisition system from the ground up designed to attract bold innovative contractors who can deliver results for the taxpayer and not just comply with government fiat. This results-oriented system should be based on reasonable competition, proven best business practices, and commercial accountability measures that would replace the government-unique barriers that currently restrict competition and prevent some of the most qualified commercial firms from doing business with the government. The true test of any successful acquisition reform will be when Silicon Valley firms are major players in the government marketplace.

The current strained fiscal environment demands that the federal government move away from a process-driven acquisition system if it is ever going to access the cost saving opportunities and innovative solutions that have arisen in the commercial market. A system that only works by going around it is not a workable system and should be dismantled. If there is only one valuable lesson to be learned from the HealthCare.gov debacle, that would be a valuable one indeed.

Bill Greenwalt is a visiting fellow in the Marilyn Ware Center for Security Studies.

June 13, 2014

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Re: Comments on Competition Policy in the Communications Market

Thank you for the opportunity to respond to your inquiry on an update of the Communications Act. We, the undersigned scholars at the American Enterprise Institute's Center for Internet, Communications, and Technology Policy replied – in our individual capacities – to your initial request for comments on January 31, 2014.

Your latest inquiry asks the public to comment specifically on the question of competition in communications markets. Because our initial reply outlined most of our views on the topic of competition, we are resubmitting it here, along with two related papers: “Broadband Competition in the Internet Ecosystem” and “In Search of a Competition Doctrine for Information Technology Markets: Recent Antitrust Developments in the Online Sector.”

Events in the few short months since our previous submission have only served to reinforce our observations of the marketplace and our confidence in our policy proposals.

Consider that just since January 2014:

- Facebook paid \$19 billion for WhatsApp, a messaging service that now boasts some 500 million users worldwide and which provides an alternative to traditional telecom text messaging services.
- Amazon launched Fire TV (an even more ambitious upgrade of its Amazon Video service), partnered with HBO GO, and will soon reveal its own mobile device.
- Google announced it will likely build fiber optic broadband access networks in an additional 34 U.S. cities. Google has also said it is launching a new low-earth-orbit satellite constellation, specifically devoted to broadband access.
- AT&T said it will extend its fiber optic broadband networks in 100 U.S. cities. AT&T also said it would acquire DirecTV, a combination that could provide even more robust competition in the video distribution market.

- Verizon commenced the full replacement of copper wire telephone service in New York City with advanced fiber optics.
- Comcast, Time Warner Cable, and other cable firms announced plans to dramatically expand their use of Wi-Fi to cover ever larger areas with fast wireless access.
- Comcast and Verizon each signed agreements with Netflix, providing for direct connections between their broadband networks and Netflix's content delivery network. For Netflix, bandwidth costs should go down, and performance should improve. Contrary to much of the commentary, the interconnection and peering markets are wide and deep and, despite one high-profile stand-off, are working well.

These developments show that competition is thriving in the multiple dimensions of the dynamic Internet ecosystem. New investments in fiber, satellite, and wireless technologies show that intermodal competition is alive and well. The number of options, and the capabilities of those options, is increasing. The continued investments in networks, devices, and services by content and software firms — and investments in content and software by network firms — show that the entire market place is growing in diversity and dynamism.

We believe economic theory and evidence in the marketplace suggest competition is best served by an open environment unfettered by prescriptive regulation of specific technologies and firms, by an industry-specific regulator. The better path is to trust a more general watchdog to protect consumers from harms on a case-by-case basis.

We remain at your service to discuss ideas and answer any questions you might have.

Respectfully,

Richard Bennett
Visiting Fellow

Gus Hurwitz
Visiting Fellow

Jeffrey Eisenach
Visiting Scholar

Roslyn Layton
Visiting Fellow

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In Search of a Competition Doctrine for Information Technology Markets: Recent Antitrust Developments in the Online Sector

Jeffrey A. Eisenach and Ilene Knable Gotts†

Recent antitrust developments in the online sector – sometimes described as the “Internet Ecosystem” – demonstrate that the search for a coherent and reliable doctrine for evaluating competition issues in high-tech markets remains incomplete. While acknowledging that traditional approaches are often inapposite for assessing the competitive dynamics of high-tech markets, enforcers continue to struggle to devise a coherent alternative framework. We review some recent cases that illustrate the challenges of enforcing competition law in information technology markets.

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I. INTRODUCTION

Information technology (“IT”) markets have been raising difficult issues for competition authorities for over a century. Indeed, December 2013 marked the 100th anniversary of AT&T’s controversial “Kingsbury Commitment”¹ in which AT&T agreed to interconnect its long-lines networks with local telephone companies in return for a legal monopoly over long distance service—a deal that ultimately led to decades of litigation and perhaps the most famous consent decree in antitrust history, the 1982 “Modified Final Judgment.”² Competition authorities have struggled to devise solutions to real or theoretical antitrust concerns in virtually every major IT market, from mainframe computers (IBM)

† Forthcoming in *Communications and Competition Law: Key Issues in the Telecoms, Media and Technology Sectors* (Alphen aan den Rijn, The Netherlands: Kluwer Law International/International Bar Association series). Jeffrey A. Eisenach is a Senior Vice President at NERA Economic Consulting. Ilene Knable Gotts is a partner at Wachtell, Lipton, Rosen & Katz in New York. The views expressed in this paper are the authors’ and should not be attributed to their firms, clients or other institutions with which they are affiliated.

¹ <http://vcxc.org/documents/KC1.pdf>.

² *United States v. AT&T*, 552 F. Supp. 131 (D.D.C. 1982), *aff’d sub nom. Maryland v. United States*, 460 U.S. 1001 (1983).

to operating systems (Microsoft), from “enterprise management software” (Oracle-PeopleSoft) to search engines (Google).

IT markets pose a variety of analytical challenges. They are characterized by both supply- and demand-side economies of scale and scope, typically implying high market share and/or high levels of concentration (*e.g.*, HHI). Although such dynamics could result in market power to the extent that the assets are “essential” to compete, traditional concentration measures are meaningless for determining such potentialities given their limited and static nature. Indeed, rapid innovation and the potential for disruptive entry imply such market power may be ephemeral, even illusory. Strong complementarities (*e.g.*, between smart phones and networks, or operating systems and microchips) place interoperability and interconnection issues at center stage. Particular business practices (*e.g.*, a decision to standardize around one technology but deny interoperability to others) may be efficiency-enhancing and competition-inhibiting at the same time. Consolidation may harm competition in a static sense, yet generate real but sometimes difficult-to-assess benefits for innovation, or demand-side externalities from network effects. Products tend to be highly differentiated (*e.g.*, smartphones with different operating systems and features), leading to prices above marginal cost, and, in many cases, prices and terms are set through bilateral bargaining over actual or anticipated quasi-rents.

Our goal in this article is certainly not to resolve these issues, but rather to describe them in a way that illuminates the analytical challenges, provide some recent examples of antitrust reviews involving IT markets, and offer some thoughts on how these issues are likely to present themselves in the future. We also note that while economists continue to make progress towards a better understanding of the competitive dynamics of IT markets, much of that understanding is not yet fully or consistently reflected in practice. We are not suggesting, however, that IT markets get a “free pass” and not be subject to antitrust law principles, or even worse, that there is a need for regulation to supplant free market behavior. To the contrary: antitrust law enforcement is usually the correct place for addressing both IT market behavior and transactions.

The remainder of this paper is organized as follows. Section II presents a taxonomy of the economic characteristics that distinguish IT markets from more traditional markets, grouping them into three categories—*dynamism*; *modularity*; and *demand-side effects*—and provides some examples of the implications of these characteristics for competition analysis. Section III discusses several recent situations in which competition authorities have wrestled with such issues in practice. Section IV offers some thoughts on how these issues are likely to present themselves in the immediate future. Section V presents a brief conclusion.

II. THE IT CHALLENGE TO TRADITIONAL ANTITRUST DOCTRINE

Effective antitrust policy is premised on the ability to recognize monopoly power; assess its effects on prices and quality; identify the anticompetitive conduct it sometimes enables (*e.g.*, by raising rivals’ costs); and, ultimately, determine its effects on consumer welfare—which, half a century after the Chicago revolution, continues to be acknowledged as the central objective of antitrust. Towards these ends, academics and practitioners have developed various analytical tools, empirical proxies, and rules of thumb (*e.g.*, high market shares and/or high concentration ratios create a presumption of monopoly power

or high likelihood of collusion) that together constitute traditional antitrust doctrine.³ IT markets have characteristics that limit the usefulness of these traditional approaches, often in ways that are not yet well understood. We begin by describing the characteristics that distinguish IT markets from more traditional ones, and then discuss some of the challenges these characteristics pose for traditional antitrust doctrine.

A. The IT Trifecta: Dynamism, Modularity, Demand-Side Effects

IT markets exhibit at least three meaningful distinguishing characteristics: *dynamism, modularity, and demand-side effects*.⁴

Dynamism refers to the significance of innovation as a measure of market performance: In dynamic markets, the ability of a firm to offer new and improved products plays at least as significant a role in its success (*i.e.*, its profitability) as the ability to produce and sell existing products at lower prices.⁵

In such markets, firms incur significant sunk cost investments to create new products, causing average costs to exceed marginal costs over the relevant range of output, but resulting in product differentiation (innovation being simply product differentiation over time) that allows sellers to recoup their investments by earning high margins (relative to marginal cost). Under current doctrine, high margins are easily mistaken for traditional monopoly power, but assuming low entry barriers, they are not only consistent with, but necessary for, maximization of consumer welfare: They not only allow firms to recoup sunk cost investments, but also provide the incentive to take the risks inherent in innovation.

The assumption of low entry barriers is not a trivial one, and other characteristics of IT markets—*e.g.*, demand-side network effects—may call it into question. But it is nevertheless true that the sort of market power that is so commonplace in IT markets frequently contains the seeds of its own destruction, as today’s hot product can easily become tomorrow’s obsolete clunker (*see, e.g.*, “Apple Newton” and “Palm Pilot”).

A second characteristic that distinguishes IT markets is modularity, or what is sometimes referred to as “platform competition.” From an economic perspective, modularity is associated with strong complementarities in production or consumption: Operating systems are strong complements with personal computers; online music stores are strong complements with smart phones; smart phones are strong complements with communications networks, etc. Modularity also creates demand for compatibility or “interconnection.” Firms that produce complementary products (*e.g.*, Microsoft and Nokia; Google and Samsung) may team up to create platforms (sets of compatible

³ By “traditional antitrust doctrine,” we mean “modern doctrine as applied to traditional markets.”

⁴ For a more extensive discussion of these phenomena and their implications for competition analysis, *see* JEFFREY A. EISENACH, *BROADBAND COMPETITION IN THE INTERNET ECOSYSTEM* (American Enterprise Institute, 2012); *see also* OZ SHY, *THE ECONOMICS OF NETWORK INDUSTRIES* (Cambridge University Press, 2001).

⁵ WILLIAM J. BAUMOL, *THE FREE MARKET INNOVATION MACHINE: ANALYZING THE GROWTH MIRACLE OF CAPITALISM* (Princeton University Press, 2002), at 4 (“Innovation has replaced price as the name of the game in a number of important industries. The computer industry is only the most obvious example, whose new and improved models appear constantly, each manufacturer battling to stay ahead of its rivals.”); *see also* JOSEPH SCHUMPETER, *CAPITALISM, SOCIALISM AND DEMOCRACY* (1942).

complements); in other cases (*e.g.*, Apple, Blackberry) firms choose to achieve compatibility through vertical integration.

Competition in such markets takes place both within platforms (*e.g.*, between HTC and Samsung for leadership on the Android platform) and among them (*e.g.*, between Android and iOS). Disputes over interconnection terms—in which firms seek to create and exercise bargaining power and so maximize their shares of the economic profits created by a successful platform—are commonplace.

Finally, IT markets are also characterized by significant demand-side effects, including economies of both scale and scope. Demand-side economies of scale, also known as network effects, imply that a product is more valuable to consumers as the number of users increases: The prototypical, if now somewhat dated, example is the fax machine. Demand-side economies of scope, by contrast, imply that a product's value increases with the diversity (as opposed to simply the number) of users: The value of a newspaper to both advertisers and users depends on the presence of the other *type* of consumer (though for some consumers, the presence of advertisers may detract from the value rather than add to it).

The relationship between competition and consumer welfare in markets with demand-side effects is more complicated than in more traditional markets in several ways. For example, it is well established that a monopolist in a two-sided market has strong incentives to set efficient relative prices (*i.e.*, to engage in efficient price discrimination).⁶ In markets with strong network effects, the efficiency benefits of monopoly may exceed the costs in terms of foregone competition.⁷

B. Implications for Enforcement

These characteristics of IT markets have important implications for competition policy and antitrust enforcement, challenging accepted rules of thumb, complicating application of time-tested techniques, and forcing regulators to take account of factors that do not play a significant role in more traditional markets.

Perhaps most obviously, the dynamic nature of IT markets—the fact that they are characterized by rapid technological change—forces competition authorities to pay greater heed to forecasts of future events than is often the case in more traditional markets, even up to the point of forecasting the impact of mergers and potentially anticompetitive conduct on the development of markets for products that do not yet exist. No combination of economists, lawyers and technologists has thus far demonstrated much competence in performing this task,⁸ and for good reason. As Professor Hovenkamp points out:

⁶ See, *e.g.*, Julian Wright, *One-Sided Logic in Two-Sided Markets*, 3(1) REVIEW OF NETWORK ECONOMICS 44 (2004).

⁷ See Michael L. Katz & Carl Shapiro, *Systems Competition and Network Effects*, 8 THE JOURNAL OF ECONOMIC PERSPECTIVES 93 (Spring 1994).

⁸ See generally Ilene Knable Gotts and Richard T. Rapp, *Antitrust Treatment of Mergers Involving Future Goods*, ANTITRUST 178 (2004). Inaccurate predictions of future events can prove embarrassing. The Federal Trade Commission (“FTC”), for example, justified the imposition of conditions in the 2000 AOL-Time Warner merger on the basis of its finding that AOL, as the “leading provider of narrowband internet access,” was “likely to become the leading provider of broadband internet access as well.” See U.S. Federal Trade Commission, In the Matter of America Online, Inc. and Time Warner Inc., Docket

[I]nnovation often produces very sudden and quite unpredictable results. It can completely kill an industry in a few years, as electronic calculators did to slide rules in the 1960s. In the process, it can bring an entirely new industry into existence in an equally short time. It can produce results far different than researchers expected, such as the blockbuster drug Viagra, which was the culmination of a research project seeking a treatment for angina, not for erectile dysfunction. Innovation can produce sudden and dramatic shifts in prices or output and almost instantly expand the range of consumer choices. As a result, predicting and managing competitive processes in highly innovative industries is much more difficult than in markets where technology is very largely constant and most movements affect only the output and price of a set of unchanging products.⁹

It is well understood that dynamism implies that existing monopoly power may be ephemeral,¹⁰ but its implications for antitrust regulation are in fact far more complex and multifaceted than that simple thesis suggests. For example, a merger might be defended on the grounds that the combination is necessary to advance development of a new product—but only if regulators can be persuaded the new product will be successful (and so enhance consumer welfare). A second implication of dynamism is its inextricable relationship with the economics of innovation—the cycle of investment, product differentiation, and pricing power (the return on risk and entrepreneurship) that incentivizes innovation in the first place. Dynamic industries display strong economies of scale, tend to have high levels of concentration at any point in time, and are characterized by high profit margins. The implications are profound, calling into question the predictive power of the two most commonly used proxies for

No. C-2989 (Complaint) (Dec. 14, 2000) at 3. As it turned out, AOL never became a significant, let alone leading, broadband Internet Service Provider (“ISP”). Similarly, in the AT&T-MediaOne transaction, the Antitrust Division of the U.S. Department of Justice (“DOJ”), expressed concern with the indirect ownership interests that AT&T would have had in both Excite@Home and RoadRunner, two broadband Internet companies, and required AT&T to divest its RoadRunner interest. *See* Press Release, U.S. Dep’t of Justice, Justice Department Requires AT&T to Divest MediaOne’s Interest in RoadRunner Broadband Internet Access Service (May 25, 2000), *available at* http://www.justice.gov/atr/public/press_releases/2000/4829.pdf. At the time of the acquisition, Excite@Home and RoadRunner together served the vast majority of subscribers who received broadband Internet service over cable facilities. The DOJ was concerned that AT&T would be able, post-closing, to facilitate collusion and coordination between Excite@Home and RoadRunner in ways that would result in a substantial lessening of competition in the market for aggregation, promotion, and distribution of residential broadband content. Instead, in 2001, Excite@Home declared bankruptcy.

⁹ *See* Herbert Hovenkamp, *Antitrust and the Movement of Technology*, 19 GEO. MASON L. REV. 1119, 1120-1121 (2012).

¹⁰ *See, e.g.*, Douglas H. Ginsburg and Joshua D. Wright, *Dynamic Analysis and the Limits of Antitrust Institutions*, 78 ANTITRUST LAW JOURNAL 1, 22 (2012).

actionable market power, market concentration¹¹ and profit margins.¹² Moreover, the costs associated with Type II error (imposition of remedies on the basis of falsely identified monopoly power) are especially high, as such remedies—often in the form of “sharing” requirements or barriers to consolidation—not only deprive existing firms of the returns on innovation, but signal to future entrepreneurs that the payoff for successful innovation is subject to regulatory truncation.¹³

Since the Fifth Century BC, medical doctors have sworn to a Hippocratic Oath that recognizes before all else, that they are “to do no harm.” It would be admirable if antitrust enforcers could adopt the same approach—and recognize that enforcement should seek to do more good than harm and that harm will result if they unnecessarily deter innovation or synergies by stopping or conditioning a transaction or conduct that, left alone, would not have been anticompetitive. FTC Commissioner Maureen Ohlhausen has consistently in her public pronouncements advocated for “regulatory humility.” As recently described in a speech before the Free State Foundation:

It is exceedingly difficult to predict the path of technology and its effects on society. The massive benefits of the Internet in large part have been a result of entrepreneurs’ freedom to experiment with different business models. The best of these experiments have survived and thrived, even in the face of initial unfamiliarity and unease about the impact on consumers and competitors . . . Early skepticism does not predict potential consumer harm. Conversely, as the failures of

¹¹ Dissenting Statement of Commissioner Joshua D. Wright, In re Fidelity Nat’l Financial, Inc. (F.T.C. File No. 131-0159 (Dec. 23, 2013), *available at* http://www.ftc.gov/sites/default/files/documents/public_statements/dissenting-statement-commissioner-joshua-d.wright-matter-fidelity-national-financial-inc.lender-processing-services-inc.december-2013/131224fidelitywrightstatement.pdf; American Bar Association, Section of Antitrust Law, MARKET POWER HANDBOOK: COMPETITION LAW AND ECONOMIC FOUNDATIONS (2d ed.) (2012); Ilene Knable Gotts, *Market Definitions in the Merger Context: Hard Work Pays Off in the Long Run*, FORDHAM COMPETITION LAW INSTITUTE, ANNUAL PROCEEDINGS, INTERNATIONAL ANTITRUST LAW & POLICY, Ch. 16 (B.E. Hawk ed., 2013).

¹² See Kenneth G. Elzinga and David E. Mills, “*The Lerner Index of Monopoly Power: Origins and Uses*,” AMERICAN ECONOMIC REVIEW: PAPERS & PROCEEDINGS 101, 3 (2011); American Bar Association, *supra* note 11.

¹³ See Franklin W. Fisher, *Diagnosing Monopoly*, in INDUSTRIAL ORGANIZATION, ECONOMICS AND THE LAW: COLLECTED PAPERS OF FRANKLIN M. FISHER (MIT Press, 1991) 3-32. See also *Novell, Inc. v. Microsoft Corp.*, 731 F.3d 1064, 1073 (10th Cir. 2013) (“If the law were to make a habit of forcing monopolists to help competitors by keeping prices high, sharing their property, or declining to expand their own operations, courts would paradoxically risk encouraging collusion between rivals and dampened price competition—themselves paradigmatic antitrust wrongs, injuries to help one another would also risk reducing the incentive both sides have to innovate, invest, and expand—again results inconsistent with the goals of antitrust. The monopolist might be deterred from investing, innovating, or expanding (or even entering a market in the first place) with the knowledge anything it creates it could be forced to share; the smaller company might be deterred, too, knowing it could just demand the right to piggyback on its larger rival.”).

thousands of dotcoms show, early enthusiasm does not predict consumer benefit.

Because it is so difficult to predict the future of technology, government officials, like myself, must approach new technologies and new business models with a significant dose of regulatory humility. . . . We must identify benefits and any likely harm. If harms do arise, we must ask if existing laws and regulations are sufficient to address them, rather than assuming that new rules are required.

And we must remain conscious of our limits . . . Even worse, data-driven decisions can seem right while being wrong. Political polling expert Nate Silver notes that “[o]ne of the pervasive risks that we face in the information age . . . is that even if the amount of knowledge in the world is increasing, the gap between what we know and what we think we know may be widening.” Regulatory humility can help narrow that gap.¹⁴

It is important for the U.S. economy that the appropriate balance is achieved.

The presence of strong complements in production—modularity—poses a related but distinct set of challenges, forcing regulators to judge the competitive and consumer welfare implications of interoperable (or interconnected) technologies relative to proprietary or “closed garden” approaches. Refusals to interconnect or to facilitate interoperability (*e.g.*, Microsoft’s refusals to reveal APIs to Netscape or, to take an even earlier example, AT&T’s attempts to prohibit attachment of foreign devices such as the “Hush-A-Phone” to its network) may evidence an intent to foreclose competition and raise rivals’ costs or, alternatively, a welfare-maximizing choice by the platform operator to optimize system functionality¹⁵ (as Comcast argued in its defense of its throttling of *BitTorrent* in the first litigated net neutrality case).¹⁶ Where achieving interoperability involves incurring sunk costs (as in the case of standard essential patents (“SEPs”)), the potential arises for opportunistic behavior, though courts have been reluctant to conclude such behavior violates the antitrust laws.¹⁷

Lastly, demand-side effects present a multitude of challenges. Most obviously, markets in which demand-side economies of scale (*i.e.*, “network effects”) are significant are subject to “tipping” and may create barriers to entry. Conversely, the very same network effects responsible for these results create real benefits for consumers, who *really are* better off when, for instance, everyone can learn to use the same (QWERTY) keyboard.¹⁸ Multisided markets (demand-side economies of scope) pose their own special concerns, forcing

¹⁴ Remarks of Maureen K. Ohlhausen, Commissioner, U.S. Federal Trade Commission, *The Procrustean Problem with Prescriptive Regulation, Sixth Annual Telecom Policy Conference, Free State Foundation* (Washington, D.C. Mar. 18, 2014), available at http://www.ftc.gov/system/files/documents/public_statements/291361/140318fsf.pdf.

¹⁵ See generally Kevin Boudreau, *Open Platform Strategies and Innovation: Granting Access vs. Devolving Control*, 56 MANAGEMENT SCIENCE 1849 (Oct. 2010).

¹⁶ See *Comcast Corp. v. FCC*, 600 F.3d 642 (D.C. Cir. 2010).

¹⁷ See, *e.g.*, Susan Decker, *Rambus Antitrust Case on Royalties Dropped by FTC*, BLOOMBERG (May 14, 2009), available at <http://www.bloomberg.com/apps/news?pid=newsarchive&refer=home&sid=at5P6AmiOMsQ>; see also <http://www.ftc.gov/enforcement/cases-proceedings/011-0017/rambus-inc-matter>.

¹⁸ See, *e.g.*, Katz & Shapiro, *supra* note 7.

regulators to consider the effects of mergers, for example, on both downstream “consumers” and upstream “suppliers.”¹⁹ Economists have only recently begun to develop the tools necessary to assess such effects. Thus, as Ballon and Van Heesvelde conclude:

[C]urrently no clear, general principle exists about how to regulate platforms, and regulators have no operational frameworks that can easily accommodate the particular characteristics of platform markets—such as the existence of externalities across different sides of the platform, and the complex effects of multi-homing of service providers and/or end users.²⁰

The depth of the IT challenge to traditional antitrust doctrine is evidenced by the fact that even the Holy Grail of antitrust enforcement—stable or lower prices—can no longer be taken for granted. In IT markets, price effects in one market have to be weighed against (possibly countervailing) effects in others, as well as against changes in quality, not only contemporaneously but over time: A price increase which leads to higher returns to suppliers may lead to static losses (from lower consumption), but higher rates of innovation and ultimately higher consumer welfare.

III. FROM THEORY TO PRACTICE: RECENT ENFORCEMENT REVIEW INVOLVING IT (AND RELATED) MARKETS

The challenges to traditional antitrust doctrine described above are on vivid display almost daily as competition authorities struggle to identify actionable conduct and assess the competitive effects of proposed transactions throughout the IT sector. In this section, we discuss several recent cases, including transactions involving content providers, database software, hardware, devices and networks, as well as cases involving potential competition and future markets. The cases discussed highlight the issues agencies face across a diverse, complex and rapidly changing set of markets in identifying market power and fashioning appropriate remedies.

A. *Transactions Involving Content Providers*

In recent years, both the FTC and the DOJ have reviewed acquisitions involving firms that compete in providing data or content to others. These transactions often held the potential of increasing the rate of innovation, enhancing modularity, and providing demand-side scale and scope efficiencies. Such effects could drive down costs, particularly in nascent sectors. On the other hand, these developments could increase entry barriers or eliminate competition through foreclosure, thereby raising rivals’ costs. The agencies’ response has

¹⁹ See, e.g., David S. Evans & Richard Schmalensee, *The Antitrust Analysis of Multi-Sided Platform Businesses*, in OXFORD HANDBOOK ON INTERNATIONAL ANTITRUST ECONOMICS at 19-21, Roger Blair & Daniel Sokol, eds. (forthcoming), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2185373 (warning against “basing judgments about market power on analysis of only a single side of a multi-sided platform”).

²⁰ Pieter Ballon & Eric Van Heesvelde, *ICT Platforms and Regulatory Concerns in Europe*, 35 TELECOMMUNICATIONS POLICY, 702, 707 (2011).

often been to impose some form of licensing or open access requirements designed to create a “level playing field” for competitors.

(1) Horizontal Theories

A number of recent transactions have involved the combination of firms with databases, in which the agency required that competition be maintained by providing to a third party the rights to one of the databases.

Most recently, on March 24, 2014, the FTC conditioned its approval of CoreLogic, Inc.’s acquisition of DataQuick Information Systems, Inc.²¹ The FTC’s complaint alleges that CoreLogic and DataQuick are two of three providers of national accessor and recorder bulk data, and that their combination would have increased the risk of both coordinated and unilateral effects. CoreLogic, which offers a variety of products tailored to lending, investment, and real estate industries, collects and maintains data and is the largest provider of data in the United States. DataQuick offered licenses for such data and had a unique license with CoreLogic that allowed it to relicense data in bulk. The data at issue include current and historical public record data in a standardized bulk format for the vast majority of real estate properties in the U.S. Customers use these data as inputs into proprietary programs and systems for internal analyses. The database includes over a decade of information.

It appears likely that the transaction parties argued that combining operations would lower costs of maintaining the database and broaden the user set. To the extent there was competition between the merging firms, that competition would be eliminated. Moreover, the FTC alleged that new competitors were not likely to emerge in this market because of the high cost of obtaining the necessary data (especially historical information). Accordingly, the FTC’s remedy aims to replace DataQuick as a competitive force. The consent requires CoreLogic to license to Renwood RealtyTrac (“RealtyTrac”) historical data and to deliver going-forward data for up to seven years as well as to provide RealtyTrac access to several ancillary data sets that DataQuick provides to its customers. The consent also provides RealtyTrac with access to information regarding customers and data management, requires CoreLogic to provide it with access to technical support for 18 months, and requires CoreLogic to provide certain DataQuick customers with the opportunity to terminate their contracts early and switch to RealtyTrac without penalty. RealtyTrac currently operates an online marketplace of foreclosure real property listings and provides national foreclosure data services to real estate consumers, investors, and professionals, and with this license, will be a new entrant into the business.

In 2012, the FTC similarly conditioned its approval of CoStar’s acquisition of LoopNet on the sale of LoopNet’s ownership interest in Xceligent to DMG Information, Inc. and other behavioral relief. CoStar, LoopNet, and Xceligent offered listing databases and information services used by brokers, investors, appraisers, developers, and others in the commercial real estate industry. CoStar actively tracks and aggregates commercial real estate listings and property-specific information nationwide and provides subscription-based access to its

²¹ Press Release, Fed. Trade Comm’n, FTC Puts Conditions on CoreLogic, Inc.’s Proposed Acquisition of DataQuick Information Systems (Mar. 24, 2014), *available at* <http://www.ftc.gov/news-events/press-releases/2014/03/ftc-puts-conditions-corelogic-incs-proposed-acquisition-dataquick>.

comprehensive database. LoopNet operated the most heavily trafficked commercial real estate listings database in the United States and offered some commercial real estate information services. Xceligent also actively tracked and aggregated commercial real estate listings and property-specific information and maintained a detailed and comprehensive database.

The FTC's complaint alleges that the proposed acquisition would reduce competition in the markets for these listing databases and information services, and that CoStar and LoopNet are the only two providers with nationwide coverage. The complaint also alleges that Xceligent is the "most similar competitor for information services" to CoStar, and, therefore, the combination would eliminate the direct and substantial competition between the two companies, due to LoopNet's ownership stake in Xceligent.²² The consent requires that the combined Co-Star-LoopNet take certain steps to ensure that Xceligent is able to compete and expand aggressively in the U.S. market for commercial real estate listings databases and information services. Specifically, the consent "imposes certain conduct requirements to assure the continued viability of Xceligent as a competitor to the merged firm and to reduce barriers to competitive entry and expansion. These additional provisions will facilitate Xceligent's geographic expansion and prevent foreclosure of [the parties'] established customer base."²³ The consent requires, among other things, CoStar and LoopNet to continue to offer their customers core products on a stand-alone basis for three years.²⁴ A related provision prohibits the parties from limiting use of the REApplications product, a software tool for managing market research in connection with customers' purchase, lease, or license of CRE database services from competitors. Also, in 2013, the FTC required Fidelity to sell a copy of LPS's title plants (databases used to determine title status of real property) in six Oregon counties.²⁵

(2) Vertical Theories

Some of the most interesting transactions involving content providers were not horizontal, but "vertical" in nature. The DOJ's Guide for Merger Remedies indicates that vertical mergers "can create changed incentives and enhance the ability of the merged firm to impair the competitive process. In such situations, a remedy that counteracts these changed incentives or eliminates the merged firm's

²² *Analysis of Agreement Containing Consent Order to Aid Public Comment, CoStar Grp, Inc., Lonestar Acquisition Sub, Inc., and LoopNet, Inc.*, File No. 111-0172 (F.T.C. May 2, 2012), available at <http://www.ftc.gov/sites/default/files/documents/cases/2012/04/120426costaranal.pdf>.

²³ *Id.*

²⁴ The "anti-bundling" provisions are aimed to protect Xceligent for a limited period while it expands the breadth and geographic scope of its services.

²⁵ Press Release, Fed. Trade Comm'n, FTC Puts Conditions on Fidelity National Financial's Acquisition of Lender Processing Services (Dec. 24, 2013), available at <http://www.ftc.gov/news-press-releases/2013/12/ftc-put-conditions-fidelity-national-financials-acquisition>. This matter is also noteworthy in the debate that Commissioner Wright started where he challenged in his dissent the presumption that a decrease in the number of competitors from four to three, or even three to two, will necessarily harm competition even in highly concentrated markets where entry is unlikely.

ability to act on them may be appropriate.”²⁶ The Guide recognizes that “there is a panoply of conduct remedies that may be effective in preserving competition. No matter what type of conduct remedy is considered, however, a remedy is not effective if it cannot be enforced. . . . The most common forms of conduct relief are firewall, non-discrimination, mandatory licensing, transparency, and anti-retaliation provisions, as well as prohibitions on certain contracting practices.”²⁷

In 2009, Comcast proposed acquiring NBC Universal (“NBCU”). Comcast argued that the transaction would bolster its role as a creator and distributor of content, by offering “multiplatform anytime, anywhere” media. Thus, the transaction offered potential gains in terms of dynamism, modularity, and demand-side scale and scope. Although the transaction had certain horizontal aspects since it included NBCU’s cable networks and Comcast already had some content, the DOJ’s focus was vertical in nature: the merger as proposed would allegedly have enabled Comcast to harm competition by either withholding or raising the price of NBCU content for firms that competed with Comcast’s cable operations. In addition to traditional competitors, such as cable overbuilders, satellite services, and telephone companies, the DOJ noted the emerging online competition from online video distributors (“OVDs”).

The DOJ indicates that the settlement ensures that the transaction will not chill the nascent competition posed by online competitors that have the potential to reshape the marketplace by offering innovative online services. Under the terms of the consent, the joint venture agreed to license its programming to OVDs on similar, or better, terms than (1) those that have obtained under distribution agreements with one of NBCU’s peers²⁸ or (2) NBCU offers to traditional video programming distributors. The consent also prohibits Comcast from imposing upon content owners contractual terms that unduly limit a content owner’s ability to negotiate freely creative arrangements with Comcast competitors. The settlement prohibits the joint venture from retaliating against (1) any broadcast network, affiliate, cable programmer, production studio or content provider for licensing content to Comcast competitors or (2) any firm that raised concerns with the DOJ or the FCC about the transaction. The consent also requires NBCU to adhere to the FCC’s Open Internet provisions regardless of whether they are overturned.²⁹

B. Transactions Involving Database Software

As with cases involving data bases, the agencies’ views of acquisitions involving database software often seem to turn on predictions regarding the

²⁶ U.S. Dep’t of Justice, Antitrust Div., Antitrust Division Policy Guide to Merger Remedies (June 2011), available at www.justice.gov/atr/public/guidelines/272350.pdf.

²⁷ *Id.*

²⁸ United States v. Comcast Corp., No. 1:11-CV-00106-RJL (proposed judgment, D.D.C. June 29, 2011) Definition V, available at <http://www.justice.gov/atr/cases/f272600/272610.pdf>. Peers include broadcast competitors ABC, CBS, and Fox, cable programmers News Corp., Time Warner, Viacom, and The Walt Disney Co., and video production studios News Corp., Sony, Time Warner, Viacom, and Walt Disney.

²⁹ *Id.* Specifically, Comcast cannot unreasonably discriminate in the transmission of OVD’s lawful network traffic to a Comcast broadcast customer and is required to give other firms’ content equal treatment under any of its broadcast offerings that involve caps, tiers, metering for consumption or other usage-based pricing.

competitiveness and conduct of alternative providers and the changes in the incentives of the merged firm following the transaction.

The 2009 Oracle/Sun transaction illustrates these themes. Oracle acquired Sun Microsystems, Inc. for two primary reasons: (1) to gain control over Java; and (2) to integrate vertically its stack of offerings to compete with firms such as IBM and EMC/VMware.³⁰ Oracle makes databases and other software for large corporations. Sun Microsystems, Inc., made computer servers and owned the widely used Java platform, which is one of the key software building blocks used in Internet programs, and MySQL, an open source database program, that critics of the transaction said could someday evolve into a competitor of Oracle and/or Microsoft. Nevertheless, as proposed, the transaction held the potential of jump-starting innovation among rivals IBM and EMC, increasing modularity, and expanding demand-side efficiencies of scale and scope.

The DOJ issued a second request, but ultimately closed the investigation on the basis that, according to the DOJ, (1) there were many (perhaps eight or more) open and proprietary database competitors so customers would continue to have choices, and (2) there is a large community of developers and users of Sun's open source database with significant expertise in maintaining and improving the software and who could support a derivative version of it.³¹ Thus, the transaction would neither affect the viability of alternative providers nor change Oracle/Sun's incentives to engage in anticompetitive conduct.

The FTC reached the opposite conclusion in a 2013 consent in which it required that Solera, which had acquired Actual Systems (and two related companies) on May 29, 2012, sell one of the U.S. and Canadian yard management systems ("YMS") and provide a 10-year license to a key database to ASA Holdings, a company started by former employees of Actual Systems. At the time of the 2012 acquisition, both Solera and Actual Systems developed and sold YMS used by automotive recycling yards. Presumably, the combination would produce cost savings. According to the FTC, however, the market for YMS software was already highly concentrated at that time and the elimination of the competition between the two companies had reduced innovation for software and caused higher prices for automotive recycling industry customers. In the relevant geographic market of the United States and Canada, Solera and Actual Systems were allegedly two of only three providers of YMS. In this case, the FTC's prediction was that alternative providers would not emerge, and that (absent relief) incentives for anticompetitive conduct would be increased.

The potential for such vertical theories to lead to complex conduct remedies is illustrated by the DOJ's 2011 examination of Google's acquisition of ITA Software, which it saw primarily as a vertical merger.

ITA had developed the leading independent airfare pricing and shopping system "QPX." QPX collects and organizes airline flight schedules, pricing and seat availability for travel services companies. It is used by online travel agents

³⁰ See John Furrier and Dave Vellante's Analysis: *Is Oracle Better Off After Sun Acquisition?*, FORBES (July 9, 2013), available at <http://www.forbes.com/sites/siliconangle/2013/07/09/analysis-is-oracle-better-off-after-sun-acquisition/>.

³¹ Press Release, U.S. Dep't of Justice, *Department of Justice Antitrust Division Issues Statement on the European Commission's Decision Regarding the Proposed Transaction Between Oracle and Sun* (Nov. 9, 2009), available at http://www.justice.gov/atr/public/press_releases/2009/251782.htm.

(e.g., Orbitz) and other flight search services.³² Google, the largest Internet search provider, planned to launch an Internet travel site to offer comparative flight search services. Google indicated at the time that it was “buying ITA Software to create a new, easier way for users to find better flight information online. By combining ITA Software’s expertise with Google’s technology, [Google would] . . . be able to bring new flight search tools for users that [would] . . . make it easier for them to search for flights, compare flight options and prices, and get them quickly to sites where they can buy their tickets.”³³ Moreover, according to Google, the combination would permit it to make more significant innovations and bigger breakthroughs than possible if Google had simply licensed ITA Software’s data service.³⁴ Thus, Google presented the transaction as one that fostered dynamism and demand-side benefits.

The DOJ did not conclude that Google would use its positioning in general search to gain unfair advantage in travel search. Rather, the DOJ alleged that, after acquiring ITA, Google could deny QPX to other flight search companies or disadvantage their access to it, to gain an advantage for Google’s new flight search services. These foreclosure concerns arose because the DOJ believed that the remaining options to QPX were not suitable alternatives.

To address these concerns the DOJ required Google/ITA (1) to continue to license QPX to other flight search companies on fair, reasonable and nondiscriminatory (“FRAND”) licensing terms; (2) to make available to other flight search services any QPX upgrades it makes available to other customers; and (3) not to enter into agreements with airlines that would “inappropriately” restrict the airlines’ right to share seat and booking class information with Google’s competitors. In addition, Google committed to continue to fund for two years research and development of QPX at least at similar levels to what ITA had invested in recent years and to develop and offer to travel websites ITA’s next generation “Instasearch” product. The consent provides for mandatory arbitration under certain specified circumstances and establishes internal firewalls to prevent unauthorized use of competitively sensitive information and data gathered from ITA’s customers. The consent also prevents Google’s tying of the system to other products. The duration of the consent is five years (shorter than the typical 10 years found in most consent decrees).

Google’s acquisition of ITA also exemplifies the difficulties in analyzing high-technology transactions and in fashioning remedies. Google’s acquisition held the potential of benefiting consumers by, among other things, resulting in better ways to access ITA’s data and improving overall travel-related searches. For example, Google might facilitate expansion of ITA’s search offerings beyond travel to include hotels. To the extent that Google made fare offerings more transparent, consumers could benefit. Given that Google did not plan to sell tickets, but would instead simply direct consumers to airline or online travel sites to make a purchase, Google’s entry could also benefit consumers by increasing competition to meta-search companies.

As mentioned above, the DOJ thought that Google, which apparently had planned to enter into the flight search service, would use its control over what the

³² United States v. Google Inc. and ITA Software, Inc., No. 1:11-cv-00688-RLW (proposed judgment, D.D.C. Oct. 5, 2011).

³³ Google, *Facts about Google’s acquisition of ITA Software*, available at <http://www.google.com/press/ita/faq.html>.

³⁴ *Id.*

DOJ identified as a “critical input” to disadvantage its competitors post-merger. Implicitly recognizing the potential consumer benefits from Google’s acquisition of ITA, the DOJ focused on behavioral conditions that would ensure that the change of ownership of ITA’s business would not result in a change in the access terms to QPX and its improvements or ITA’s internal decisions regarding R&D. The behavioral conditions imposed, however, are highly complex and interventionist in nature. Given the speed at which high technology marketplaces evolve as well as the potential that such restrictions could actually hinder competition if left in place too long, it is not surprising to see the DOJ limit the consent duration to five years, rather than the 10-year terms typically seen in consents.

C. Transactions Involving Hardware, Platforms, or Networks

As with other IT markets, acquisitions involving hardware, platforms or networks are often scrutinized to determine whether or not they will create or enhance entry barriers by becoming a bottleneck for rivals to compete. These transactions often involve nascent or quickly evolving marketplaces, with agency decisions premised on imprecise facts regarding the actions and ability of third parties to develop competing products or platforms.

In 2010, the FTC closed its investigation of Google’s acquisition of AdMob, a mobile advertising network.³⁵ AdMob had been one of the first mobile advertising networks to focus on the iPhone when the Apple App Store opened in June 2009. At the time that Google announced its proposed acquisition of AdMob, Google had a beta advertising network for mobile applications that also operated on some iPhone apps. The parties indicated that the transaction would (1) accelerate the pace of innovation and engaging ad units across platforms, (2) build more powerful relevance and optimization capabilities, and more powerful technology and tools to monetize mobile traffic, and (3) leverage Google’s sales team, infrastructure and relationships to increase the effectiveness of display advertising.³⁶ In other words, to use our paradigm, the transaction would foster dynamism, modularity and demand-side benefits.

The FTC’s closing statement indicated that the decision not to challenge the transaction “was a difficult one because the parties currently are the two leading mobile advertising networks . . . [and] each of the merging parties viewed the other as its primary competitor. . . .” The FTC decided not to challenge the transaction because Apple announced in April 2010 that it had acquired Quattro Wireless and had transformed Quattro into a new mobile advertising platform called “iAd” that would be released in June 2010. The FTC concluded that Apple had both the ability and the incentive to ensure that advertising networks would not raise prices or reduce the percentage of advertising revenue that they share with app developers.³⁷

³⁵ Press Release, Fed. Trade Comm’n, FTC Closes Its Investigation of Google AdMob Deal (May 21, 2010), *available at* <http://www.ftc.gov/news-events/press-releases/2010/05/ftc-closes-its-investigation-google-admob-deal>.

³⁶ *See generally* Google Official Blog *We’ve officially acquired AdMob!*, *available at* <http://googleblog.blogspot.com/2010/05/weve-officially-acquired-admob.html>.

³⁷ Perhaps ironically, in April 2014, Apple faced accusations of denying access to its iAd service to an online radio competitor, Bloom.fm, for anticompetitive purposes. *See* Stuart Dredge, *Apple bans music app Bloom.fm from running ads on its iAd network*, THE GUARDIAN (Apr. 11, 2014), *available at*

Also, on December 2, 2011, the DOJ issued a statement indicating that it was closing its investigation of Google's proposed acquisition of Admeld Inc. ("Admeld"), an online display advertising service provider.³⁸ In a blog post on the day of announcement, Google indicated that "[b]y combining Admeld's services, expertise, and technology with Google's offerings, [it was] . . . investing in what [it hoped would] be an improved era of flexible ad management tools for major publishers."³⁹ In addition, Google promised to continue to support other ad networks, demand-side platforms, exchanges and adservers. The DOJ statement indicates that the DOJ focused on the potential effect of the transactions on competition in the digital advertising industry. Both companies provide services and technology to web publishers that facilitate the sale of those publishers' display advertising space. Admeld operated a supply-side platform that helps publishers optimize the yield from their display advertising. The investigation found that web publishers often rely on multiple display advertising platforms and can move business among them in response to changes in price or the quality of ad placements. As a result, the risk that the market will tip to a single dominant platform is lessened. In addition, there had been recent entrants. The DOJ also evaluated whether the acquisition would enable Google to extend its market power in the Internet search industry to online display advertising through anticompetitive means, and concluded the acquisition is not likely to substantially lessen competition in the sale of display advertising.

On the other hand, the DOJ also successfully challenged Bazaarvoice, Inc.'s ("Bazaarvoice") July 2012 acquisition of PowerReviews, Inc. ("PowerReviews").⁴⁰ In that case, the DOJ alleged as the relevant market "rating and review platforms ("R&R platforms") used to collect and display consumer-generated product ratings and reviewing online."⁴¹ The DOJ asserted that Bazaarvoice was the leading commercial supplier of R&R platforms and PowerReviews was its closest competitor by a wide margin; further, it argued, although some retailers used in-house R&R platforms, for many retailers such in-house solutions are not a substitute and therefore do not provide a meaningful constraint on the company's pricing.

The DOJ alleged that PowerReviews had been positioned as the low-price alternative to Bazaarvoice and that the fierce competition between the two companies had led to innovation and new platform features. The complaint quotes several internal company "hot" documents indicating the transaction eliminated Bazaarvoice's "only competitor" who had "suppressed prices." In addition, internal documents, among other things, stated that the combination

<http://www.theguardian.com/technology/2014/apr/11/apple-bloom-fm-music-app-iads>. It is unclear whether competitive authorities plan to investigate.

³⁸ Press Release, U.S. Dep't of Justice, Statement of the Department of Justice's Antitrust Division on its Decision to Close its Investigation of Google Inc.'s Acquisition of Admeld Inc. (Dec. 2, 2011), available at http://www.justice.gov/atr/public/press_releases/2011/277935.htm.

³⁹ Google Official Blog, *Helping publishers get the most from display advertising with Admeld* (June 13, 2011), available at <http://googleblog.blogspot.com/2011/06/helping-publishers-get-most-from.html>.

⁴⁰ *United States v. Bazaarvoice, Inc.*, No. C-13-0133JSC (opinion, N.D. Cal. Jan. 1, 2014).

⁴¹ *Id.* at ¶ 1.

would “avoid margin erosion,” “eliminate feature driven one-upmanship and tactical competition,” and “create significant barrier to entry.”⁴²

The key allegation of the complaint is that “PowerReviews was routinely the only significant threat that Bazaarvoice faced for U.S.-based sales opportunities.” The complaint is also unusual in its failure to allege any ongoing competitive harm, such as higher prices, poorer service, or less innovation—claims typically made in cases challenging a consummated merger. Rather, the complaint simply states that as “a result of the transaction, Bazaarvoice will be able to profitably impose price increases on retailers and manufacturers based in the United States.”

In its defense, Bazaarvoice asserted that the alleged product market was too narrow given that ratings and reviews are one of many tools that brands and retailers use to engage with customers. PowerReviews, it argued, was a small company and generally unprofitable, and was acquired by Bazaarvoice because its operations provided a base for Bazaarvoice’s expansion. According to Bazaarvoice, since the acquisition, there had been substantial competitor repositioning and entry and intense competition on price and innovation. For example, immediately after the merger, Reevo, a U.K.-based competitor, opened a U.S. office and won customers from Bazaarvoice. In addition, the company argued that the complaint was based on dated, superseded and excerpted documents and predictions that bear no resemblance to marketplace realities and that the DOJ had ignored what the totality of the ordinary course documents and economic evidence show. The merger parties argued that there had been no harm to customers.

The bench trial occurred from September 23, 2013 to October 15, 2013. The DOJ’s opening statements and briefs heavily relied on Bazaarvoice’s internal documents and contended that the reason there was no evidence of higher prices post-merger was the existence of the ongoing DOJ investigation and challenge. Bazaarvoice argued there had been no harm to customers and that most customers were not worried about the merger; the reason that rival reviews and ratings software companies had not grown is because the market changed following the transaction, with Google and Amazon offering their own ratings systems and other software companies facilitating retailers and brands to undertake such systems in-house.

On January 8, 2014, the court ruled for the DOJ, finding that Bazaarvoice was unable to rebut the government’s *prima facie* case. According to the court, “the purchase of PowerReview’s provides ‘breathing space’ for Bazaarvoice in R&R while it prepares to compete in the broader market. . . . It is unlikely that PowerReviews will be replaced by the existing R&R competitors in the next two years, the time frame in which the Court evaluates the likely effects of the merger.”

Specifically, the court rejected the fact that none of the 104 customers whose depositions were taken complained that the merger had hurt them, indicating that it would be a mistake to rely on customer testimony about effects for several reasons: (1) Bazaarvoice’s business conduct was likely tempered by the government’s immediate investigation; (2) the customers were not privy to the evidence, including the economic experts’ opinions; (3) many customers had paid little or no attention to the merger and had different levels of knowledge, sophistication and experience; and (4) with the pricing policies utilized, it is

⁴² *Id.* at ¶¶ 4, 5, 9.

difficult for customers to discern what is actually happening in the market. In addition, the Court indicated that “the potential for witness bias was greater in this case than most. . . . Third-party customers had to testify about their market strategy in front of a vendor that would be negotiating with within a short time.”

Although Judge Orrick notes that “intent is not an element of a Section 7 violation,” a significant portion of the decision discusses the strong documentary evidence that establishes PowerReview as Bazaarvoice’s fiercest (and perhaps only significant) competitor. The court further indicates that Bazaarvoice’s defenses against the government’s arguments were often “undermined by the pre-acquisition statements of its and PowerReview’s executives. Indeed, the court finds that “anticompetitive rationales infused virtually every pre-acquisition document describing the benefits of purchasing PowerReviews.”⁴³ Another, long-term purpose of the transaction, however, was to grow the business beyond basic R&R. While acknowledging this objective as well, the court indicates that “Bazaarvoice’s efforts at trial to walk away from its central rationale leading up to the merger—that acquiring PowerReviews would significantly diminish price competition for R&R platforms—was, at best, unconvincing.”⁴⁴

The economic testimony appears to have also played a role in the court’s decision to define the market narrowly—and to reject the inclusion in the market firms that defendants argued could enter rapidly. According to the court, the analysis of DOJ’s expert (Dr. Carl Shapiro) confirmed what the Judge believed was apparent from the non-expert testimony: “other social commerce tools, including social networking sites, Q&As, and forums, either serve a different purpose than R&R or are insufficient substitutes such that customers would not switch from R&R to a social commerce tool in the face of a SSNIP.”⁴⁵

The court expressly addresses whether its conclusions regarding the merger’s anticompetitive effects should be impacted by the fact that it involves dynamic high technology market. While noting that it is debatable whether the antitrust laws are well suited for dynamic markets or if they potentially undermine innovation or are needed because market power is transitory when technology changes too fast for companies to become entrenched, the court indicates that “it is not the court’s role to weigh in on this debate” but instead “the court’s mission is to assess the alleged antitrust violations presented, irrespective of the dynamism of the market at issue.”⁴⁶ The court concludes that “while Bazaarvoice indisputably operates in a dynamic and evolving field, it did not present evidence that the evolving nature of the market itself precludes the merger’s likely anticompetitive effects.”⁴⁷

Finally, although most of the focus of Verizon’s 2011 agreements with SpectrumCo and Cox to purchase broadband wireless spectrum was on the impact on competition in the wireless broadband sector, these agreements also raised some interesting issues with respect to their potential to impact the development of a proprietary set-top box.⁴⁸ As proposed, the deal included the

⁴³ *Id.* at ¶ 35.

⁴⁴ *Id.* at ¶ 89.

⁴⁵ *Id.* at ¶ 147.

⁴⁶ *Id.* at ¶ 141.

⁴⁷ *Id.* at ¶ 141.

⁴⁸ Press Release, Verizon, Inc., Comcast, Time Warner Cable, and Bright House Networks Sell Advanced Wireless Spectrum to Verizon Wireless for \$3.6 Billion (Dec. 2, 2011), available at <http://www.comcast.com/About/PressRelease/PressRelease>

creation of a new joint venture (referred to as the “Joint Operating Entity” or the “JOE”) in which the parties would collaborate to develop innovative technology and intellectual property that would integrate wired video, voice, and high-speed Internet with wireless technologies. In other words, the agreement would potentially result in increased dynamism, modularity, and demand-side benefits.

As originally proposed, however, the JOE would function as the exclusive vehicle for R&D for these companies within the JV’s exclusive field for a potentially unlimited duration. The exclusive sales partnerships and research and development collaborations among these rivals, particularly with no end date, could blunt the long-term incentives of the parties to compete against each other, and others, as the industry evolves. Implicit in the concern is that such long-term exclusivity was unnecessary to achieve the potential benefits.

Therefore, the DOJ consent announced on August 16, 2012,⁴⁹ among other things, required that the JOE Agreement be amended to allow Time Warner Cable and Bright House Networks to develop independently any technology that they have presented to the JOE for potential development but that the joint venture declines or ceases to pursue. The DOJ consent is somewhat unusual in that it contains certain restrictions that, unless the DOJ later modifies the consent, become effective on December 2, 2016 (five years after the commercial agreements were entered into) that: require the parties to withdraw from JOE by that date, and require the JOE to (a) license the exiting party with an immediate, irrevocable, perpetual, royalty-free fully paid-up non-exclusive license with immediate rights to sublicense, exploit, and commercialize any IP then owned by the JOE and (b) permit the cable companies to license JOE-developed technology to other wireless carriers if they choose to do so upon leaving the JOE.

D. Transactions Involving Potential Competition and Future Markets

As discussed above, the “regulatory humility” advocated by Commissioner Ohlhausen should be the governing principle when dealing with less certain terrain. The trend, however, has been in the reverse. In *Google/AdMob*, the Commission expressly dismissed the proposition that it should be careful not to intervene when the market is nascent, every current competitor is a recent entrant, entry barriers are unclear, and there are little historical data. Instead, in that merger the Commission indicated that it “must subject mergers in nascent markets to the same level of antitrust scrutiny as mergers in other markets.” Similarly, the judge in *Bazaarvoice* discusses (and even debates) whether applying the antitrust laws might *impede* competition in a dynamic market, but ultimately concludes that the defendant did not establish that the evolving nature of the market itself precludes the merger’s likely anticompetitive effects. In *Verizon/SpectrumCo*, the DOJ includes a “springing” provision that becomes effective only five years after the transactions closed and seeks to create competition in the future in innovation of wireless devices.

[Detail.aspx?PRID=1134&SCRedirect=true](#). SpectrumCo, a joint venture originally consisting of Comcast, Time Warner, Cox (which later withdrew), Bright House Networks, and Sprint (which later withdrew), was the successful bidder for 137 wireless spectrum licenses in the AWS auction that concluded in September 2006.

⁴⁹ Press Release, U.S. Dep’t of Justice, Justice Department Requires Changes to Verizon-Cable Company Transactions to Protect Consumers, Allows Procompetitive Spectrum Acquisitions to Go Forward (Aug. 16, 2012), *available at* http://www.justice.gov/atr/public/press_releases/2012/286098.htm.

In *Nielsen/Arbitron*, the FTC goes even further, however, seeking to protect a *future* market for audience measurement services.⁵⁰ Nielsen had announced plans to acquire Arbitron on December 17, 2013. The two companies were the leading media ratings businesses, although their operations prior to combining—Nielsen in TV and Arbitron in radio—do not overlap. Both were developing, however, syndicated cross-platform audience measurement services, which would measure the audience for a program through traditional platforms (TV or terrestrial radio) and the Internet, satellite, or other means. According to the FTC, the elimination of future competition between Nielsen and Arbitron would likely cause advertisers, ad agencies, and programmers to pay more for national cross-platform audience measurement services. As a result, FTC Chairman Edith Ramirez and Commissioner Julie Brill voted to condition the transaction's approval on Nielsen's obligation to (1) continue its cross-platform project with ESPN Inc. and Comscore Inc. and (2) license Arbitron's portable people meter and related data, as well as software and technology being used in the ESPN project, to an FTC-approved third party for up to eight years.⁵¹ Commissioner Wright dissented from the decision on the basis that there was insufficient evidence to believe the merger will substantially lessen competition in the future market for the audience measurement services.⁵² Commissioner Wright argues that the intervention is premised on "a novel theory—that is, that the merger will substantially lessen competition in a market that does not today exist."⁵³ Commissioner Wright would impose a higher standard of evidence regarding likely competitive effects in a matter involving future markets.

IV. LOOKING AHEAD: SOME ISSUES FOR THE FUTURE

As the cases discussed above demonstrate, IT markets are generating an abundant volume of thorny issues, and there is no reason to expect a slowdown anytime soon. Much of what lies ahead for regulators is by nature as unpredictable as innovation itself. Two sets of issues seem certain to play important roles: net neutrality and "big data."

A. *Net Neutrality: When (if Ever) is Ex Ante Regulation Appropriate?*

The concept of net neutrality means different things to different people, but from a competition-law perspective the central question is the extent to which refusals to interconnect (or imposition of "discriminatory" interconnection fees) by firms with market power are sufficiently likely to be harmful that they should be *per se* illegal. Specifically, advocates of net neutrality regulation argue that broadband ISPs have incentives to refuse interconnection with (or discriminate against) "edge" providers of content and applications. They argue further that

⁵⁰ Press Release, Fed. Trade Comm'n, *FTC Puts Conditions on Nielsen's Proposed \$1.26 Billion Acquisition of Arbitron* (Sept. 20, 2013), available at <http://www.ftc.gov/opa/2013/09/nielsen.shtm>.

⁵¹ See Statement of the Fed. Trade Comm'n, *In the Matter of Nielsen Holdings N.V. and Arbitron Inc.*, FTC File No. 131-0058 (Sept. 20, 2013), available at <http://www.ftc.gov/os/caselist/1310058/130920nielsenarbitroncommstmt.pdf>.

⁵² See Dissenting Statement of Commissioner Joshua D. Wright, *In the Matter of Nielsen Holdings N.V. and Arbitron Inc.*, FTC File No. 131-0058 (Sept. 20, 2013), available at <http://www.ftc.gov/os/caselist/1310058/130920nielsenarbitron-jdwstmt.pdf>.

⁵³ *Id.* at 1.

traditional antitrust standards—which would in general proscribe only conduct that results in the foreclosure of equally efficient competitors—are inapposite in the context of the Internet Ecosystem, since traditional antitrust standards fail to account for the beneficial effects of “openness” (*i.e.*, free interconnection) on innovation by edge providers.⁵⁴

The FCC’s 2010 Open Internet Order embraced this expansive view of the need for net neutrality regulation, and on that basis imposed an open access mandate on ISPs, prohibiting them from refusing interconnection with edge providers (“blocking”) or charging them for delivering traffic (“discriminating”).⁵⁵ Four years later, in January 2014, the D.C. Circuit Court of Appeals overturned the Order on jurisdictional grounds, while at the same time embracing the Commission’s underlying economic rationale and describing an alternative legal theory, under Section 706 of the Communications Act, upon which the Commission might formulate a new set of rules.⁵⁶ The Commission is currently drafting a Notice of Proposed Rulemaking under which it is expected to propose reinstating the rules (in some as-yet undetermined form). In the meantime, in April 2014, the European Parliament voted to adopt strict net neutrality rules, which essentially ban all payments from content and application providers to broadband ISPs, though at the time this is written final adoption of the rules depends on a second vote likely to occur later in the year.⁵⁷

It is impossible to predict how continuing efforts to impose such rules will play out politically and in the courts. What is certain, however, is that the debate will continue over whether certain platforms—in this case broadband ISPs—have both sufficient market power and sufficiently perverse incentives to justify *ex ante* bans on a broad class of two-sided business models. The political forces favoring such regulation—driven by a combination of misplaced concerns over censorship by ISPs and self-interested efforts by edge providers to avoid bearing the full costs of their services—are powerful, but and it is our sense that the debate will continue to evidence a lack of both theoretical and empirical support for such sweeping *ex ante* interventions, leading in the end towards adoption of a case-by-case enforcement regime for all platform providers markets, including broadband ISPs.⁵⁸

⁵⁴ See, e.g., Robin S. Lee & Tim Wu, *Subsidizing Creativity through Network Design: Zero Pricing and Net Neutrality*, 23 J. ECON. PERSPECTIVES, 61–76 (2009).

⁵⁵ *In re Preserving the Open Internet*, 25 F.C.C.R. 17905 (2010).

⁵⁶ See *Verizon v. FCC*, 740 F.3d 623 (2014).

⁵⁷ See, e.g., Mark Scott and James Kanter, *E.U. Lawmakers Approve Tough ‘Net Neutrality’ Rules*, NEW YORK TIMES (Apr. 3, 2014), available at http://www.nytimes.com/2014/04/04/business/international/eu-lawmakers-approve-tough-net-neutrality-rules.html?_r=0.

⁵⁸ See generally Jonathan Sallet, *The Internet Ecosystem and Legal Regimes: Economic Regulation Supporting Innovation Dynamism* (Nov. 11, 2011), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1957715. For a discussion of how such a regime might operate in relation to the antitrust laws, see *Comcast Cable Communications LLC v. Fed. Communications Comm’n*, 71 F.3d 982 (D.C. Cir. 2013), *cert. denied*, 134 S. Ct. 1287 (2014).

B. Big Data and the Internet of Things

The FTC held a workshop in November 2013 on the “Internet of Things.”⁵⁹ As described by Commissioner Ohlhausen, the one-way conversations at the outset of the Internet where websites provided information to users evolved into the rise of social media, where users responded to websites and created conversations to themselves, to now, the Internet of Things, where our phones, appliances, cars and other items are able to carry on conversations without human intervention, and just inform humans as necessary.⁶⁰ The Internet of Things is one of the factors (perhaps the most significant factor) driving the related phenomena commonly referred to as “big data”: the capacity to collect, synthesize and analyze previously incomprehensible amounts of data. *Science Daily* reported in 2013 that ninety percent of the world’s data has been generated over the past two years.⁶¹

While much of the focus on “big data” has involved its implications for data security, privacy, and other consumer protection issues, it is also true that access to database information is becoming increasingly important from a competition perspective. Indeed, the central theme of cases like Bazaarvoice, Nielson/Arbitron and the Google “search neutrality” investigations is the capacity for market leaders to capitalize on economies of scale and scope in the collection and analysis of “big data.”

For reasons that should be apparent, we will not try to predict the precise course technology will follow in coming years, let alone the exact implications for competition policy. It seems self-evident, however, that the capacity to collect and assess ever larger amounts of data will continue to expand both technologically and in terms of economic significance; further, that the fundamental economic characteristics of information markets will continue to lead to concerns about market power and anticompetitive conduct in such markets; and, finally, that competition authorities will continue to wrestle with the challenge of determining when intervention is appropriate, and in what form.

VI. CONCLUSIONS

Policing competition in information technology markets presents profound challenges. The defining characteristics of such markets lead naturally to high market shares, apparent barriers to entry, and potential market power. On the other hand, their dynamic nature and the potential for high returns for successful innovation challenge the longevity of even the most entrenched monopolists.

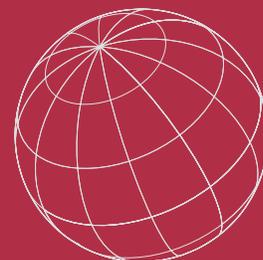
The cases discussed above highlight the tensions regulators will continue to face in the years ahead, as well as the challenges facing academics and practitioners in terms of developing more useful frameworks and analytical tools. In particular, regulators need better approaches for assessing the extent to which market power in IT markets is likely to be sustainable as opposed to transitory, for balancing efficiency benefits of both consolidation and conduct against the

⁵⁹ See <http://www.ftc.gov/news-events/events-calendar/2013/11/internet-things-privacy-security-connected-world>.

⁶⁰ See Ohlhausen speech, *supra* note 14.

⁶¹ *Big Data for Better or Worse: 90% of World’s Data Generated over Last Two Years*, SCIENCE DAILY (May 22, 2013), available at <http://www.sciencedaily.com/releases/2013/05/130522085217.htm>.

competitive costs, and for assessing the efficiency tradeoffs, over time, of various forms of remedies.



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Foreword

In this paper, Jeff Eisenach tackles the important and timely debate surrounding the regulation of Internet-based communications. Broadband service providers are currently treated differently from other information technology industries in that they are subject to increasing levels of *ex ante* regulation by the Federal Communications Commission (FCC). Other Internet sectors are subject to *ex post* treatment under standard antitrust laws. The discrepancy is justified by claims that broadband is somehow crucially different from the remainder of the Internet ecosystem and as a result requires special regulatory practices.

The FCC outlined its rationale in the December 2010 Open Internet Order; however, its authority to implement the order is currently being challenged in court. Verizon Wireless appealed FCC's "data roaming" rules, which would impose new open-access regulations on broadband service providers, and last month the FCC presented oral arguments defending its rules.

In a similar case, the DC Court of Appeals will pass judgment next year on the "net neutrality" rules, which would prohibit broadband providers from engaging in business practices that are both common and legal in other industries. The outcomes of these cases will help answer the question

at the heart of the issue: will more regulation improve broadband networks?

The case for heavier government regulation is often justified on the grounds that competition in broadband markets operates differently from competition in other Internet markets. Many believe that broadband is a monopoly, but in this paper, Eisenach argues the other side and makes a convincing case that this assumption is simply not true. He analyzes the core characteristics of broadband networks—dynamism, modularity, network effects, and multisidedness—which are remarkably similar to other information technology industries. His analysis effectively dismantles the claim that broadband deserves asymmetric regulatory treatment and suggests that modern antitrust principles should be applied instead.

Applying the proper regulatory framework is crucial since a failure to do so can stifle the incentives to innovate with broad implications for the entire economy. It is my hope that this paper will help identify the appropriate policies that will encourage competition among broadband service providers.

—Aparna Mathur, *AEI Economic Studies* Editor

Executive Summary

Like the other information technology (IT) markets that comprise the Internet ecosystem, broadband communications services are characterized by rapid innovation, declining costs, product differentiation, competitive price discrimination, network effects, and “multisidedness.” Broadband Internet service providers (ISPs) make large sunk cost investments and seek to differentiate their products so that they can earn economic returns on those investments. They seek to assemble or participate in systems that create value for consumers and do so by choosing both the platforms they join and the products with which they interconnect. They experience both supply-side economies of scale and scope and demand-side externalities that create powerful incentives to increase volumes by maximizing system openness, but as with other IT firms, these incentives do not always outweigh the costs of interoperability. In short, like other IT markets, broadband (1) is characterized by rapid innovation, high sunk costs, and declining average costs (*dynamism*); (2) functions as a complementary component in modular platforms (*modularity*); and (3) is subject to demand-side economies of scope and scale (*network effects*).

Despite these similarities, broadband is treated differently from other IT industries when it comes to competition policy: competition in the rest of the IT sector is subject to scrutiny under antitrust laws, while broadband is regulated by the Federal Communications Commission (FCC). Indeed, the FCC is currently in court defending its authority to impose “net neutrality” regulations prohibiting broadband ISPs from engaging in business practices that are both presumptively legal and commonplace in other industries. In the wireless arena, the FCC asserts its authority over the electromagnetic spectrum to impose economic regulation on wireless ISPs. And

the commission’s recent decision to extend the \$9 billion “universal service” program (heretofore limited to telephone services) to broadband promises to impose de facto price controls on broadband ISPs that participate. In short, while other elements of the “Internet ecosystem”—applications, content and devices—receive ex post treatment under the antitrust laws, broadband ISPs are subject to ex ante regulation.

Broadband is regulated differently from other IT markets in part because it is analyzed differently. Although important unsettled questions remain about how best to police competition in such markets, it is generally agreed that analysis of such markets should deemphasize the traditional “structure-conduct-performance” paradigm and assess the consequences of potentially harmful conduct on a case-by-case basis. Thus, high levels of concentration in IT markets such as handsets, operating systems, search engines, and social networks are not regarded as signals of market power (or at least not market power sufficient to justify ex ante regulation), but the FCC often still utilizes anachronistic measures of concentration to justify regulation of broadband markets.

One asserted rationale for asymmetric treatment is the notion that broadband networks are uniquely at the “core” of the Internet while content, applications and devices are at the “edge.” This metaphor is at best misleading, and in any case does not justify differential policy treatment. To the contrary, for purposes of competition analysis, it is no longer possible to distinguish meaningfully between the competitive characteristics of broadband markets and other IT markets, and accordingly, there is no basis for asymmetric regulatory treatment. Accordingly, ex ante oversight of competition by the FCC should be replaced by the same ex post enforcement framework that applies to the rest of the Internet ecosystem.

Introduction

It is increasingly apparent that markets for broadband communications services share many of the “high-tech” characteristics found in other information technology (IT) markets, including rapid innovation, declining costs, product differentiation and competitive price discrimination, network effects, and “multi-sidedness.”¹ These characteristics have important implications for competition analysis, including the need for increased focus on market dynamism and vertical relationships among market participants, a reduced emphasis on traditional structural presumptions, and increased reliance on case-by-case analysis.

Some scholars suggest competition in IT markets is so naturally intense, or that the risks of policy error are sufficiently high, that enforcers should apply a reduced level of antitrust scrutiny.² Others argue that IT markets are in some respects more prone to market failure than more traditional markets and hence deserve enhanced scrutiny.³ The Federal Communications Commission’s (FCC’s) December 2010 Open Internet Order seems to endorse an extreme form of the latter view.⁴ While the FCC presented a cursory “structural” assessment of the broadband market,⁵ it ultimately concluded that the conduct it sought to deter does “not depend upon broadband providers having market power with respect to end users”⁶ and, in fact, that the “broad purposes of this rule . . . cannot be achieved by preventing only those practices that are demonstrably anticompetitive or harmful to consumers.”⁷ Instead, the FCC determined that ex ante regulation of broadband providers’ conduct in the “Internet ecosystem”⁸ was justified based on arguments associated with network effects and multisidedness—theories that, it concluded, suggest that broadband Internet service providers (ISPs) might “set inefficiently high fees to edge providers”⁹ or “withhold or decline to expand capacity.”¹⁰

The FCC’s acknowledgement that broadband markets have become integrated with the overall Internet ecosystem is reflective of a rapidly emerging consensus.¹¹ However, its decision to impose price controls and preemptively ban certain conduct, and to do so without finding that the conduct at issue was harmful to consumers, is not easily squared with mainstream academic opinion, which widely agrees that competition oversight of IT markets should be case-specific, narrowly tailored, and grounded in a concern for consumer welfare.¹²

As this is written, the FCC’s authority to implement the Open Internet Order is being challenged in litigation before the US Court of Appeals for the DC Circuit.¹³ Even if the challenge is successful, however, the FCC might assert its authority to impose ex ante rules on broadband services through a variety of means. For example, the agency imposes various regulations on wireless ISPs, based at least in part on its authority over the electromagnetic spectrum,¹⁴ and, its recent expansion of the Federal Universal Service Fund—heretofore limited to supporting voice communications services—would subject broadband ISPs receiving support from the new Connect America Fund to de facto price regulation.¹⁵ Moreover, even if the Open Internet Order is overturned, the FCC might well attempt to revisit its prior decisions declaring that broadband is not a telecommunications service and hence not subject to the FCC’s core authority over common carriers. As recently as 2010, the FCC’s general counsel issued a memorandum stating that it could declare broadband a Title II “communications service,” subject to the full array of common carrier rules designed for monopoly providers of traditional telephone service.¹⁶

The central thesis here is that the expansion of ex ante FCC regulation over broadband markets is

inconsistent with both academic consensus and market reality. To the contrary, the convergence of broadband with other IT markets argues for a convergence at the policy level as well: if it is no longer possible to distinguish meaningfully between the competitive characteristics of broadband markets and other IT markets, the basis for asymmetric regulatory treatment—for ex ante regulation of broadband services and ex post antitrust scrutiny of other IT markets—is impossible to sustain. Further, if the choice is between applying modern competition principles to broadband and subjecting the rest of the Internet ecosystem to FCC-style regulation, the former course is far superior to the latter.

In this context, this paper examines the market for broadband services through the lens of the literature on competition in IT markets. I conclude that the competitive dynamics¹⁷ of broadband markets are now substantially similar to those in other sectors of the Internet ecosystem and that competition oversight of broadband markets should therefore be brought into conformity with the ex post, case-specific approach applied to other IT markets. This discussion is organized around three sets of characteristics that distinguish competition in IT markets from competition in more traditional ones: dynamism, modularity, and network effects.

By *dynamism*, I refer to what is sometimes called “innovation competition” or “Schumpeterian competition.” It is the idea that firms compete primarily by creating new and better products, as opposed to “static competition,” in which firms compete to charge the lowest price for a homogenous and unchanging commodity. Markets characterized by rapid innovation are often associated with high rates of capital spending (for R&D and capital expenditures), economies of scale and scope, “competitive price discrimination,” and product differentiation.

Modularity refers to what some have called “mix and match” competition: the ability to assemble bundles of complementary products from different suppliers, and the interoperability (for example, the existence of standards or of a technology “platform”) that makes it possible to do so. Providers of complementary products in

such markets must cooperate to make their products work together, but they also compete for the economic rents generated by a successful platform, including by seeking to become “customer facing.”

Third, *network effects* are present in markets where the value of a product or service to each customer is affected by the number of other customers who use it, as with telephones and fax machines, for example. Multisided markets represent a particular form of network effects, in which some types of consumers attach value to the presence of other customer types, such as when stock exchanges compete for both listings and investors or newspapers compete for both readers and advertisers. Both phenomena represent what can also be referred to as demand-side complementarities or, to be more specific, demand-side economies of scale (network effects) and demand-side economies of scope (multisidedness).

Taken together, these characteristics cause the competitive dynamics of IT markets to differ from the competitive dynamics of more traditional ones. They help to explain, for example, why IT markets are often relatively concentrated yet typically exhibit high levels of rivalry and strong performance. All three sets of characteristics are present in broadband markets, which despite being relatively concentrated, evidence falling prices, rising output, rapid innovation, and few apparent instances of anticompetitive conduct.

The remainder of this paper is organized as follows. Section 2 briefly discusses the “structure-performance paradox,” finding that, like many other IT markets, the broadband market exhibits both (a) relatively high levels of concentration by traditional metrics, and (b) strong performance in terms of output expansion, innovation, and other metrics. Section 3 describes the broadband market from the perspective of the three themes I described—dynamism, modularity, and network effects—and shows how the economic phenomena associated with these concepts affect the competitive dynamics of broadband markets, causing them to behave like IT markets. Section 4 outlines some specific implications of this analysis for competition oversight of broadband markets,

concluding overall that the dynamism and complexity of broadband markets, and their interrelatedness with other elements of the Internet ecosystem, argue

strongly against the sort of industrial policy-oriented, ex ante regulation practiced by the FCC. Section 5 provides a brief conclusion.

Broadband Competition: The Structure-Performance Paradox

In a 1999 article on competition in the computer industry, Tim Bresnahan took note of an interesting paradox arising out of Andy Grove's description of the computer industry.¹⁸ In *Only the Paranoid Survive* (1995), Grove had argued that the industry had shifted from a "vertical" to a "horizontal" structure comprised of independent competitors at each of several layers (for example, Dell and Hewlett-Packard selling computers and Microsoft and Apple selling operating systems).¹⁹ Moreover, Grove said, competition in this new "mix and match" model, was more intense than in the old vertically integrated structure in which firms like IBM and DEC competed to sell the entire "stack" of complementary products and services. Bresnahan noted that Grove's assessment was widely shared: "Almost all market participants characterize the 'Silicon Valley' style of industry organization as more competitive than the 'IBM style.'"²⁰

For economists, Bresnahan pointed out, Grove's conclusions presented something of a puzzle:

The puzzle arises when one looks at [the new horizontal structure] with an industrial organization economist's eyes, especially with an antitrust economist's eyes. Several of these 'competitive' horizontal layers have very concentrated structures, typically suggesting a dominant firm and fringe model. . . . [A]n elementary structural analysis shows a puzzle. How can this be so competitive?²¹

As Bresnahan said in 1999, "Resolving the puzzle is the key to understanding computer industry competition."²² The same is true for broadband markets today.

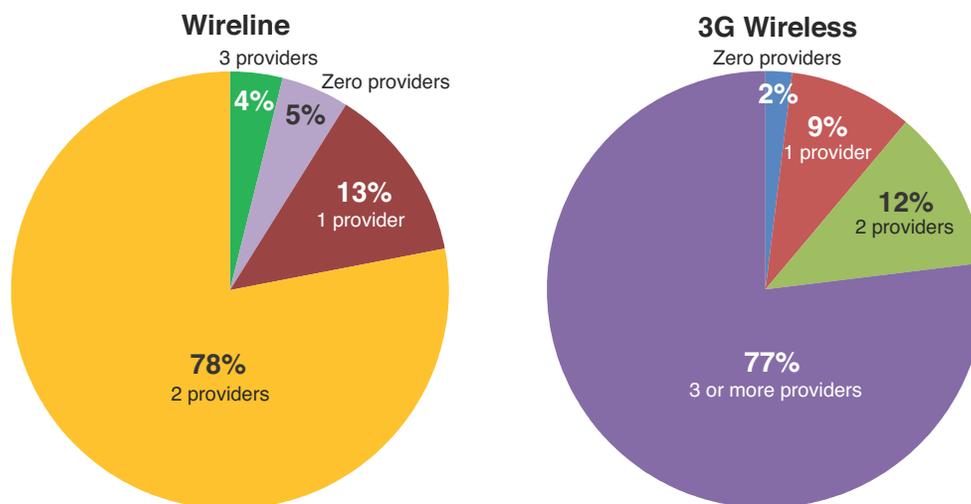
The Structural Presumption

Although recent developments have begun to shift the focus of competition analysis away from structural presumptions,²³ both the antitrust agencies and the telecommunications regulatory agencies—the FCC and state public utility commissions—continue in many cases to base their analyses largely on traditional concepts of market definition and concentration. While rebuttable, the "structural presumption" is that, other things equal, highly concentrated markets are more likely than unconcentrated ones to be subject to the exercise of market power.²⁴

Market power takes two basic forms. First, firms may possess traditional market power: the ability to raise price above the competitive level, reduce quality, or otherwise deprive consumers of the benefits of competition (for example, by slowing innovation). Traditional market power is manifested through either coordinated effects (explicit or tacit collusion)²⁵ or unilateral effects; the latter is typically associated with some form of locational market power²⁶ resulting from geography or product differentiation, which allows a firm to raise prices (or lower quality) to a subset of consumers without having to fear that they will switch to competitors in sufficient numbers to make the price increase unprofitable.²⁷ Second, firms may possess exclusionary market power: the ability to deprive competitors or potential competitors of inputs or access to markets or to raise their costs, reducing competition in the long run.

Traditional analysis invariably concludes that markets for broadband service are relatively concentrated: as illustrated in figure 1, there typically are two wireline suppliers and three wireless providers serving each community. Moreover, although many think that the next generation of 4G wireless services

FIGURE 1
US RESIDENTIAL BROADBAND AVAILABILITY BY MODALITY, 2009



SOURCE: Federal Communications Commission, Office of Broadband Initiatives, *Connecting America: The National Broadband Plan* (March 2010).

(based on LTE or WiMAX technology) will serve as an economic substitute for wireline broadband, there is not yet a consensus that that moment has arrived; hence, the wireline and wireless markets are often considered separately.²⁸ Finally, it would seem that entry barriers in wireline service are high enough to make new entry unlikely, and even in wireless, some argue that the costs of acquiring spectrum and building out a network limit the likelihood of entry.²⁹

In its Open Internet Order, the FCC summed up the structural evidence as follows:

- (1) The wireline broadband market is highly concentrated, with most consumers served by at most two providers; (2) the prospects for additional wireline competition are dim due to the high fixed and sunk costs required to provide wireline broadband service; and (3) the extent to which mobile wireless offerings will compete with wireline offerings is unknown.³⁰

As noted above, the FCC ultimately refused to base its net neutrality rules on a finding that broadband

ISPs had traditional market power.³¹ In other contexts, however, it has not hesitated to rely on structural evidence as a basis for findings of market power. In its 2010 Qwest Forbearance Order, for example, the FCC conducted a “traditional market power analysis,”³² determined that “the retail mass market for wireline services in Phoenix remains highly concentrated with two dominant providers, Qwest and Cox,”³³ and was “unable to find that Qwest is subject to effective competition in the Phoenix MSA.”³⁴

Similar findings frequently play important roles in the FCC’s analyses of wireless competition. In its recent Data Roaming Order, it justified the new rules in part on grounds that they would “promot[e] competitive choice in broadband services.”³⁵ Similarly, the FCC cited the desire to increase the number of wireless broadband providers in its decision granting a wireless license transfer from Skyterra Communications to Harbinger Capital Partners Funds.³⁶ In 2010, for the first time in many years, the FCC failed to find the wireless market “effectively competitive,” at least in part as a result of concerns about “continued industry concentration.”³⁷ In 2011, the Department

of Justice sued to block the acquisition of AT&T by T-Mobile in part because “the proposed merger would result in an HHI [Herfindahl-Hirschman Index] of more than 3,100 for mobile wireless telecommunications services, an increase of nearly 700 points. These numbers substantially exceed the thresholds at which mergers are presumed to be likely to enhance market power.”³⁸

More broadly, the structuralist approach has been a touchstone of groups advocating increased regulation, which have frequently characterized the wireline broadband market as a “cozy duopoly”³⁹ and argued that even the wireless market has an insufficient number of competitors to achieve a competitive result.⁴⁰ According to Cooper,

Most communications markets have a small number of competitors. In the high speed Internet market, there are now two main competitors and the one with the dominant market share has a substantially superior technology. When or whether there will be a third, and how well it will be able to compete, is unclear. This situation is simply not sufficient to sustain a competitive outcome.⁴¹

For structural purists, a market with even six competitors would not be sufficiently unconcentrated to produce competitive results.⁴²

The predicted consequences of high concentration, according to the structuralists, include high prices; reduced output; retarded innovation; and frequent, successful exclusionary conduct. In a joint 2007 filing at the FCC, for example, the Consumer Federation of America, Consumers Union, and Free Press argued that, as a result of high concentration and insufficient regulation, US broadband connections were “slow, expensive, and not universally available.”⁴³ Pointing to inadequate competition in the wireless market and the failure of the FCC to impose network neutrality regulation, the groups complained that wireless broadband networks “actively block the use of unapproved equipment,” that “certain applications and services are prohibited

(e.g., VoIP),” and that network operators were seeking to turn wireless services into “a proprietary network of ‘walled garden’ content and services.”⁴⁴

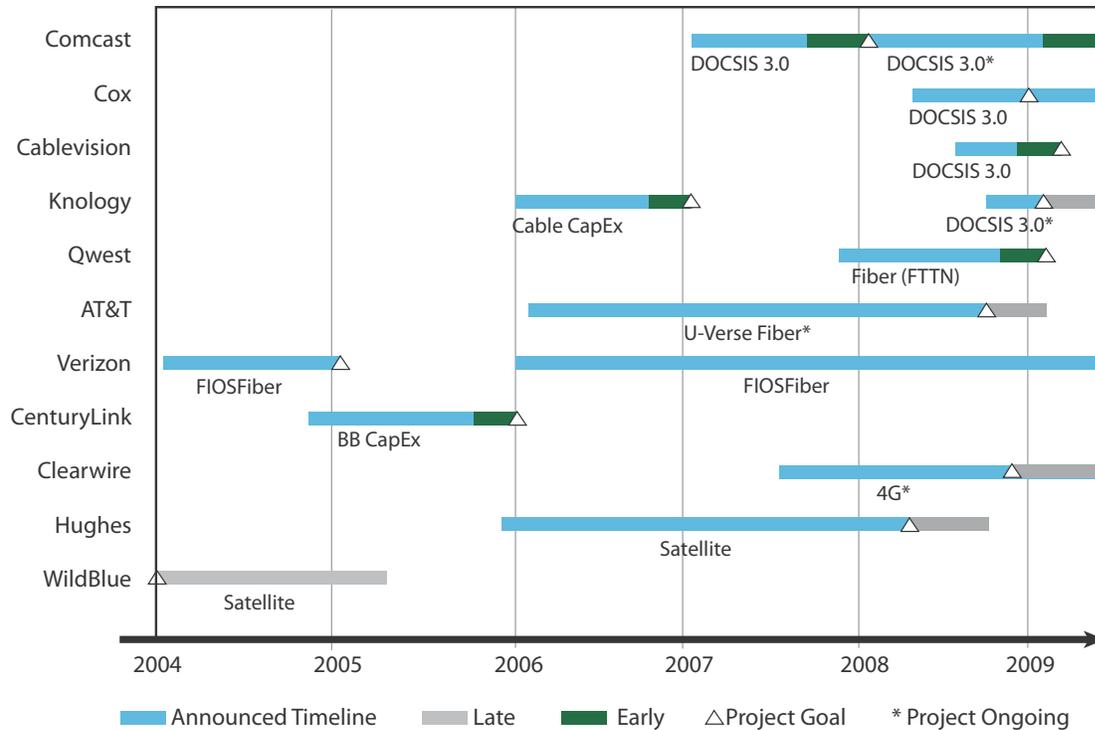
The Performance Paradox

The broadband industry has consistently confounded structuralist predictions of poor performance, thus presenting precisely the same type of paradox Bresnahan identified in Grove’s analysis of the “new” computer industry. Despite (or perhaps because of) high concentration, broadband output is rising, prices are falling, quality is increasing, firms are making large investments in new technologies and infrastructures, rivalry is intense, and there are few significant instances (some would say none) of demonstrated anticompetitive conduct.

While a complete discussion of the performance of US broadband markets is beyond the scope of this paper, a lengthy treatment is hardly necessary to reject the “cozy duopoly” hypothesis. Indeed, the evidence that broadband markets are performing well can be found in the FCC’s own reports, beginning with the 2010 *National Broadband Plan* (NBP) report, which concluded, “Due in large part to private investment and market-driven innovation, broadband in America has improved considerably in the last decade. More Americans are online at faster speeds than ever before.”⁴⁵ Research performed for the FCC in conjunction with the NBP report found that real wireline broadband prices fell at a 5 percent annual rate between 2004 and 2009,⁴⁶ while evidence reported by the FCC in its regular *CMRS Competition Reports* shows rapid declines in prices for both mobile voice and data.⁴⁷

Quality-adjusted broadband prices have declined primarily as a result of higher speeds, which in turn reflect the deployment of more capable infrastructure. The NBP report surveyed deployment plans of new broadband infrastructures by major broadband providers. As shown in figure 2, it found that both telephone companies (deploying either fiber-to-the-premises [FTTP] or advanced DSL infrastructures)

FIGURE 2
SELECTED FIXED BROADBAND INFRASTRUCTURE UPGRADES



SOURCE: Federal Communications Commission, Omnibus Broadband Initiative, *Connecting America: The National Broadband Plan* (March 2010), 39.

and cable companies (rolling out third-generation DOCSIS 3.0 infrastructure) were in the process of completing upgrades to their networks and that Clearwire had begun rolling out a nationwide 4G network based on WiMAX technology. Separately, the report noted that several wireless carriers had announced plans to roll out 4G wireless networks based on LTE technology, including Verizon, which had committed to upgrading its entire 3G infrastructure to 4G by 2013.⁴⁸

In another report prepared in conjunction with the NBP, Atkinson and Schulz surveyed the capital expenditures of major US communications companies, estimating investments for 2008 through 2015 based on actual spending and announced plans, concluding that cumulative private-sector investment in broadband infrastructure over the eight-year period would total \$244 billion.⁴⁹ The NBP report specifically

concludes that high levels of investment are the result of competition among network operators.⁵⁰

Declining prices, improving quality, and increasing availability have led to increased adoption and output. In a report released in February 2011, the National Telecommunications and Information Administration found that broadband penetration increased to 68.2 percent in October 2010 from 63.5 percent a year earlier and just 19.9 percent in 2003. Broadband is the fastest-propagating technology in history, and mobile broadband is propagating even more rapidly than wireline.⁵¹

There is no evidence that countries that have taken a more regulatory approach have achieved superior performance as a result. Despite entreaties from advocates of increased regulation to conclude that the United States was “falling behind” other nations,⁵² the NBP report refused to weigh in, concluding only that

“each country’s experiences and challenges have critical differences.”⁵³ In fact, US markets appear to be performing well on a variety of metrics, including the deployment of fiber-to-the-premises and of 4G wireless, where the United States has a clear lead.⁵⁴ A recent Nielsen report found that among nine Western nations, America was second only to Switzerland in broadband connection speeds.⁵⁵

In addition to strong performance, other metrics are also inconsistent with the structuralist hypothesis. First, no credible evidence exists that broadband ISPs earn above-market returns. For example, Hazlett and Weisman analyze financial market valuations of telephone and cable companies and find no evidence of market power,⁵⁶ while Darby presents evidence that broadband providers earn lower returns than the Standard and Poor’s average and significantly lower returns than many high-tech firms.⁵⁷

Second, it is worth noting that despite the sunk costs associated with entry, new broadband providers have entered the market, and further entry is likely. In the mobile arena, Clearwire represents a recent case of new entry, and Dish is seeking government permission to acquire the spectrum necessary to enter. Moreover, in an important sense, *all* wireless broadband providers are recent entrants into the market for 3G services, and either new or aspiring entrants into the market for 4G.⁵⁸ On the wireline side, infrastructure upgrades undertaken by wireline carriers have allowed them to enter and compete in new product markets (for example, cable companies in telephony, telephone companies in video).⁵⁹ Such behavior is not consistent with the structuralist prediction that “cozy duopolists” would refuse to enter one another’s markets.

Third, structuralist predictions of exclusionary conduct and stifled innovation have not been borne out by experience. To the contrary, whereas the structuralists predicted that wireline providers would seek to emulate the “walled garden” of the early wireless marketplace—in which carriers chose equipment, limited access to outside content and applications, and so forth—the opposite has occurred: the advent of 3G wireless led to the opening up of the “wireless

ecosystem,” with content, application, device, and companies like Apple, Google, Microsoft, and Samsung taking the lead in defining the wireless value proposition.⁶⁰ Rather than limiting the devices and applications on their networks, mobile providers are now competing on the basis of the types and number of third-party applications available through their phones and devices.⁶¹ Nor is innovation limited to the wireless sphere. “Over-the-top” video services such as Netflix now account for the bulk of Internet traffic, and broadband ISPs are responding by offering such services such as TV Everywhere and applications that allow customers to watch live television programming on their iPads using home Wi-Fi connections.⁶² On the other hand, the FCC’s Open Internet Order could cite only two adjudicated instances of anticompetitive conduct (one of which, Comcast’s alleged discrimination against BitTorrent, has since been overturned in the courts) and none since 2007.⁶³

The fact that the broadband market outperforms structuralist predictions is not surprising in the context of modern competition analysis, which recognizes that large numbers of competitors are not necessary to achieve competitive results. As the NBP report noted,

The lack of a large number of wireline, facilities-based providers does not necessarily mean competition among broadband providers is inadequate. While older economic models of competition emphasized the danger of tacit collusion with a small number of rivals, economists today recognize that coordination is possible but not inevitable under such circumstances. Moreover, modern analyses find that markets with a small number of participants can perform competitively.⁶⁴

“The critical question,” the report continued (quoting from the Department of Justice’s *ex parte* comments), “is not ‘some abstract notion of whether or not broadband markets are ‘competitive’ but rather ‘whether there are policy levers that can be used to

produce superior outcomes.”⁶⁵ Before turning to that question, we first seek a better understanding of the

competitive dynamics of the Internet ecosystem generally and modern broadband markets in particular.

The Competitive Dynamics of Broadband

Bresnahan began his 1999 article on the computer industry by explaining that, for an industry economist, “the first task is to understand how competition works in the industry, and how structure influences and is influenced by competition. Only when that task is done can we reasonably hope to say what kinds of industry structures public policy should favor and how.”⁶⁶ In the same spirit, this section describes how competition works in the modern broadband industry. The conclusion, to summarize, is that competition in the broadband industry is shaped by the same forces as in the rest of the Internet ecosystem, like the markets for computers, content, applications, software, and so forth. As I have explained, those characteristics can be thought of as falling into three broad categories: dynamism, modularity, and network effects.

First, because broadband markets are dynamic, the primary focal points of competition are innovation and product differentiation. Broadband ISPs, like other Internet firms, seek to outpace their rivals, and earn economic rents, by developing superior products and services. To do so, they make large, nonrecoverable investments in R&D, equipment, and other fixed assets. To recover these costs (which must be recovered, at least in expectation, or the investments would not be made), ISPs must charge at least some customers prices in excess of marginal cost, which is to say they must price discriminate or, as some prefer to say, engage in “differential pricing.”⁶⁷ To price discriminate, they must differentiate their products. This causal chain (or, more accurately, causal circle)—invest, innovate, differentiate, price discriminate, invest, and so forth—is central to the competitive dynamics of all IT markets, including broadband. (See figure 3.)

Second, broadband products serve as complementary inputs in larger systems. The ability to assemble

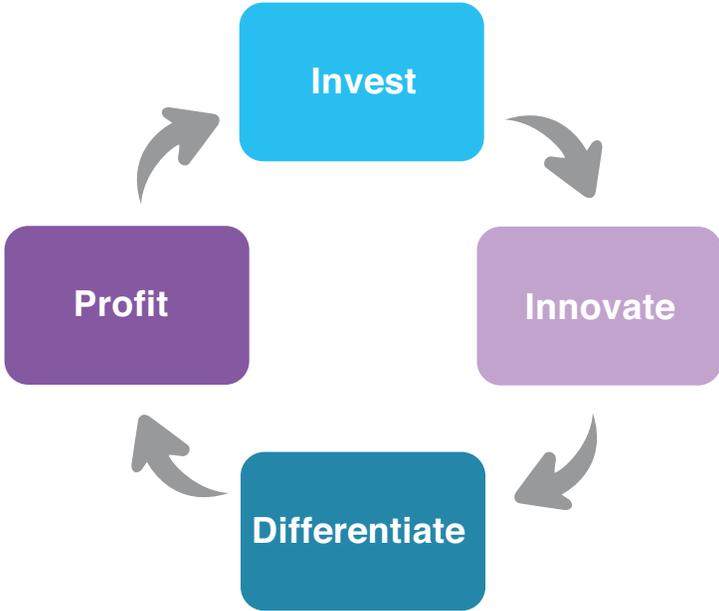
different types of inputs into value-producing systems is referred to as modularity, which is made possible, in turn, by the existence of standards or “platforms.” Competition may occur both within platforms (intraplatform competition) and between them (interplatform competition). As I will discuss, broadband services are one of four types of modules (along with applications, content, and devices) that comprise Internet platforms. (See figure 4.)

Third, broadband markets are, like other IT markets, subject to both demand-side economies of scale (network effects) and demand-side economies of scope (multisidedness). Markets are said to be subject to network effects if the value attached to a product or service by each consumer is a function of how many other consumers use it. In multisided markets, some types of consumers (for example, content and application providers) value the presence of other types of consumers (for example, subscribers). (See figure 5.)

Network effects and multi-sidedness typically go hand in hand. For example, a vertically integrated content and application aggregator and device manufacturer (for example, Apple) may place a higher value on distributing its products through a broadband ISP with many customers than one with fewer customers, not only because it will sell more iPhones, but also because doing so increases its own value to the content and applications providers (the other participants in its platform) on which it depends for complements.

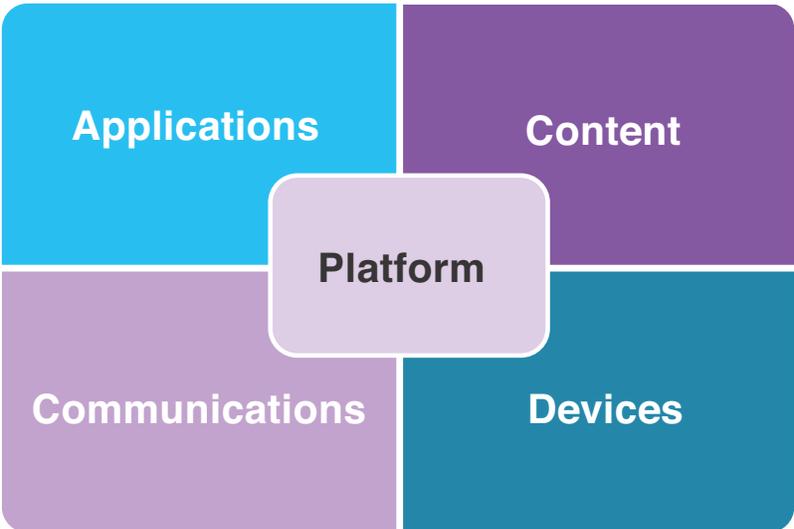
It is worth noting that the term *platform* is used to describe both modularity (referring to institutions that facilitate the exploitation of complementarities between products) and multisidedness (institutions that facilitate complementarities between economic actors). Thus, both the Windows/Intel (“Wintel”) computer environment (facilitating interaction between complementary

FIGURE 3
CYCLE OF DYNAMIC INNOVATION



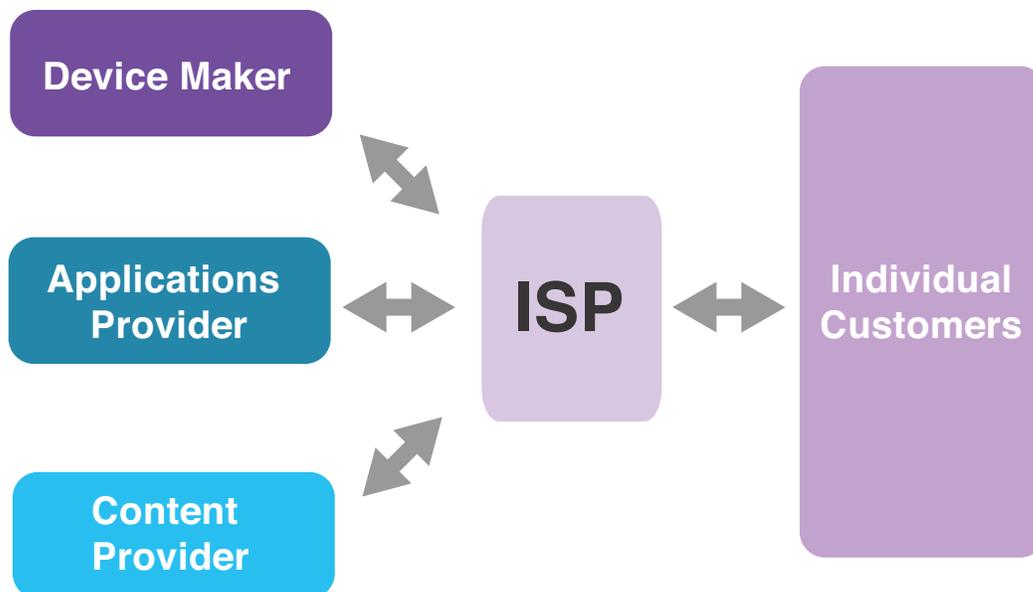
SOURCE: Author.

FIGURE 4
ELEMENTS OF AN INTERNET ECOSYSTEM PLATFORM



SOURCE: Author.

FIGURE 5
THE ROLE OF ISPs IN A TWO-SIDED MARKET



SOURCE: Author.

computer products) and the local newspaper (facilitating interactions between advertisers and readers) are referred to as “platforms.”⁶⁸

We now turn to a more extensive examination of how these characteristics manifest themselves in broadband markets.

Dynamism

Markets characterized by rapid technological change are often referred to as “dynamic.” Market structures may change rapidly, and firms must innovate and adapt just to keep up; today’s dominant firm may be seeking bankruptcy protection tomorrow. But technological change does not happen of its own accord: innovation demands investment, not only to invent new products (R&D), but also to bring them to market (capital expenditures). Such investments tend to be both sunk (unrecoverable) and fixed (insensitive to output). As a result, industries characterized by

rapid technological change are generally subject to economies of scale and engage in efficient price discrimination, enabled by product differentiation, to earn back past investments and attract the capital needed to make new ones.⁶⁹

In innovation markets, firms compete not only by seeking to offer the best products at the lowest prices, but also—and primarily—by making investments intended to create entire new categories of products or substantially reduce the costs of making existing ones. According to Baumol, “Innovation has replaced price as the name of the game in a number of important industries. The computer industry is only the most obvious example, whose new and improved models appear constantly, each manufacturer battling to stay ahead of its rivals.”⁷⁰ Innovation competition plays a central role in economic progress⁷¹ and likely contributes far more to long-run economic prosperity than the static efficiency gains associated with achieving the competitive result in traditional models.⁷²

Telecommunications markets were not traditionally thought of as “innovative” in this sense, but the convergence of telecommunications with digital computing has accelerated the pace of change. Mobile wireless markets are the most obvious example, with new technologies now being introduced roughly every five years as the market progresses from 3G to 4G wireless standards (WiMAX and LTE).⁷³ However, wireline networks are also evolving rapidly: current fiberoptic networks deliver speeds four times as fast as those initially introduced in the early 2000s⁷⁴; techniques developed in just the past few years (known as vectoring and pair bonding) now allow even legacy copper networks to deliver broadband speeds up to 100 Mbps.⁷⁵

One important characteristic of innovation competition is its riskiness: innovation markets have a win-or-lose aspect, where the firms that innovate successfully are rewarded with high margins, while those that do not die off.⁷⁶ The leading exponent of dynamic competition, Joseph Schumpeter, famously coined the phrase “creative destruction” to describe it. As Schumpeter put it, innovation competition “strikes not at the margins of the profits and the outputs of the existing firms but at their foundations and their very lives.”⁷⁷

Again, telecommunications markets were not traditionally thought of in such terms; for decades, AT&T was the prototypical safe investment, and telephone companies enjoyed the steady returns associated with rate-of-return regulation until the mid-1990s.⁷⁸ But investors in firms such as Clearwire, with its bet-the-firm commitment to WiMAX technology—or for that matter, in Verizon, with its arguably even more audacious bet on fiber-to-the-home—can have little doubt that everything is at risk. Firms that bet wrong do, in fact, cease to exist: AT&T, which made losing bets on everything from cell phones (it sold, then bought) to cable companies (it bought, then sold), survives today in name only.

Dynamism has several important implications for competition analysis. First, and perhaps most obviously, rapid technological change places a burden on antitrust enforcers to take a forward-looking

approach to the assessment of market power. Katz and Shapiro, for example, note that “under the Schumpeterian view that competition consists of repeated waves of innovation that sweep aside ‘dominant’ incumbents, current product-market shares may indicate very little about the future of the industry or about whether any given firm will possess significant market power.”⁷⁹ Similarly, Posner, writing in 2001, concluded, “Because of the extraordinary pace of innovation, not only in computers but in communications technology . . . the networks that have emerged in the new economy do not seem particularly secure against competition.”⁸⁰ The US Department of Justice made essentially the same point in a 2010 filing before the FCC:

In any industry subject to significant technological change, it is important that the evaluation of competition be forward-looking rather than based on static definitions of products and services. Insight can best be gained by looking at product life cycles, the replacement of older technologies by newer ones, and the barriers facing suppliers that offer those newer technologies. In the case of broadband services, it is clear that the market is shifting generally in the direction of faster speeds and additional mobility.⁸¹

In one respect, at least, the FCC seems to have taken this advice to heart: Looking at potential future technological developments in the broadband market, the NBP report concluded today’s telephone companies—dominant firms, in the eyes of many—are at risk of obsolescence if they are not able to find a way effectively to compete with cable’s cost-effective DOCSIS 3.0 technology.⁸²

The extent to which dynamism erodes market power, and perhaps reduces the need for antitrust enforcement in general, is a matter of contention.⁸³ However, many agree on a narrower point: that the traditional presumption against market concentration does not carry over to innovation markets. As Katz and Shelanski explain:

A proper understanding of innovation-based competition means that, in some markets, antitrust enforcement cannot rely on its long-established presumptions that increased concentration or market power will reduce innovation or harm consumer welfare. A merger from four to three firms, or even from three to two, while raising a presumption of increased short-run power over price and output, does not so easily raise a presumption of reduced development and deployment of new technology.⁸⁴

In other words, to the extent market performance is measured by the pace of innovation, there is simply no basis for presuming an inverse relationship between concentration and performance.

Another important implication of dynamism in IT markets is the importance of economies of scale, which lead ultimately to competitive price discrimination. As Baumol notes, innovative industries spend substantial proportions of their revenues on fixed costs such as research and development. He observes, “These outlays [on R&D and other innovative activities] are substantial, amounting to more than 10 percent of total annual revenue in industries such as communications and pharmaceuticals. In the computer software industry they may well be higher.”⁸⁵ Such costs can be recouped only through high margins. As Shapiro explains:

Since R&D costs often do not vary with the scale of output, such fixed costs are common in innovative industries. In my experience it is common in the technology sector for firms to follow a rule of thumb that involves investing some percentage of revenues into R&D; hence, long-term viability requires sufficient margins to fund ongoing R&D efforts. Fixed costs also are very common in industries that create informational content. Indeed, in some of these markets, such as those for movies or music, that involves (*sic*) “hits” and “duds,” it is well understood that the large margins earned

on the “hits” are necessary to compensate for the larger number of “duds” that are inevitable.

For all of these reasons, competitive prices are often above marginal cost in innovative industries, and sometimes far above marginal cost.⁸⁶

The problem of defraying fixed costs in industries with economies of scale is a familiar one, especially to students of regulated industries (like traditional telecommunications), who recognize it as the central challenge posed by natural monopoly. Economic efficiency requires that prices be set equal to marginal cost, but marginal cost is always below average cost in industries with downward-sloping average cost curves over the relevant range of output; thus, setting price equal to marginal cost ensures the firm earns negative returns and, having anticipated the problem, never enters the market in the first place. As Varian explains:

Many important industries involve technologies that exhibit increasing returns to scale, large fixed and sunk costs, and significant economies of scope. Two important examples of such industries are telecommunications services and information services. In each of these cases the relevant technologies involve high fixed costs, significant joint costs and low, or even zero, marginal costs. Setting prices equal to marginal cost will generally not recoup sufficient revenue to cover the fixed costs and the standard economic recommendation of “price at marginal cost” is not economically viable. Some other mechanism for achieving efficient allocation of resources must be found.⁸⁷

The efficient solution is price discrimination. As Wallsten explains in the context of broadband, “Because [broadband] carriers must recover the high fixed costs of investment, average prices must exceed marginal costs if providers are to continue investing in their networks. The most efficient way to recover those fixed costs is to charge different types of consumers different prices.”⁸⁸ Such price discrimination

is efficient to the extent that it reflects Ramsey pricing principles: when price-cost margins are set in inverse proportion to the elasticities of demand of different customer groups so that the least price-sensitive customers shoulder the fixed costs by paying prices above average cost, while the most price-sensitive are offered prices at or near marginal cost (below average cost).

For many years, economists believed that price discrimination was impossible in competitive markets, since competitors would always have an incentive to undercut (“cream skim”) above-cost prices. Indeed, the expectation that competition would make price discrimination impossible led economists for many years to suppose that the presence of price discrimination was a certain indicator of market power. As it turns out, neither proposition is true: competition does not preclude price discrimination, and price discrimination does not imply market power.⁸⁹

Indeed, recent work by Baumol and others has led to a growing recognition of the ubiquity and significance of the practice, especially in IT markets.⁹⁰ As Baumol and Swanson explain in an important 2003 article, competitive price discrimination is not just *desirable* in markets with high fixed costs and heterogeneous consumers, but also *necessary* and *inevitable*. Moreover, the prices charged are generally efficient (reflecting Ramsey pricing), and so long as the market is sufficiently competitive, the price-discriminating firms earn only competitive returns.⁹¹

The economic imperative to differentiate products has a profound impact on competition in the Internet ecosystem: it means that individual firms compete to create new products and new product attributes that serve as effective differentiators—attributes that create sufficient added value to cause some cohort of consumers to be willing to pay a price greater than marginal cost.⁹² Thus, broadband service providers seek to differentiate both their wireline (FiOS vs. U-Verse vs. DOCSIS 3.0) and wireless (LTE vs. HSPA+ vs. WiMAX) communications offerings.⁹³ At least equally important, they also compete by seeking to assemble the most compelling combinations of products for consumers (those that generate

the most value for at least some subsets of consumers).⁹⁴ Thus, at the same time that they are innovating internally, broadband ISPs are also collaborating with suppliers of complementary inputs (mobile wireless devices, high-capacity DVRs, video applications for iPads, TV Everywhere services, and so forth) to generate compelling bundles of products and services that differentiate them from their competitors.

To reiterate, what I have described is a causal chain with direct implications for both the competitive dynamics of broadband markets and the challenges faced by competition authorities in evaluating them. High rates of innovation (dynamism) imply large sunk costs, which must be recouped through price discrimination, but price discrimination is possible only if products can be sufficiently differentiated to allow for higher margins on at least some sales.⁹⁵ Thus, firms are constantly engaged in a search for product-differentiating attributes in their own products; in markets characterized by modularity, in the complementary products produced by others; or, in multisided markets, in the types of customers to whom they cater.

Modularity

In its FCC filing on the *National Broadband Plan*, the Department of Justice concluded that “Broadband services are one part of a wider information technology ecosystem that ultimately delivers value to consumers.”⁹⁶ The statement rings true, but an economist cannot help but ask: precisely what does it mean to be “part of an ecosystem”?

The answer lies in the related concepts of modularity (an engineering term) and complementarity (an economic one). Modularity refers to standards (or “platforms”) that allow different products (or “modules”) to interoperate, while complementarity refers to the fact that the products generate greater benefits if used together than if used independently.⁹⁷ In IT markets, it is commonplace for modules to be perfect complements, meaning that they

generate no value at all unless used in conjunction with other modules as part of a platform (a personal computer, an operating system, and one or more types of applications software).⁹⁸ Thus, to say that a product or service is part of the Internet ecosystem is to say that it is one of the complementary modules operating together on one of the many platforms that comprise the “platform of platforms”⁹⁹ called the Internet.

It is conventional to classify the modules that make up Internet platforms into four categories: applications, communications (broadband), content, and devices.¹⁰⁰ Further, an Internet platform can be defined as a system that contains at least one of each type of module, without which it would be unable to function; that is, the term “Internet platform” can sensibly be defined such that the four types of modules are perfect complements.

The recognition that broadband comprises just one of four equally necessary components of all Internet platforms has important implications for how we think about the competitive dynamics of the Internet ecosystem. In particular, it becomes clear from this perspective that one of the central metaphors in the policy discussion about broadband regulation—the notion that broadband networks are at the “core” of the Internet while content, applications, and devices are at the “edge”¹⁰¹—is fundamentally misleading and economically incorrect. Although it is certainly understandable that the modern telecommunications intelligentsia would see broadband as the center of the Internet ecosystem (just as pre-Copernican astronomers, seeing the universe from their earthbound perspective, mistakenly believed the Earth was the center of the universe), it is not. For purposes of competition analysis, at least, broadband is a complement among complements, a module among modules.

This realization does not end the debate about appropriate competition policy for broadband and other Internet services, but it does reframe it. First, it explains why it is incorrect to argue, as the FCC does in the Open Internet Order, that broadband ISPs differ from “edge” providers because they “control access to the Internet for their subscribers and for anyone

wishing to reach those subscribers” and, on this basis alone, to “find broadband providers distinguishable from other participants in the Internet marketplace.”¹⁰² The same could be said for the providers (collectively) of any essential input to Internet platforms, including operating systems, browsers, Internet access devices, and so forth. (For example, it is equally true that operating system providers “control access to the Internet for their subscribers and for anyone wishing to reach those subscribers.”) Going further, the ability to cut off access to the entire Internet is hardly necessary to raise competition issues: it may be sufficient, in theory, for a device manufacturer to restrict interoperability with a software program, or for a search engine operator to decline to show results from a competitor’s sites. Nothing is unique, in other words, about the ability of broadband ISPs to affect—for competitive reasons or otherwise—how various modules interoperate, or fail to interoperate, on Internet platforms.¹⁰³

To understand the competitive dynamics of broadband markets, it is necessary to dispense altogether with the edge versus core metaphor and focus instead on the roles played by broadband ISPs in two types of competition: competition between producers of modules within platforms (intraplatform competition) and competition between platforms (interplatform competition).¹⁰⁴ I will discuss both types of competition in this section and the following one.

To begin, the central economic function of a platform is to strike the optimal balance between the benefits and costs of modularity (in this context, interoperability) on one hand and the benefits and costs of integration on the other.¹⁰⁵ The primary benefit of modularity is that it allows firms (and the platform or platforms in which they participate) to capture both the benefits of specialization (of specializing in the production of one or a few modules) while still benefiting from the economies of scale and scope made possible by participation in a widely distributed platform.¹⁰⁶ But modularity also imposes costs. Most obviously, the design and engineering costs of achieving interoperability across different products (porting costs) may outweigh the benefits.¹⁰⁷

Modularity can also interfere with the ability of entrepreneurs to appropriate returns on investment,¹⁰⁸ or (in cases of complementary monopoly products) inhibit efforts to avoid “double marginalization” through vertical integration.¹⁰⁹ Successful platforms achieve a mix of interoperability and integration that maximizes overall value, given the technical and economic context of the market in question and are capable, over time, of adjusting to change.

Given the obvious complexity of this balancing exercise, it might seem that the challenge of creating and maintaining a stable interface would best be solved through centralized decision making. That is, regardless of whether the platform operator opts for relative modularity (like Android) or a more integrated approach (like Apple), intuition suggests that there will generally be a single “platform czar” calling the shots. This intuition, however, turns out to be wrong—or, to be more precise, true only as a special case.¹¹⁰ In general, platform participants compete to control the direction of a platform and, by doing so, to affect how current and future economic rents are divided. Indeed, intraplatform competition is commonplace in the computer sector and in the broadband ISP sector as well.¹¹¹

In a 1999 article, Bresnahan and Greenstein coined the term “divided technical leadership” to describe “a structure in which a number of firms possess the capability to supply key platform components.”¹¹² As Bresnahan explains:

Under divided technical leadership, there is no single vertically integrated firm with control over direction of a platform. Instead, a number of firms supply, in the short run, and invent, in the long run, platform components. Frequently, different firms will have positions of dominance in different layers. These firms must cooperate in the short run to serve their customers. They find themselves, however, in competition when it comes to invention.¹¹³

According to Bresnahan and Greenstein, divided technical leadership was the “inevitable” consequence

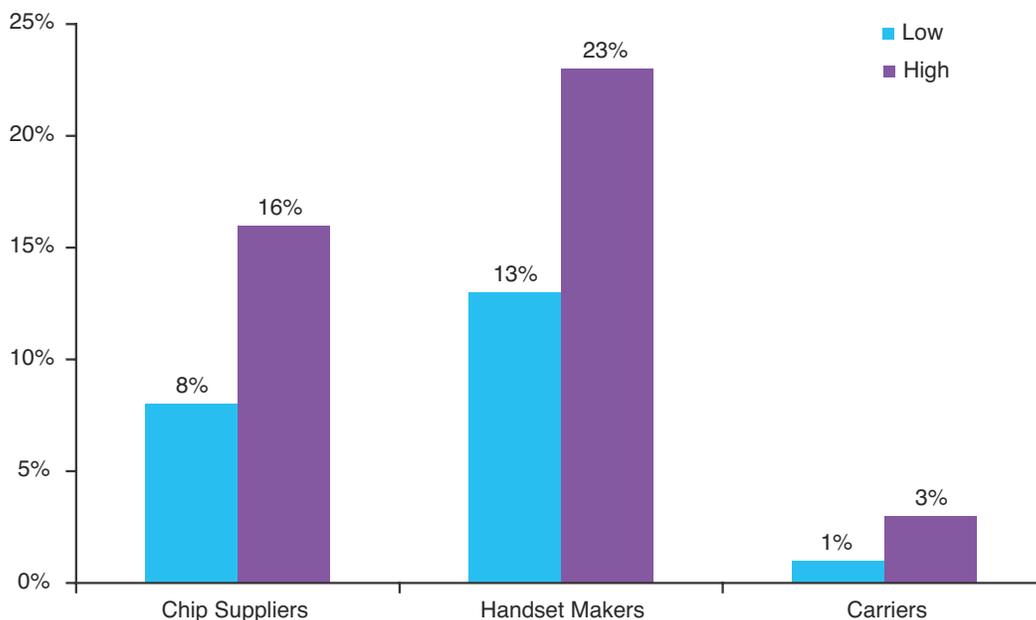
of the emergence of client/server architectures, which “necessarily have divided technical leadership because they re-use components from other platforms,” requiring an “aspiring client/server platform steerer” to “make progress on each component at or near the technical level of the leader of that component,” an “extraordinarily difficult feat.”¹¹⁴

Modularization has had the same effect in the Internet ecosystem, permitting the reuse of components across platforms, making it difficult or impossible for a single firm to steer the technological development of every module or component, and leading to divided technical leadership (intraplatform competition).¹¹⁵ As Bresnahan puts it, intraplatform competition results in part from the fact that “a firm in one layer [of the platform] has every incentive to grab the rents of a firm in another layer.”¹¹⁶ Consider the following example, offered by Sallet:

A consumer who buys a book from Amazon on her iPad using the AT&T wireless network engages in three separate transactions with three separate revenue streams, three price points, and three consumer relationships. But, and this is the critical point, the transactions are interdependent, and this interdependence—the shared value arising from the use of a package of complementary products—is what firms can bargain over. The bargaining may involve specific terms of a contractual relationship, such as exclusivity rights. It may involve payment from one firm to another for the ability to gain access to the package. It may be the purchase or subsidization of another firm’s product for the ability to engage in joint marketing.¹¹⁷

Firms in the Internet ecosystem compete over rents by seeking to develop better products or superior brand images, or by leveraging control of some key input or attribute like intellectual property. For example, a recent study by Dedrick, Kraemer, and Linden analyzes the intraplatform competition for the rents generated by smartphones:

FIGURE 6
 RETURN ON ASSETS FROM “ICONIC” SMARTPHONES



SOURCE: Table 4 in Jason Dedrick, Kenneth L. Kraemer, and Greg Linden, “The Distribution of Value in the Mobile Phone Supply Chain,” *Telecommunications Policy* 35 (2011): 505–21.

In the smartphone market, carriers and handset makers each try to increase their leverage. Handset makers can accomplish this in part by building brand image with consumers. An excellent recent example of this is Apple’s iPhone. Well regarded by consumers based on its hit line of iPod music players, Apple was reportedly able to negotiate a share of monthly iPhone subscriber revenue from AT&T.¹¹⁸

As shown in figure 6, Dedrick, Kraemer, and Linden examined the division of profits between chipset suppliers, handset makers, and wireless carriers and found that both chipset suppliers and handset makers earned far higher returns on assets than the carriers, who earned just 1–3 percent, largely as a result of the high capital costs incurred in creating and maintaining their networks.¹¹⁹

Based on their findings, Dedrick and colleagues conclude that “value-adding complementary goods

and services” are “shifting the key level of competition toward platforms based on operating systems, including those provided by software makers such as Google and Microsoft or by the handset makers such as Apple.”¹²⁰

The FCC has acknowledged the growing role of complementary goods in broadband competition, at least in the wireless market. For example, in its 2011 report on competition in the commercial mobile radio services market, it concluded:

In addition to network quality and advertising, a third component of non-price rivalry among mobile wireless service providers is the differentiation of the downstream products that they offer or that rely on their networks, including handsets/devices, operating systems, and mobile applications. . . . As mobile operating systems, and the functionalities and application stores they enable, play a more

prominent role in a consumer's mobile wireless experience, consumers are showing an increasing loyalty to particular operating systems or device platforms.¹²¹

Although this acknowledgement is certainly a step in the right direction, it remains—in the spirit of the FCC's continuing adherence to the core-edge metaphor—carrier-centric. That is, differentiation is portrayed not as competition among platforms, but rather as “rivalry among mobile wireless service providers.” Indeed, the discussion is contained in a section of the report labeled “Provider Conduct,” implicitly suggesting that applications, content, and device providers are passive players in the competitive dynamics of wireless communications markets, rather than active participants in the competition within and among ecosystems.

In fact, platform competition takes place along virtually every dimension of product differentiation and involves all types of platform participants.¹²² Broadband platforms compete to offer the most compelling content (like music and apps in wireless and access to video-on-demand or compelling sports programming in wireline), to provide the most compelling devices and applications software,¹²³ and to build and protect the most valuable intellectual property portfolios.¹²⁴ They also compete for brand recognition and the ability to be “customer facing.”¹²⁵ Although broadband providers are often portrayed as customer facing, Sallet notes this is not always the case.¹²⁶ For example, a broadband ISP may play a visible but secondary role, as when a satellite TV company (for example, DirecTV) sells a triple-play package in which the wireline broadband service is provided by a phone company. In still other instances, the broadband provider may be completely “upstream” from the customer, such as when a consumer purchases a Kindle packaged with connectivity from a provider (originally Sprint, now AT&T) whose identity the consumer may not even know.

The role of modularity in modern broadband markets is perhaps best illustrated by the recent travails of formerly dominant cell phone supplier Nokia. As

Sallet points out, in February 2011, Nokia's CEO sent a memorandum to employees describing the firm's strategic challenge and “telling the tale of value creation”¹²⁷ in the Internet ecosystem:

The battle of devices has now become a war of ecosystems, where ecosystems include not only the hardware and software of the device, but developers, applications, ecommerce, advertising, search, social applications, location-based services, unified communications and many other things. Our competitors aren't taking our market share with devices; they are taking our market share with an entire ecosystem. This means we're going to have to decide how we either build, catalyze or join an ecosystem.¹²⁸

Three days later, Nokia announced its decision to enter a strategic alliance with Microsoft, in the hope of creating a new ecosystem capable of competing successfully with the likes of Apple; Android; and another formerly dominant but now fading provider, Research in Motion. The first major result of that collaboration—the Nokia Lumia 900, a 4G smartphone using the Windows operating system—rolled out in Spring 2012.¹²⁹ It was available exclusively on the AT&T network.¹³⁰

Network Effects and Multisidedness

The third set of characteristics that distinguish IT markets from traditional ones is the presence of network effects and multisidedness. Network effects are demand-side economies of scale, meaning that the value of a product or service to consumers is a function of how many other consumers use it.¹³¹ Multisided markets, by contrast, involve demand-side economies of scope: that is, participants in multisided markets are assumed to be heterogeneous and to value diversity rather than numbers.¹³² A telephone network with identical subscribers evidences network effects, as its value is an increasing function of the number of subscribers. A telephone network

to which businesses as well as consumers subscribe is also multisided, assuming both groups value the presence of the other type of subscriber.¹³³

The competition literature on network effects has two main themes. One theme focuses on “tipping” and “lock-in” effects. Tipping means that if the value of a network increases with the number of subscribers, then (a) in equilibrium, there will only be one network, and (b) once one network establishes a lead, the balance of competition must “tip” in its favor, perhaps even if it is in other respects inferior.¹³⁴ Moreover, subscribers, recognizing that they will to some extent be “locked in” to their choices by the investments they make to join a network (in software, hardware, or learning), will tend to join the networks they expect to prevail, even if those networks would not otherwise be their first choice. Tipping and lock-in, in other words, suggest not only that network effects create a tendency toward monopolies, but that the resulting monopolies may be as much the result of chance as of merit.¹³⁵

The second theme relates to the nature of competition in markets where tipping has not occurred. In this case, network effects tend to intensify competition, since the effects of changes in product characteristics (price, quality, availability of complements) are magnified by demand-side complementarities.¹³⁶

Importantly, the tendency of network effects to result in monopoly is often counterbalanced by offsetting factors, including declining returns to scale and the presence of heterogeneous consumer tastes. As Weiser explains:

The claim that network markets will invariably tip to a single standard . . . overlooks important reasons why network competition can occur. Significantly, the tipping prediction does not take account of the likely scenario where a network effect (the value of additional customers) declines at some point in time because the network size has reached critical mass or where a rival network is able to overcome the first mover’s initial advantage. In markets where the critical mass is small

enough to accommodate multiple providers of a particular product or service, multiple firms will compete at the platform level, as they currently do in the market for video game consoles and cell phones. Moreover, it is quite clear that consumers’ demand for variety can compensate for a lack of a strong network effect.¹³⁷

Moreover, tipping is an issue only in the case of incompatible standards—Betamax versus VHS, QWERTY versus Dvorak, Apple versus Wintel, and so forth. If platforms are interoperable or, to use Rohlfs’s term, interlinked, then network effects are tied to total industry output—that is, to the size of all interlinked platforms, rather than to the size of any one platform.

It is noteworthy that broadband communications networks have been characterized by voluntary peering and transit arrangements (voluntary interconnection). For example, Economides notes that “dire predictions” that network effects would lead to the emergence of a dominant Internet backbone provider which would “degrade interconnection with a targeted rival” have not been borne out by experience; instead, “on the Internet we have observed a trend in the opposite direction (toward interconnection and full compatibility).”¹³⁸

Despite universal interconnection of their communications functions, broadband networks experience indirect network effects by virtue of their participation in both “upstream” platforms associated with competing network architectures (for example, DOCSIS 3.0, FTTP/GPON, LTE, WiMAX) and “downstream” platforms associated with competing consumer platforms (for example, Android, iOS, Windows Phone).¹³⁹ In each case, ISPs benefit from belonging to larger platforms—and suffer, as seems to be the case with Sprint-Nextel’s choice of WiMAX for its 4G standard, from choosing smaller ones. The value of a broadband ISP to an Internet platform can also be a function of indirect network effects. A device maker (like Nokia) may value distributing its devices through a larger broadband ISP not because its devices will be able to communicate

with more customers (which, because of interlinking, is not the case), but because the larger ISP may have a larger customer base or more sales outlets and thus contribute to more sales of the device, in turn contributing to the value of the Nokia platform (for example, to suppliers of applications and content).

The presence of network effects, combined with the multisided nature of the market, provides an important constraint on downstream pricing power. For example, a broadband ISP that raises prices to downstream consumers has to take into account not just the lost revenues from consumers who switch to other providers, but also the resulting reduction in its value to producers of complements. And the feedback loop does not stop there: as customers flee to competitors, the competitors' value grows. As Rysman explains:

If there are multiple competing market intermediaries, the effect of participation of one side on the other has even more bite. Consider two competing platforms pricing to consumers and sellers. As without competition, the consumer price depends on consumer demand, consumer cost, and the mark-up to sellers. But now, lowering the consumer price attracts consumers from the competing platform, which degrades the value of the competitor to buyers, and hence leads to a larger increase in buyer interest in the original platform. Hence, the "two-sidedness" of pricing can be more pronounced in competitive markets.¹⁴⁰

Network effects intensify interplatform competition in nonprice dimensions as well. As Weiser notes, "standards competitions" create strong incentives for innovation:

Standards competitions often will enable consumers to benefit from a more dynamic product market that includes more choices, enhanced products, and lower prices. To be sure, a head start or an installed base from a related technology is important to influencing

the ultimate outcome of such a battle, but, regardless of the outcome, it seems clear that competition to control the standard will push companies to develop superior technology in the hope of establishing their preferred standard.¹⁴¹

Thus, network effects intensify both intra- and interplatform competition, while creating strong incentives for interoperability.¹⁴² As Weiser explains, "where a firm sponsoring a platform standard faces competition, it is likely to provide open access to its platform in order to attract complementary products even without regulatory requirements that it do so,"¹⁴³ promoting competition within platforms and facilitating the entry of "independent" modules.¹⁴⁴

Efforts to promote development of complements can also have more direct effects on competition in other layers. For example, Intel's decision to invest billions of dollars in wireless broadband ISP Clearwire was driven by its desire to catalyze growth in the WiMAX platform, of which Intel is the lead sponsor,¹⁴⁵ and Google's desire to foster development of a platform around its Android operating system was a driving force behind its decision to enter the device business.¹⁴⁶

Multisidedness can intensify competition in the same way as network effects. Indeed, the two often go hand in hand: as explained above, for example, the downstream pricing power of a broadband ISP is attenuated by the combination of network effects and multisidedness, which together tie its value to upstream complementers to the volume of downstream customers. In addition, three other consequences of multisidedness have important consequences for broadband competition.

First, efficiency in two-sided markets demands price discrimination, in the sense that the very purpose of a two-sided platform is to set relative prices so as to achieve the optimal mix between the two types of participants (or, more broadly, the optimal mix between multiple participant groups).¹⁴⁷ Thus, in general, advertisers will be charged one price and readers a different one, and so forth. Moreover, to the extent customers on one or both sides of the market

are heterogeneous, the case for price discrimination within customer groups is strengthened—since efficient price discrimination can lower prices to marginal consumers, bringing more of them to the platform and creating “external” benefits for customers on the other side.¹⁴⁸

Second, multisided markets are also associated with the notion of “terminating monopoly”: the notion that a platform operator (for example, a broadband ISP) might be able to exercise upstream market power by virtue of the fact that its downstream consumers “single home,” or subscribe to only one broadband ISP.¹⁴⁹ As Rysman explains, the question of “multi-homing” vs. “single-homing” matters because

The intermediary can be viewed as a monopolist over access to members that do not use other intermediaries. Hence, firms compete aggressively on the side that uses a single network in order to charge monopoly prices to the other side that is trying to reach them. As a result, competition between platforms can have large price effects on the side of the market that uses a single platform and little or no effect on the side that uses multiple platforms.¹⁵⁰

As intuition suggests, however, the terminating monopoly problem is premised on the assumption that downstream consumers do not value the ability to access multiple upstream providers (they do not value diversity), so that the platform operator can threaten to exclude upstream providers without lowering the value of its platform to consumers.¹⁵¹ This assumption is not valid in the market for broadband access, where consumers place a high value on the diversity of available applications, content, and devices.

Third, it is worth emphasizing that the literature on two-sided markets is in an early phase of development. The theoretical models are highly stylized (they fail to capture salient attributes of actual markets), and to the extent that they have been used to predict either the efficiency consequences or distributional implications of various policy proposals (for

example, net neutrality), the predictions typically depend on strong assumptions both about the structure of the models and the values of various parameters.¹⁵²

How Broadband Competition Works

To summarize, broadband markets are now characterized, like markets in the rest of the IT sector, by dynamism, modularity, network effects, and multisidedness. The competitive dynamics of such markets are shaped by complex interactions between market-specific factors on both the demand and supply sides, but the central tendencies are straightforward. Dynamism is shorthand for a causal circle in which firms compete by investing to create new products and, by succeeding, differentiate themselves sufficiently to earn an economic return on their investments, which attracts the capital needed to repeat the cycle. Modularity allows this process of innovation and differentiation to exploit the specialized capabilities of multiple firms to generate complementary products; it places producers of complementary goods in competition with one another over the current rents and future directions of the platforms in which they participate; and it creates a new type of competitor, competitive platforms, composed of loose and fluid alliances of complementers that may themselves belong to multiple platforms. Network effects and multisidedness function in many respects as competition “superchargers”—they magnify the effects of competitive choices through demand-side complementarities of scale and scope.

For purposes of competition analysis, broadband markets share all the key characteristics of other IT markets, including, specifically, the markets for Internet applications, content, and devices. Like other IT firms, broadband ISPs make large sunk cost investments. For many IT firms, such investments primarily take the form of intellectual property; for broadband ISPs, they are primarily telecommunications infrastructures. From an economic perspective, however, the effect is the same: in each case, firms invest to create products that are sufficiently unique

and highly valued (by at least some consumers) to command prices that generate returns sufficient to compensate for not only the capital invested but also the risk of failure. Put simply, there is no economic difference between the risky investments made by companies like Sprint Nextel (in WiMAX) and Verizon (in FiOS) and the similarly risky investments made by companies like Facebook (in Instagram) or Intel (in WiMAX). In other words, broadband markets, like other IT markets, are characterized by dynamic competition.

Similarly, broadband ISPs, like other IT-sector firms, seek to assemble or participate in systems that create new value for at least some types of consumers, and they do so by choosing both the platforms they interoperate with and, when they function as platform leaders, the complementors they admit. Their decisions regarding interoperability

are affected by both supply-side and demand-side economies of scale and scope, which create powerful incentives to increase volumes by maximizing system openness and capturing the benefits of modularity, but these incentives do not always overcome the costs of interoperability.¹⁵³

Because of both supply- and demand-side economies of scale, broadband markets, like other IT-sector markets, are relatively concentrated. Moreover, as in other IT markets, firm-level entry may involve sector-specific costs (for example, patents and copyrights, access to content and distribution networks, a new semiconductor fabrication plant, the need to procure spectrum licenses). Yet the rapid pace of innovation associated with all of these markets forces incumbents to constantly reinvest, whether in intellectual property or in new network equipment, diluting the advantages of incumbency.¹⁵⁴

Implications for Regulation and Competition Policy

The emergence of the Internet ecosystem has accelerated innovation, enhanced economic growth, and increased consumer welfare. The challenge for public policy is to develop and maintain a legal and regulatory framework that facilitates its continued development, including a framework for preventing anticompetitive conduct that harms consumers without stifling rivalry and entrepreneurship. In this section, I will begin by explaining why ex post antitrust oversight would be superior to ex ante regulation for broadband markets and close by discussing some of the broader implications for competition analysis and regulatory policy of the theory of broadband competition I have presented.

Replacing Regulation with Antitrust

Competition policy seeks to preserve competition and enhance consumer welfare while avoiding the temptation to protect or promote particular competitors, industries, or technologies. In a world of imperfect information, this must necessarily involve weighing benefits and costs, including the benefits and costs of waiting to intervene (weighing “Type I” against “Type II” error).¹⁵⁵ In general, the balancing of benefits and costs places a high value on the recognition that, absent clear evidence of market failure, competition provides powerful incentives for the efficient allocation of resources to their highest valued uses,¹⁵⁶ and it recognizes that the exercise of government authority is itself not without costs, including the incentives it creates for “rent seeking” or “taxation by regulation.”

With these principles in mind, competition policy in the United States has generally relied upon ex post antitrust enforcement over ex ante regulation. The

exceptions have included, and to some extent still include, markets thought to be subject to natural monopoly (for example, electricity, pipelines, railroads, and telecommunications), as well as markets where, correctly or not, policymakers perceived a unique, compelling need for government intervention (for example, airlines and broadcasting).

The legacy of traditional communications regulation—in the form of the FCC and the fifty-state public utility commissions—remains in place. Until fairly recently, it had appeared that these legacy regulators would limit themselves primarily to traditional communications services—primarily to voice telephony (Title II of the Communications Act for landline service; Title III for mobile wireless) and to traditional broadcast (Title III) and cable (Title VI) video platforms—and not extend ex ante regulation to the Internet. As these traditional services were gradually subsumed into the Internet ecosystem, many believed, legacy regulatory structures would become less relevant.¹⁵⁷

Two factors now suggest otherwise. First, the FCC’s foray into “net neutrality” regulation—beginning in 2005 with its decision to adopt four “Open Internet Principles” (which it later sought to enforce in the Comcast-BitTorrent Order), and most recently with its issuance of the Open Internet Order—indicates the agency believes it is “compel[led] to protect and promote the Internet” and has “broad authority to promote competition, investment, transparency, and an open Internet.”¹⁵⁸ Second, as noted above, both the FCC and state regulators continue to intensively regulate traditional communications services, promulgating and enforcing various forms of prescriptive regulations, including price controls, universal service programs, interconnection mandates, and open-access policies, the effects of which increasingly are

spilling over onto the Internet.¹⁵⁹ At the same time, of course, most of the Internet ecosystem remains subject to traditional antitrust enforcement,¹⁶⁰ which is quite different both in operation (ex post vs. ex ante) and substance (antitrust being far less prescriptive and, because it develops over time through precedent, more evolutionary, than regulation).

The most obvious risk of this duplicative approach to competition regulation is the potential for confusion and inconsistency, and the obvious remedy is for policymakers to facilitate development of coherent, integrated approach to the regulation of all IT-sector markets, broadband included. This conclusion is not new and should not be controversial. As Farrell and Weiser put it in 2003,

As the Internet, computer software, and telecommunications (“New Economy”) industries converge, affected firms will increasingly seek clear and consistent legal rules. Moreover, courts reviewing the FCC’s decisions in this area are increasingly pressuring the Commission to devise a regulatory regime more compatible with economic theory and antitrust policy.¹⁶¹

The factors that led Farrell and Weiser to this conclusion have only intensified in the intervening years, yet there is little apparent progress towards the integration they urged. Indeed, the incompatibilities between FCC regulatory policies on the one hand and economic theory and antitrust policy on the other continue to be significant.

Second, arguably the most fundamental distinction between antitrust and regulation is that the former is inherently reactive while the latter seeks to be proactive. As the Antitrust Modernization Commission explained:

Antitrust law in the United States is not industrial policy; the law does not authorize the government (or any private party) to seek to “improve” competition. Instead, antitrust enforcement seeks to deter or eliminate anti-competitive restraints. Rather than create a

regulatory scheme, antitrust laws establish a law enforcement framework that prohibits private (and, sometimes, governmental) restraints that frustrate the operation of free-market competition.¹⁶²

The same cannot be said for communications regulation: while the question of the FCC’s authority over broadband is yet to be fully litigated, its role in traditional communications markets goes beyond simply protecting competition to shaping the industry’s form and structure in “the public interest.”¹⁶³ In short, the FCC is charged—at least, with respect to its regulation of traditional telecommunication services—with executing the very sort of “industrial policy” the antitrust laws reject.¹⁶⁴ The potential costs of such an approach are especially high in environments, like the Internet ecosystem, where technologies and industry structures are rapidly evolving. That is, in an environment with a technologically stable telecommunications industry, policies that bias the level of investment away from the efficient optimum are presumably less harmful than they might be in a more fluid environment where policy biases risk tipping the competitive outcome in favor of a less efficient technology or structure.¹⁶⁵ As Renda notes,

Asymmetries in the regulatory treatment of players located at different layers of the value chain may result in distortions of platform competition, and should thus be avoided unless they are justified by the need to remove sources of egregious, irreversible market power, or refusals to supply truly indispensable assets.¹⁶⁶

A third, and related, principle is that a less concentrated industry structure, in and of itself, should not be an objective of competition policy when it comes to broadband. More broadly, policymakers should dispense with the structural presumption in favor of the far more nuanced approach embodied in modern antitrust doctrine. For all the reasons I have described, relatively high levels of concentration are

to be expected in IT sector markets, including broadband, and do not signal market dysfunction or indicate policy opportunities to improve competitive outcomes. Concentration, when it occurs, is usually efficient, often transitory, seldom if ever leads to collusion, and does not imply the ability to earn monopoly rents; to the contrary, even “monopolists” in platform industries are subject to market forces that often dictate welfare-maximizing outcomes.

Ultimately, it is not sufficient simply to deemphasize the role of structuralism in as a policy objective (for example, in formulating spectrum policy); rather, policymakers should recognize that the role of competition policy, in broadband as in other industries, should be to *protect* competition, not *promote* it. In today’s converged broadband market, there is no more basis for proactive policies designed to increase the number of broadband ISPs, per se, than for policies designed to increase the number of search engines, operating systems, or social networks.¹⁶⁷

Fourth, prescriptive regulation should be avoided in favor of ex post enforcement of more broadly defined tenets. This principle emerges, first, from the rapidly changing nature of Internet markets and technologies—dynamism in the narrow sense, that is, of fluidity.¹⁶⁸ As the *National Broadband Plan* concludes, “Technologies, costs and consumer preferences are changing too quickly in this dynamic part of the economy to make accurate predictions.”¹⁶⁹ While some worry that ex post enforcement is by nature “too slow” to keep up with rapidly changing markets,¹⁷⁰ markets are often self-correcting (the purported anti-competitive outcome is remedied—for example, by entry—before government action of any kind can take effect).¹⁷¹ As Shapiro and Varian conclude,

We believe a cautious approach toward antitrust policy and enforcement is called for in high-technology industries, in part because technological change does tend to erode monopoly power and in part because much of the conduct at issue has at least some claim on increasing consumer welfare.¹⁷²

Even when government action is required, it is far from clear that ex ante regulation is a more expeditious remedy: in this context, the main difference between prescriptive rules and ex post enforcement is the time required to write the rules, and resolve the inevitable litigation that follows, before enforcement can even begin. Moreover, experience has shown that, once a rule is in place, it can take at least as long to modify or repeal it as it took to pass it in the first place, creating the possibility that rules designed to address an ephemeral problem persist long after the problem is resolved—and so are transformed from cure to disease.¹⁷³

Another rationale for avoiding prescriptive rules is that, in an economic environment in which similar conduct (even the very same conduct) can have both positive and negative consequences, banning entire classes of conduct risks throwing “the welfare-enhancing baby out with the anticompetitive bathwater.”¹⁷⁴ Broad rules are more likely to do harm than good when the competitive effects of particular types of conduct are fact-dependent and when, as is certainly the case with Internet platforms, economic science has not yet arrived at the kinds of established, broad findings that underlie, for example, the per se rule against horizontal collusion.¹⁷⁵

Finally, the presumption against prescriptive regulation is further strengthened by the tendency of regulatory agencies to engage in cross-subsidization and, in so doing, create a marketplace for rent seeking. As Shapiro and Varian point out, “We also must note that regulation brings its own dangers: a regulatory structure created to control monopoly power can easily be used to serve other purposes, in particular, to support a system of cross-subsidization.”¹⁷⁶ It is noteworthy, in this regard, that one of the rationales proffered for net neutrality rules is the desirability of subsidizing “edge” providers, even at the cost of disadvantaging infrastructure providers.¹⁷⁷

Thus, to summarize, we have at least four reasons to replace ex ante regulation of broadband with ex post antitrust enforcement. First, doing so is necessary to harmonize competition policy across the various sectors of the Internet ecosystem. Second, ex ante

regulation invites counterproductive “industrial policy” efforts to shape the evolution of a highly dynamic marketplace. Third, there is no basis for efforts to “increase competition” by increasing the number of competitors (and thus reducing measures of industry concentration), and thus no need for ex ante regulation to pursue this objective. Fourth, by its nature, ex ante regulation is inferior to ex post enforcement because it is less accurate in discriminating between welfare-enhancing and welfare-reducing conduct, is cumbersome to implement, and often leads to rent seeking and politicization.

Toward a Pro-Competition Policy for Broadband

The task of replacing today’s legacy regulatory framework with a pro-competition, antitrust-based approach to broadband competition is complex and will not happen overnight. Moreover, our understanding of how to apply ex post antitrust principles to high-tech markets is far from perfect and still evolving. Thus, the objective is to replace an imperfect regulatory model with a *less imperfect* enforcement approach. Even so, the analysis I have presented has some clear and immediate implications for how we should regulate, or not regulate, broadband markets.

First, blanket bans on vertical restraints and discriminatory pricing should be avoided in broadband markets as they are in other IT markets.¹⁷⁸ Although such conduct can pose difficult issues for competition analysis in IT markets as elsewhere (because it often generates both benefits and costs), broad consensus exists that ex ante prohibitions on vertical restraints are not justified. For example, Carl Shapiro, who has written that exclusive dealing arrangements are more likely to be problematic in network industries than in traditional ones, nevertheless opposes blanket bans:

Of course, exclusive dealing and exclusive membership rules need not be anticompetitive, even in network industries. These contractual

forms can serve to differentiate products and networks, to encourage investment in these networks, and to overcome free riding. I am certainly not proposing a *per se* rule against exclusivity in a network context.¹⁷⁹

Similarly, Jonathan Baker, who opposes blanket approval of price discrimination, also opposes a blanket ban:

So long as entry is easy, and the practices facilitating price discrimination do not harm competition, as by raising entry barriers or otherwise reducing competition by excluding actual or potential rivals, price discrimination is competitive, and not a harmful practice.¹⁸⁰

As Renda emphasizes, the arguments in favor of vertical restraints and differential pricing are at least as powerful in broadband markets as in other parts of the Internet ecosystem.

When looking at the economics of complex and interconnected system goods, there seems to be very little room to differentiate between ISPs and gateway players located at higher layers. In both cases, players have an incentive to secure a share of the value created by the system by engaging in some form of differential pricing or price discrimination from their supply side, and in preferential agreements on the demand side.¹⁸¹

Renda also notes that the case against ex ante regulation of vertical restraints is further strengthened by the fact that the optimal balance between integration and interoperability often shifts over time, with closed systems often being more efficient (or even necessary) for the development of new platforms, which later evolve towards more open models.

As often happened in the past few years, the need to create successful business models and to ensure security will initially call for some degree

of proprietary-ness (as in the case of the App store), and later give leeway to a significant degree of commoditization of lower platform layers. In other words, market forces, rather than a regulator, are likely to solve the problem by pushing for interoperability once the market becomes more mature.¹⁸²

Because exclusivity is often more beneficial to new business models than old ones, blanket bans are likely to have the perverse effect of discriminating against innovation and, by extension, against entry.

A pro-competitive presumption for vertical restraints in broadband markets would have profound implications for regulation. First, and most obviously, the proscription of entire classes of vertical restraints imposed by the Open Internet Order represents precisely the sort of blanket ban rejected by Baker and Shapiro in the context of other high-tech markets. Net neutrality would thus be the first and most obvious regulation to fall.¹⁸³ But the effects extend much further, to virtually all forms of vertical “open-access” regulation, existing and proposed, including those governing Internet access devices (the CableCARD and AllVid rules)¹⁸⁴ and wireless handsets,¹⁸⁵ as well as legacy rules governing wireline consumer premises equipment and wireless service (which require wireless service to be offered separately from devices on a nondiscriminatory basis).¹⁸⁶

Acknowledging the convergence of broadband with the Internet ecosystem also has important implications for horizontal issues, including interconnection and “unbundling.” As discussed above, the competitive dynamics of the IT sector, where incentives for innovation are of paramount importance and network effects provide strong incentives (short of tipping) for voluntary interconnection, mitigate strongly against horizontal open-access mandates.

Much of the economic analysis of these issues in the IT sector has been in the context of intellectual property law, where a patent or copyright can give a platform operator *de facto* exclusive control. The policy questions are when, if ever, the government should impose a compulsory license (the equivalent

of unbundling in the telecommunications environment) or mandate “open interfaces” with competing platforms (the equivalent of mandatory interconnection). As Weiser explains, the balance tips in favor of encouraging competition between platforms rather than mandating interconnection:

A central tenet of the competitive platforms model is that, even if the industry structure will ultimately rely on a single standard, competition policy should still err on the proprietary side of the line, allowing rival standards to battle it out in the marketplace.¹⁸⁷

The rationale is straightforward: platform competition promotes increased output, product enhancement, and new product innovation.

By encouraging competition between rival platforms, intellectual property law can advance three critical goals: forcing companies to compete to build a valuable customer base, requiring all companies to continue to enhance their products and bring new ones to market more quickly for fear of being displaced by a new killer application, and driving companies to innovate and develop superior technologies. By contrast, providing open access to a single standard that would otherwise face viable platform competition undermines the achievement of each of these benefits.¹⁸⁸

For these reasons, content, applications, and device manufacturers are seldom forced to engage in compulsory licensing, except in the context of targeted, typically time-limited, remedies in cases of merger or monopolization.¹⁸⁹ In telecommunications, by contrast, mandated interconnection requirements are commonplace—resulting, as Hovenkamp notes, in reduced incentives for investment:

Antitrust together with intellectual property is often a better vehicle for addressing such problems as ‘interconnection’ and the lack of

neutrality in networked communications. Regulatory solutions have tended to go too far, requiring interconnection and sharing even when doing so inefficiently diminishes investment incentives.¹⁹⁰

Ultimately, as Renda explains, the effect of open-access regulation is to systematically disadvantage broadband ISPs relative to other Internet ecosystem competitors:

Being a dominant network operator and internet service provider today means being clearly handicapped in the race to become a dominant IP-based platform, since it entails being subject to a series of open access obligations that other players in the value chain do not have.¹⁹¹

Heretofore, regulators have mostly limited horizontal unbundling and interconnection regulations to traditional telecommunications platforms and

services, but both national and international regulators are now considering extending such rules to broadband.¹⁹² The convergence of broadband into the Internet ecosystem argues against both unbundling (for example, data-roaming requirements on wireless carriers) and mandatory interconnection regimes.¹⁹³

Lastly, the characteristics of IT markets, including broadband markets, have important implications for merger analysis. For reasons explained above, measures of market concentration have little or no saliency in such markets, yet antitrust authorities in general, and the FCC in particular, continue to focus on such metrics, at least as triggers for further review. More recently, antitrust authorities have begun to rely on “upward pricing pressure” models designed to estimate the unilateral effects of mergers in differentiated product markets.¹⁹⁴ The ability of these models accurately to predict the consumer welfare effects of mergers is directly limited in the presence of multisidedness and other IT market characteristics.¹⁹⁵

Conclusions

The notion that broadband services have been “converging” with other aspects of the IT sector is neither new nor controversial. Indeed, convergence seems to be universally recognized, including by telecommunications regulators, who routinely refer to broadband services as part of the “Internet ecosystem.” Yet, despite the fact that broadband markets are now essentially indistinguishable from other IT markets from the perspective of competition

analysis, they remain subject to a starkly different and increasingly anachronistic regulatory regime.

The application of modern antitrust principles to the Internet ecosystem is and will remain as much art as science, and both doctrinal and episodic errors will no doubt be made. Such errors are likely to be far smaller, however, than the consequences of continuing to apply nineteenth century regulatory policies and principles to a twenty-first century marketplace.

Notes

1. The idea that telecommunications has converged with other “new economy” sectors such as the Internet and computer software is, of course, not new. See, for example, Joseph Farrell and Philip J. Weiser, “Modularity, Vertical Integration, and Open Access Policies: Towards a Convergence of Antitrust and Regulation in the Internet Age,” *Harvard Journal of Law & Technology* 17, no. 1 (Fall 2003): 85–134, at 87: “As the Internet, computer software, and telecommunications (‘New Economy’) industries converge, affected firms will increasingly seek clear and consistent legal rules”; Michael K. Powell, “The Great Digital Broadband Migration,” in *Communications Deregulation and FCC Reform: Finishing the Job*, ed. J. A. Eisenach and R. J. May (Kluwer Academic Publishers, 2001), 11–21, at 15–16: “Computer systems working in parity with communications have spawned the Internet and the advanced networks we see today that fully integrate satellites, telephones, wireless devices, broadcasting and cable over fiber optic, broadband, and wireless networks. The result is what we now call convergence”; and Richard A. Posner, “Antitrust in the New Economy,” *Antitrust Law Journal* 68 (2001): 925–43, at 925: “I shall use the term the ‘new economy’ to denote three distinct though related industries. The first is the manufacture of computer software. The second consists of the Internet-based businesses (Internet access providers, Internet service providers, Internet content providers), such as AOL and Amazon. And the third consists of communications services and equipment designed to support the first two markets.”

2. See, e.g., Geoffrey A. Manne and Joshua D. Wright, “Innovation and the Limits of Antitrust,” *Journal of Competition Law & Economics* 6, no. 1 (2010): 153–202; Robert W. Crandall and Clifford Winston, “Does Antitrust Policy Improve Consumer Welfare? Assessing the Evidence,” *Journal of Economic Perspectives* 17, no. 4 (Fall 2003): 3–26; and Daniel F. Spulber, “Unlocking Technology: Antitrust and Innovation,” *Journal of Competition Law & Economics* 4,

no. 4 (2008): 915–66. For a brief summary of the debate, see David Evans, “The Middle Way on Applying Antitrust to Information Technology Industries,” *Competition Policy International* (November 2009), www.techpolicyinstitute.org/files/evansnov-09.pdf (accessed October 9, 2012).

3. See, e.g., Carl Shapiro, “Exclusivity in Network Industries,” *George Mason Law Review* 7 (Spring 1999): 673–82; F. M. Scherer, *Technological Innovation and Monopolization* (John F. Kennedy School of Government, October 2007), <http://ssrn.com/abstract=1019023> (accessed September 27, 2012); and Mark Cooper, “The Importance of Open Networks in Sustaining the Digital Revolution,” in *Net Neutrality or Net Neutering: Should Broadband Internet Service Be Regulated?*, ed. T. M. Lenard and R. J. May (Progress & Freedom Foundation, 2006), 107–61, especially 126–32.

4. See Federal Communications Commission, *In the Matter of Preserving the Open Internet and Broadband Industry Practices, Report and Order*, GN Docket No. 09-191, WC Docket No. 07-52 (December 23, 2010) (hereafter, Open Internet Order). See also Federal Communications Commission, *In the Matter of Preserving the Open Internet and Broadband Industry Practices, Notice of Proposed Rulemaking*, GN Docket No. 09-191, WC Docket No. 07-52 (October 22, 2009).

5. FCC, Open Internet Order, ¶¶32–34.

6. *Ibid.*, ¶32.

7. *Ibid.*, ¶78.

8. *Ibid.*, ¶53: “Promoting competition throughout the Internet ecosystem is a central purpose of these rules.”

9. *Ibid.*, at ¶25; see generally ¶¶24–28.

10. *Ibid.*, ¶29; see generally ¶¶29–30. While rejecting a traditional market power analysis, the FCC did embrace a theory of exclusionary market power based on raising rivals’ costs. See ¶¶21–23.

11. For example, the *National Broadband Plan* specifically concludes that broadband markets are part of a “broadband

ecosystem.” See Federal Communications Commission, Omnibus Broadband Initiative, *Connecting America: The National Broadband Plan* (March 2010; hereafter, NBP Report), www.broadband.gov/download-plan/ (accessed September 28, 2012), xi: “Policymakers, including the FCC, have a broad set of tools to protect and encourage competition in the markets that make up the broadband ecosystem: network services, devices, applications and content.”); see also 15.

12. See, e.g., Jerry Brito et al., *Net Neutrality Regulation: The Economic Evidence* (April 12, 2010), <http://ssrn.com/abstract=1587058> (accessed September 28, 2012).

13. *Verizon v. FCC, Notice of Appeal*, US Court of Appeals, DC Circuit, Case No. 11-1355 (October 2, 2011), www.fhhlaw.com/VerizonNoticeofAppeal.netneutrality.2011.09.30.PDF (accessed September 28, 2012).

14. For a recent statement of the FCC’s view of its authority to regulate wireless broadband providers, see its brief in Verizon’s challenge of data roaming order: *Cellco Partnership d/b/a Verizon Wireless, v. Federal Communications Commission, Brief for Respondents*, US Court of Appeals, DC Circuit, Case No. 11-1135 (January 9, 2012), www.fcc.gov/document/cellco-partnership-v-fcc-usa-no-11-1135-and-1136-dc-cir (accessed September 28, 2012).

15. See Federal Communications Commission, *In the Matter of Connect America Fund, Report and Order and Further Notice of Proposed Rulemaking*, WT Docket 10-90 (November 18, 2011), ¶¶113–4.

16. See Federal Communications Commission, *In the Matter of Framework for Broadband Internet Services, Notice of Inquiry*, GN Docket No. 10-127 (June 17, 2010).

17. I use the term “competitive dynamics” to refer broadly to how competition works—to the ways in which technology, institutions, demand conditions, and other salient market characteristics are related to industry structure, competitive outcomes, and market performance.

18. See Timothy F. Bresnahan, “New Modes of Competition: Implications for the Future Structure of the Computer Industry,” in *Competition, Innovation and the Microsoft Monopoly: Antitrust in the Digital Marketplace* ed. J. Eisenach and T. Lenard (Kluwer Academic Press, 1999), 155–208.

19. For a refresher in graphic form, see www.refresher.com!/paranoid.html.

20. *Ibid.*, 157.

21. *Ibid.*, 157.

22. *Ibid.*, 159.

23. See e.g., Antitrust Modernization Commission, *Report and Recommendations* (April 2007), 2–3: “To be competitive, markets need not conform to the economic ideal in which many firms compete and no firm has control over price. In fact, the real world contains very few such markets. Rather, competition generally ‘refers to a state of affairs in which prices are sufficient to cover a firm’s costs, but not excessively higher, and firms are given the correct set of incentives to innovate.’ Experience has shown that intense competition can take place in a wide variety of market circumstances. Some factors—such as many sellers and buyers, small market shares, homogeneous products, and easy entry into a market—may suggest competitive behavior is likely. The absence of those factors, however, ‘does not necessarily prevent a market from behaving competitively.’” [Internal quotations from H. Hovenkamp, *The Antitrust Enterprise* (2005), 13, and E. Gellhorn, *Antitrust Law and Economics* (2004), 72; other internal citations omitted.]

24. See, e.g., US Department of Justice and Federal Trade Commission, *Horizontal Merger Guidelines* (August 19, 2010), at 3: “Mergers that cause a significant increase in concentration and result in highly concentrated markets are presumed to be likely to enhance market power, but this presumption can be rebutted by persuasive evidence showing that the merger is unlikely to enhance market power.” (hereafter, 2010 Merger Guidelines). The courts continue to embrace the structural presumption in one form or another. See, e.g., *FTC v. H.J. Heinz* 246 F.R. 3d 708 (2001) and *US v. H&R Block* 789 F.Supp. 2d.74 (2011), both of which reiterate the Supreme Court’s embrace of market share as an indicator of market power in *United States v. Philadelphia Nat’l Bank*, 374 U.S. 321.

25. See 2010 Merger Guidelines, 24–27.

26. I use the term “locational pricing power” to refer to the ability of firms in differentiated product markets to price above marginal cost even in the presence of free entry.

27. See 2010 Merger Guidelines, 20–24.

28. Interestingly, Timothy Wu, a leading proponent of net neutrality regulation, testified before Congress in early 2012 that “it is clear that 4G to the home is a cable replacement, not a complement,” apparently contradicting a decade or more of argument by regulation proponents that

wireless is a complement, not a substitute, for wireline and should not be considered as part of the relevant product market. See page 5 of Tim Wu, “Creeping Duopoly?,” Testimony before the Senate Judiciary Committee, Subcommittee on Antitrust, Competition Policy, and Consumer Rights, March 21, 2012, www.judiciary.senate.gov/pdf/12-3-21WuTestimony.pdf (accessed October 9, 2012).

29. See Federal Communications Commission, *Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Commercial Mobile Services*, WT Docket 10-33 (June 27, 2011), ¶¶55–66 (hereafter, Fifteenth Report).

30. FCC, Open Internet Order, n. 143, summarizing Department of Justice submission. The apparent implication is that broadband may evolve into two separate antitrust markets, a wireline market and a wireless market, each relatively concentrated, and each exercising little or no competitive discipline upon the other.

31. *Ibid.*, n. 87: “Because broadband providers have the ability to act as gatekeepers even in the absence of market power with respect to end users, we need not conduct a market power analysis.” The FCC did conclude, however, that market power, if it did exist, would exacerbate its concerns, and averred that “the risk of market power is highest in markets with few competitors, and most residential end users today have only one or two choices for wireline broadband Internet access service.” See Open Internet Order, ¶32.

32. See *Petition of Qwest Corporation for Forbearance Pursuant to 47 U.S.C. § 160(c) in the Phoenix, Arizona Metropolitan Statistical Area*, WC Docket No. 09-135, *Memorandum Opinion and Order* (June 22, 2010), ¶82.

33. *Ibid.*, ¶80.

34. *Ibid.*, ¶86. The FCC also examined potential competition and the likelihood of entry. See generally ¶¶80–86.

35. See *Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers and Other Providers of Mobile Data Services*, WT Docket No. 05-265, *Second Report and Order* (April 7, 2011), ¶16.

36. See *SkyTerra Communications, Inc., Transferor, and Harbinger Capital Partners Funds, Transferee*, IB Docket No. 08-184, *Memorandum Opinion and Order and Declaratory Ruling*, 25 FCC Rcd 3059 (March 26, 2010) at ¶60–61: “Large portions of the country are served by three or fewer

providers of mobile broadband service. . . . Harbinger could have a beneficial impact on competition.”

37. See Federal Communications Commission, *Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Commercial Mobile Services, Fourteenth Report*, WT Docket No. 09-66 (May 20, 2010), Section III.C (hereafter, Fourteenth Report), a finding repeated in the Fifteenth Report (see, e.g., ¶12).

38. US Department of Justice, Complaint, *United States of America vs. AT&T Inc.* (August 31, 2011), ¶25. For a full explication of the FCC’s assessment of the proposed merger, see also Federal Communications Commission, *Staff Analysis and Findings* (WT Docket No. 11-65), especially ¶¶12–122.

39. See, e.g., *Comments of the Consumer Federation of America, Consumers Union and Free Press, In the Matter of Broadband Industry Practices*, WC Docket No. 07-52, Federal Communications Commission (June 15, 2007), 11, <http://apps.fcc.gov/ecfs/document/view?id=6519529519> (accessed October 9, 2012; hereafter, 2007 Consumer Group Comments).

40. See, e.g., Ad Hoc Public Interest Spectrum Coalition, *Comments in Skype Communications S.A.R.L., Petition to Confirm a Consumer’s Right to Use Internet Communications Software and Attach Devices to Wireless Networks*, RM-11361, Federal Communications Commission (April 30, 2007).

41. Mark Cooper, “The Public Interest in Open Communications Networks,” Consumer Federation of America (July 2004), 47, <http://fjallfoss.fcc.gov/ecfs/document/view?id=6516283898> (accessed September 28, 2012).

42. See, e.g., Texas Office of Public Utility Counsel, Consumer Federation of America, Consumers Union, *Comments in Inquiry Concerning High Speed Access to the Internet Over Cable and Other Facilities*, GN Docket No. 00-185 (January 11, 2001), 44: “While six [competitors] is a clear danger sign, theoretical and empirical evidence indicates that many more than six firms are necessary for competition—perhaps as many as fifty firms are necessary.”

43. 2007 Consumer Group Comments, 74.

44. *Ibid.*, 25. Consumer groups are not alone in pressing concerns based on structuralist models. For example, in 2009, Senator Herb Kohl wrote to Assistant Attorney General Varney and FCC Chairman Genachowski warning that “four [wireless] carriers control over 90% of the cell phone

market” and expressing concern that “the concentrated state of the cell phone marketplace could lead to future price increases.” Letter from Senator Herb Kohl (July 6, 2009), 1.

45. NBP Report, 3.

46. Shane Greenstein and Ryan McDevitt, “Evidence of a Modest Price Decline in US Broadband Services,” *Information Economics and Policy* 23, no. 2 (2011): 200–11. (The authors emphasize that prices have declined even more rapidly for products like computers and integrated circuits.)

47. See e.g., Fifteenth Report, ¶191 and ¶194: “AT&T’s estimated price per MB for data traffic . . . has declined from \$1.21 in 2008 to \$0.35 in 2009 to \$0.17 in 2010.” See also Everett Ehrlich, Jeffrey A. Eisenach, and Wayne A. Leighton, “The Impact of Regulation on Innovation and Choice in Wireless Communications,” *Review of Network Economics* 9, no. 1 (2010): 1–49 (especially 17); and Gerald R. Faulhaber, Robert W. Hahn, and Hal J. Singer, “Assessing Competition in US Wireless Markets: Review of the FCC’s Competition Reports,” *Federal Communications Law Journal* 64, no. 2 (March 2012): 319–69.

48. See NBP Report, 77; see also Fifteenth Report, ¶¶108–15.

49. Robert C. Atkinson and Ivy E. Schultz, *Broadband in America: Where It Is and Where It Is Going* (Columbia Institute of Tele-Information, November 2009).

50. See NBP Report, 38: “Indeed, competition appears to have induced broadband providers to invest in network upgrades.”

51. See Mary Meeker (Morgan Stanley), *Internet Trends* (Presented at the CM Summit, New York City, June 7, 2010), slide 4, <http://bbh-labs.com/internet-trends-2010-by-morgan-stanleys-mary-meecker> (accessed September 28, 2012).

52. See Berkman Center for Internet and Society, Harvard University, *Next Generation Connectivity: A Review of Broadband Internet Transitions and Policy from Around the World* (2010), http://cyber.law.harvard.edu/publications/2010/Next_Generation_Connectivity (accessed September 28, 2012). For a rebuttal, see Robert W. Crandall, Jeffrey A. Eisenach, and Allan T. Ingraham, *The Long-Run Effects of Copper Unbundling and the Implications for Fiber* (March 2012), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2018929 (accessed September 28, 2012); and Jeffrey

A. Eisenach, “Broadband in the U.S.—Myths and Facts,” in *Australia’s Broadband Future: Four Doors to Greater Competition* (Melbourne: Committee for Economic Development of Australia, 2008), 48–59.

53. NBP Report, 4. In May 2011, the commission’s International Bureau issued a report which found that “data sources on international broadband are incomplete and generally challenging to compare. . . . As a result, we are limited in the conclusions we can draw from the data.” See Federal Communications Commission, *In the Matter of International Comparison Requirements Pursuant to the Broadband Data Improvement Act International Broadband Data Report*, IB Docket No. 10-171, *Second Report* (May 20, 2011), ¶1.

54. See, e.g., Meeker, *Internet Trends*, slide 19: “U.S. is the global leader in mobile users and innovation.”

55. See “Swiss Lead in Speed: Comparing Global Internet Connections,” Nielsen Wire, April 1, 2011, <http://blog.nielsen.com/nielsenwire/global/swiss-lead-in-speed-comparing-global-internet-connections> (accessed September 28, 2012). Historically, US broadband speeds have doubled approximately every 18–24 months (at approximately the same pace as dictated by Moore’s Law). See J. Eisenach, C. Eldering, and M. Sylla, “Is There a Moore’s Law for Bandwidth?” *IEEE Communications Magazine* (October 1999): 117–21; and, for an update, Michael Turk, “Broadband Speed and Moore’s Law,” CableTechTalk, August 14, 2008, www.cabletechtalk.com/tech-discussions/2008/08/14/broadband-speed-and-moores-law-a-response-to-robb-topolski/ (accessed September 28, 2012).

56. See Thomas W. Hazlett and Dennis L. Weisman, “Market Power in U.S. Broadband Services,” *Review of Industrial Organization* 38, no. 2 (March 2011): 151–71.

57. See Larry F. Darby, “The Informed Policy Maker’s Guide to Regulatory Impacts on Broadband Network Investment” (American Consumer Institute, November 2009), 10: “Using two of the most common indicators of profitability—net profit margin reflecting deduction of all costs from revenue and return on total capital—the data indicate that broadband access providers are earning less than the S&P average and substantially less than Google.”

58. As discussed in note 85, Baumol points out that in industries characterized by rapid innovation, incumbents are required to make continuing investments to remain

competitive. When incumbents and entrants alike face large capital costs, they are not properly considered barriers to entry. See George J. Stigler, *The Organization of Industry* (Chicago: University of Chicago Press, 1968), 67–70.

59. Wireline entry has also occurred in geographic markets where competition is perceived as producing insufficient results, including dozens of instances of municipal entry as well as Google's recent announcement that it will deploy a gigabit fiber network in Kansas City, Kansas.

60. See generally Ehrlich et al., "The Impact of Regulation"; and NBP Report, 75: "Mobile broadband represents the convergence of the last two great disruptive technologies—Internet computing and mobile communications—and may be more transformative than either of these previous breakthroughs. Mobile broadband is scaling faster and presents a bigger opportunity. This revolution is being led not only by domestic wireless carriers, who are investing billions in network upgrades, but also by American companies such as Amazon, Apple, Intel, Google, Qualcomm and numerous entrepreneurial enterprises that export innovation globally."

61. See, e.g., Fifteenth Report, ¶¶151–4.

62. For a more complete treatment of innovation in both wireline and wireless telecommunications networks, see Larry F. Darby and Joseph P. Fuhr, *Innovation and National Broadband Policies* (American Consumer Institute, March 2010); and Jonathan Sallet, *The Creation of Value: The Broadband Value Circle and Evolving Market Structures* (April 4, 2011), www.annenberglab.com/adminfiles/files/BroadbandValueCircle_Sallet.pdf (accessed September 28, 2012).

63. Open Internet Order, ¶35.

64. NBP Report, 37 (citations omitted). See also Fifteenth Report, ¶10: "Market performance metrics provide more direct evidence of competitive outcomes and the strength of competitive rivalry than market structure factors, such as concentration measures."

65. NBP Report, 37, quoting *Ex Parte Submission of the United States Department of Justice, In the Matter of Economic Issues in Broadband Competition, A National Broadband Plan for Our Future*, GN Docket No. 09.51 (January 4, 2010), 11.

66. See Bresnahan, "New Modes of Competition," 155.

67. For a useful discussion of the economic distinctions between price discrimination and price differentiation, see

Denis L. Weisman and Robert B. Kulick, "Price Discrimination, Two-Sided Markets and Net Neutrality Regulation," *Tulane Journal of Technology and Intellectual Property* 13 (Fall 2010): 81–102.

68. See, e.g., Bresnahan, "New Modes of Competition," 159: "A platform is a shared, stable set of hardware, software and networking technologies on which users build and run computer applications."; and Mark Rysman, "The Economics of Two-Sided Markets," *Journal of Economic Perspectives* 23, no. 3 (Summer 2009): 125–43, at 128: "Newspapers are a canonical two-sided market, where the newspaper provides a platform for communication from advertisers to consumers" and 129: "Many papers that study operating systems identify themselves with network effects rather than two-sided markets so perhaps this example is less canonical, but . . . the two literatures have a lot in common." Rysman (132–3) presents the distinction between supply-side and demand-side complementarity slightly differently from the distinction used here. He characterizes interoperability as a strategic decision made by the ("monopolist") operator of a multisided platform. My focus on modularity as a distinct concept facilitates a richer exploration of the interaction between platform participants.

69. For an overview of various approaches to innovation in antitrust doctrine, see Robert D. Atkinson and David B. Audretsch, "Economic Doctrines and Approaches to Antitrust" (Information Technology & Innovation Foundation, January 2011), distinguishing an "innovation economics" approach to antitrust that focuses on the importance of innovation and productivity growth as policy objectives.

70. William J. Baumol, *The Free Market Innovation Machine: Analyzing the Growth Miracle of Capitalism* (Princeton, NJ: Princeton University Press, 2002), 4.

71. The seminal work is Robert Solow, "Technical Change and the Aggregate Production Function," *Review of Economic Studies* 39 (August 1957): 312–20, finding that 87.5 percent of the increase in nonfarm output in the United States between 1909 and 1949 was due to technological progress. See also Atkinson and Audretsch, "Economic Doctrines," 13–14.

72. See e.g., David B. Audretsch, William J. Baumol, and Andrew E. Burke, "Competition Policy in Dynamic Markets," *International Journal of Industrial Organization* 19, no. 5 (2001): 613–34.

73. See Federal Communications Commission, Omnibus Broadband Initiative, *Technical Paper No. 6: Mobile Broadband* (October 2010), 15. See also Robert Hahn and Hal J. Singer, “Why the iPhone Won’t Last Forever and What the Government Should Do to Promote Its Successor,” *Journal on Telecommunications and High Technology Law* 8, no. 2 (2010): 313–50, especially 317–30.

74. See “GPON FTTH Market and Technology Overview,” PMC, April 2006, www.pmc-sierra.com/ftth-pon/ftth_overview.html (accessed October 3, 2012).

75. Analysys Mason, “‘Up to a Point Copper’: Quantifying the Reach of Accelerated DSL,” January 26, 2012, www.analysismason.com/About-Us/News/Insight/Insight_Accelerated_DSL_Jan2012/ (accessed September 28, 2012).

76. Evans, “The Middle Way,” 2: “Dynamic competition is important in many parts of the information technology sector. Some firms compete to create a new market—or a new category. We forget about the many, many firms that competed to create social networks, video sharing sites, computer operating systems, and so forth—and then died off.”

77. Joseph Schumpeter, *Capitalism, Socialism and Democracy* (New York: Harper & Brothers, 1942), 84.

78. See Jean-Jacques Laffont and Jean Tirole, *Competition in Telecommunications* (Cambridge, MA: MIT Press, 2000), 4. Some rural companies are still subject to rate-of-return regulation.

79. Michael L. Katz and Howard A. Shelanski, “‘Schumpeterian’ Competition and Antitrust Policy in High-Tech Markets,” *Competition* 14 (2005), 10, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=925707 (accessed September 28, 2012).

80. See Posner, “Antitrust in the New Economy,” 930.

81. *Ex Parte Submission of the US Department of Justice*, 4; see also Carl Shapiro, *Antitrust, Innovation, and Intellectual Property* (Testimony before the Antitrust Modernization Commission, November 8, 2005), 2: “In such ‘innovative industries,’ antitrust must pay careful attention to the incentives and obstacles facing firms seeking to develop and commercialize new technologies, and antitrust must very explicitly recognize that market conditions, business strategies, and industry structure can be highly dynamic.”

82. NBP Report, 42: “Thus, in areas that include 75% of the population, consumers will likely have only one service

provider (cable companies with DOCSIS 3.0-enabled infrastructure) that can offer very high peak download speeds.” Such predictions have often proved inaccurate or even embarrassing. The US Federal Trade Commission, for example, justified imposing significant conditions on the merger of American Online and Time Warner Inc. with its finding that “AOL is the leading provider of narrowband internet access, with a share of approximately 50 percent of narrowband subscribers. AOL is positioned and likely to become the leading provider of broadband internet access as well.” See US Federal Trade Commission, *In the Matter of America Online, Inc. and Time Warner Inc.*, Docket No. C-2989, Complaint (December 14, 2000), 3.

83. For arguments against this proposition, see Jonathan B. Baker, “Beyond Schumpeter vs. Arrow: How Antitrust Fosters Innovation,” *Antitrust Law Journal* 74 (2007) 575–602 (arguing that antitrust enforcement promotes innovation); Cooper, “The Public Interest,” 47–48: “The theory supporting Schumpeterian rents appears to be particularly ill-suited to several layers of the digital communications platform. It breaks down if a monopoly is not transitory, a likely outcome in the physical layer. In the physical layer, with its high capital costs and other barriers to entry, monopoly is more likely to quickly lead to anti-competitive practices that leverage the monopoly power over bottleneck facilities into other layers of the platform”; and J. Gregory Sidak and David J. Teece, “Dynamic Competition in Antitrust Law,” *Journal of Competition Law & Economics* 5, no. 4 (2009) 581–631, at 618: “The evolutionary and behavioral economics approaches outlined here would not abandon antitrust enforcement or even necessarily restrict it.”

84. Katz and Shelanski, 19. See also Shapiro, *Antitrust, Innovation, and Intellectual Property*, 11–12: “However, there is no consensus among industrial organization economists about the general relationship between concentration and innovation competition.” See also Sidak and Teece, “Dynamic Competition in Antitrust Law,” 588: “Despite 50 years of research, economists do not appear to have found much evidence that market concentration has a statistically significant impact on innovation.”

85. William J. Baumol, *The Free Market Innovation Machine: Analyzing the Growth Miracle of Capitalism* (Princeton, NJ: Princeton University Press, 2002), 165 (citation

omitted). Importantly, as Baumol explains elsewhere, such costs do not constitute barriers to entry. See William J. Baumol, “Regulation Misled by Misread Theory” (AEI-Brookings Joint Center for Regulatory Studies, 2006), 23: “The sunk costs that traditional theory says do not matter for an incumbent firm’s decisions are the once-and-for-all expenditures made in the past and not repeated thereafter. They are the ancient history that no current decision can change, whereas the sunk outlays that the firm must be expected to recoup are those that are incurred currently and will continue into the foreseeable future. These expectable and recurring sunk outlays most directly drive the firm to discriminatory pricing. And it is crucial to recognize that they are not barriers to entry in Stigler’s (1968) pertinent sense because they are equal burdens for the entrants and the incumbents—that is, they offer no substantial competitive advantage and, hence, no monopoly power to an incumbent firm.”

86. Shapiro, *Antitrust, Innovation, and Intellectual Property*, 7.

87. Hal R. Varian, “Differential Pricing and Efficiency,” *First Monday* 1, no. 2 (August 1996): 2.

88. See page 3 of Scott Wallsten and Colleen Mallahan, “Residential Broadband Competition in the United States” (March 2010), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1684236 (accessed October 1, 2012).

89. Arguably, the seminal article on competitive price discrimination is Robert H. Frank, “When Are Price Differentials Discriminatory?” *Journal of Policy Analysis and Management* 2, no. 2 (1983): 238–55. For other early contributions, see Michael E. Levine, “Price Discrimination without Market Power,” *Yale Journal on Regulation* 19 (Winter 2002): 1–35, at 25–26: “In the same way, high speed Internet access subscribers are charged on a monthly basis by the data transfer rate they wish to purchase, even though the ‘cost’ (other than the modem) of serving them is the same. The result of all this segmentation is the ability to support large networks with relatively ubiquitous service, offering some very low prices and some very high prices and many prices in between”; and Mark Armstrong and John Vickers, “Competitive Price Discrimination,” *Rand Journal of Economics* 32, no. 4 (Winter 2001): 579–605.

90. See, e.g., Jonathan B. Baker, “Competitive Price Discrimination: The Exercise of Market Power without

Anticompetitive Effects (Comment on Klein and Wiley),” *Antitrust Law Journal* 70, no. 3 (2003): 643–54, at 645: “Competitive price discrimination is probably found most commonly in high-technology markets and other industries with low marginal cost, high fixed costs, and some product differentiation. In such markets, it may be necessary for sellers to charge at least some customers prices in excess of marginal cost in order to make it profitable for firms to enter the market (by covering fixed costs) or stay there (to the extent the fixed costs are not sunk). Marginal cost pricing, the usual competitive bench-mark, may thus be infeasible.”

91. William J. Baumol and Daniel G. Swanson, “The New Economy and Ubiquitous Competitive Price Discrimination: Identifying Defensible Criteria of Market Power,” *Antitrust Law Journal* 70, no. 3 (2003): 661–85, at 665. See also Baumol, “Regulation Misled,” 3: “[I]n equilibrium, these discriminatory prices are not haphazard in their welfare properties but will generally constitute a Ramsey optimum—satisfying the second-best welfare attributes of revenue-constrained economic welfare.” See also Einer Elhauge, “Why Above-Cost Price Cuts to Drive Out Entrants are Not Predatory—and the Implications for Defining Costs and Market Power,” *Yale Law Journal* 112 (January 2003): 681–827, at 687: “Competition or low entry barriers will ensure that overall revenue from this output-maximizing price-discrimination schedule does not exceed economic costs.”

92. See, e.g., Carl Shapiro and Hal R. Varian, *Information Rules* (Cambridge, MA: Harvard Business School Press, 1999), 26–27.

93. See Wallsten and Mallahan, “Residential Broadband Competition,” 3: “In principle, [price discrimination] means charging high prices to consumers willing to pay a lot for broadband and low prices to consumers who are not willing to pay much for it. In reality, it is generally not possible to identify a particular consumer’s preferences, so instead providers create different products that appeal to different groups, even though the marginal cost of serving each group may be similar.”

94. See Fifteenth Report, ¶138: “In addition to network quality and advertising, a third component of non-price rivalry among mobile wireless service providers is the differentiation of the downstream products that they offer or

that rely on their networks, including handsets/devices, operating systems, and mobile applications.”

95. This assumes, of course, that consumers’ varying elasticities of demand cannot be observed directly.

96. *Ex Parte Submission of the United States Department of Justice*, 4. Emphasis added.

97. See e.g., Bresnahan, “New Modes of Competition,” 159: “A platform is a shared, stable set of hardware, software, and networking technologies on which users build and run computer applications.” See also Farrell and Weiser, “Modularity, Vertical Integration, and Open Access Policies,” 95: “Modularity means organizing complements (products that work with one another) to interoperate through public, nondiscriminatory, and well-understood interfaces”; and Jeffrey Church and Neil Gandal, “Platform Competition in Telecommunications,” in *Handbook of Telecommunications Economics*, Vol. 2, ed. S. K. Majumdar, I. Vogelsang and M. E. Cave (Amsterdam: Elsevier, 2005), 117–53, at 120: “The defining feature of network industries is that products consumed are systems of components: the ultimate ‘good’ demanded is comprised of a group of complementary products that provide value when they are consumed together. . . . For the complements to work together requires standards to insure compatibility. In this context, a ‘standard’ refers to a set of technical specifications that enable compatibility between products.” For more detailed discussion, see Carliss Y. Baldwin and C. Jason Woodard, “The Architecture of Platforms: A Unified View” (working paper, 2009), www.people.hbs.edu/cbaldwin/DR2/BWPlatformArchitectureWorkingPaper.pdf (accessed October 1, 2012). Subsequent version was published in Annabelle Gawer (ed.), *Platforms, Markets and Innovation* (Cheltenham, UK: Edward Elgar, 2009), 19–44.

98. The number and diversity of modules and platforms in the Internet ecosystem is perhaps best evoked by simply naming a small subset of the firms that provide them, such as Adobe, Amazon, Apple, Clearwire, Comcast/NBC, Disney, eBay, Electronic Arts, Facebook, Google, Hewlett-Packard, Microsoft, Motorola Mobility, Netflix, Nintendo, Nokia, Pandora, RIM, Rovio, Sony, Twitter, and Verizon. Other platform participants, such as Akamai, Alcatel-Lucent, Broadcom, Cisco, Global Crossing, IBM, Intel, Level3, Micron, Oracle, Qualcomm, Rambus, and Symantec, may be less visible, but no less important.

99. See page 28 of Timothy F. Bresnahan and Shane Greenstein, “Technological Competition and the Structure of the Computer Industry,” *Journal of Industrial Economics* 47, no. 1 (March 1999): 1–40.

100. See, e.g., Open Internet Order, ¶3.

101. *Ibid.*, ¶1.

102. *Ibid.*, ¶50 and n. 160.

103. This analysis also implicates the FCC’s description of wireless markets in the Fifteenth Report. While the commission acknowledges the existence of a “mobile wireless ecosystem” and finds that “each of the segments in the mobile wireless ecosystem has the potential to affect competitive and consumer outcomes in the mobile wireless services segment,” it embraces a traditional value chain model that portrays “mobile wireless services” as occupying a “middle part” of the mobile wireless ecosystem between “input/upstream segments” such as spectrum and network equipment and “edge/downstream” segments such as apps, content, and mobile commerce. See Fifteenth Report, ¶5–6 and figure 1. See also Fourteenth Report, ¶9–10 and figure 1.

104. See Bresnahan and Greenstein, “Technological Competition,” 23. A great deal of academic attention has focused on the special case of a platform monopolist—a platform operator that faces neither intra- nor interplatform competition, and on the question of whether such a firm will make efficient choices regarding interoperability. See, e.g., Farrell and Weiser (“Modularity, Vertical Integration, and Open Access Policies”), who conclude that under limited circumstances a platform monopolist might inefficiently foreclose interconnection. For a concise critique (arguing inefficient foreclosure is highly unlikely), see Thomas M. Lenard and David T. Scheffman, “Distribution, Vertical Integration and the Net Neutrality Debate,” in *Net Neutrality or Net Neutering*, ed. Lenard and May, 20–23.

105. See, e.g., Rysman, “The Economics of Two-Sided Markets,” 32–33, as discussed in note 68. See also Kevin Boudreau, “Open Platform Strategies and Innovation: Granting Access vs. Devolving Control,” *Management Science* 56, no. 10 (October 2010): 1849–72.

106. See Carliss Y. Baldwin, “Where Do Transactions Come From? Modularity, Transactions and the Boundaries of Firms,” *Industrial and Corporate Change* 17, no. 1 (2007): 155–95, at 187: “Modularizations, whatever their stated

purpose, create new module boundaries with (relatively) low transaction costs. Modularizations thus make transactions feasible where they were previously impossible or very costly” (emphasis in original). See also Thomas W. Hazlett, “Modular Confines of Mobile Networks: Are iPhones iPhone?” (May 2009), <http://ssrn.com/abstract=1533441> (accessed October 1, 2012), 13–14: “Modularity simultaneously yields gains from both economies of scale and specialization. When workable interfaces are achievable at low cost, competitive forces are unleashed to create complementary components of a value chain. Modularity eases entry by innovators able to contribute specific inputs in which they exhibit comparative advantage, even when such firms exhibit little or no competence as integrated providers of a larger suite of industry outputs.”

107. See, e.g., Jeffrey H. Rohlfs, *Bandwagon Effects in High-Technology Industries* (Cambridge, MA: MIT Press, 2003), 35: “Nevertheless, interlinking [i.e., modularity] also involves costs, which depend on the type of interlinking involved. In some cases, interlinking is not cost-effective. Indeed, it may not even be feasible at reasonable cost.”

108. Boudreau provides empirical evidence that limiting the number of providers of complementary inputs leads to more rapid innovation. See Kevin J. Boudreau, “Let a Thousand Flowers Bloom? An Early Look at Large Numbers of Software ‘Apps’ Developers and Patterns of Innovation,” *Organization Science* (September 2011), 11: “Adding producers in the same genre to a platform slowed development in that genre. This is consistent with the presence of intensifying competition and crowding out of incentives among similar offerings.”

109. For a general discussion, see e.g., Farrell and Weiser, “Modularity, Vertical Integration, and Open Access Policies,” 97–100. See also Rohlfs, *Bandwagon Effects*, 42–43, and Ehrlich et al., “The Impact of Regulation on Innovation,” 38–48.

110. See Baldwin and Woodard, “The Architecture of Platforms,” 20: “At first glance, it might appear that the architect should retain control of the core of the system, but this conclusion is not always correct. In man-made systems, the core components of the platform can evolve over time, hence may be subject to competitive pressures.” In the case of Android, development of the open-source operating system is governed by the Open Handset Alliance. For insight

into the governance challenges associated with such an endeavor, see Leslie Grandy, “Why Google’s Open Handset Alliance Has Been a Disappointment,” MocoNews.net, May 3, 2010, <http://moconews.net/article/419-the-reasons-why-googles-open-handset-alliance-has-been-a-disappointment/> (accessed October 1, 2012).

111. A particularly colorful and litigious example of intraplatform competition involved the fight between Rambus and a host of other firms to affect the direction of the market for DRAM technology, where Rambus controls key patents. See, e.g., Federal Trade Commission, *In the Matter of Rambus, Inc.* Docket No. 9302, *Initial Decision* (February 23, 2004), www.ftc.gov/os/adjpro/d9302/040223initialdecision.pdf (accessed October 1, 2012).

112. See Bresnahan and Greenstein, “Technological Competition,” 3.

113. See Bresnahan, “New Modes of Competition,” 166.

114. See Bresnahan and Greenstein, “Technological Competition,” 3 and 31.

115. For example, mobile wireless carriers have tried, but mostly failed, to lead in the development of “app stores” for mobile broadband devices, the most successful of which are operated by device makers.

116. See Bresnahan, “New Modes of Competition,” 166.

117. See Sallet, *The Creation of Value*, 15.

118. Jason Dedrick, Kenneth L. Kraemer, and Greg Linden, “The Distribution of Value in the Mobile Phone Supply Chain,” *Telecommunications Policy* 35, no. 6 (2011): 505–21, at 515. See also Joel West and Michael Mace, “Browsing as the Killer App: Explaining the Rapid Success of Apple’s iPhone,” *Telecommunications Policy* 34, nos. 5–6 (2010): 270–86, at 283: “While firms in the mobile telecommunications industry worked together to create enough value to spur adoption of mobile data services, in response to increasing industry commoditization, they also engaged in zero-sum competition to capture the returns from this adoption. Such competition for profits occurred not only between traditional rivals among vendors, operators and content suppliers, but also between these complementary roles within the value network.”

119. See Dedrick et al., “The Distribution of Value,” 516: “The handset makers look far better than the carriers in terms of ROA, which reflects the difference between the huge capital investments by the carriers to build and

upgrade their cellular networks and the asset-light business models of these handset makers, who outsource much of their manufacturing.”

120. *Ibid.*, 517.

121. Fifteenth Report, ¶138, 143.

122. For an important early contribution to the literature on platform competition, see Feng Li and Jason Whalley, “Deconstruction of the Telecommunications Industry: From Value Chains to Value Networks,” *Telecommunications Policy* 26, nos. 9–10 (2002): 451–72.

123. One way firms compete in this way is through a form of “sponsored entry.” For example, in April 2012, Verizon CFO Frances Shammo indicated in a conference call with analysts that Verizon planned to push phones using Microsoft’s Windows operating system as an antidote to the high costs of the iPhone: “It is important that there is a third ecosystem that’s brought into the mix here, and we are fully supportive of that with Microsoft.” See Greg Bensinger, “Verizon’s Answer to iPhone: Windows,” *Wall Street Journal* (April 20, 2012).

124. For a detailed discussion of the role of IP in the competitive dynamics of the Internet, see European Commission, Case No COMP/M.6381—*Google/Motorola Mobility Commission Decision Pursuant to Article 6(1)(b) of Council Regulation No. 139/2004*, http://ec.europa.eu/competition/mergers/cases/decisions/m6381_20120213_20310_2277480_EN.pdf (accessed October 1, 2012).

125. The right to control the customer experience played a key role in Apple’s negotiations with wireless ISPs over the iPhone, which included a threat by Apple to start its own Mobile Virtual Network Operator and thus completely eliminate the carriers from the customer experience. See West and Mace, “Browsing as the Killer App,” 276.

126. Sallet proposes replacing the notion of the “broadband value chain” with a “broadband value circle,” with the consumer (rather than broadband ISPs or some other industry sector) at the center. Sallet’s framework explains “the ability of firms anywhere along the value chain to approach customers directly and attempt to catalyze a new form of consumer surplus, which is not limited to their products alone.” See Sallet, *The Creation of Value*, 12.

127. *Ibid.*, 42.

128. Chris Ziegler, “Nokia CEO Stephen Elop Rallies Troops in Brutally Honest ‘Burning Platform’ Memo?”

Engadget, February 8, 2011, www.engadget.com/2011/02/08/nokia-ceo-stephen-elop-rallies-troops-in-brutally-honest-burnin/ (accessed October 1, 2012).

129. The launch of the Microsoft-Nokia collaboration was marred by rumors that Rovio—maker of popular smart-phone game *Angry Birds*—might not adapt its content to run on the Windows Phone 7 operating system, which one analyst called a “worrying development” that “may cause some to think twice about the likelihood of Nokia’s recovery.” See Ingrid Lunden, “Update: Analyst: No *Angry Birds* Space on WP7 Affects Nokia Recovery,” *Techcrunch*, March 23, 2012, <http://techcrunch.com/2012/03/23/analyst-no-angry-birds-space-on-windows-phone-will-cause-others-to-think-twice-about-nokias-recovery/> (accessed October 1, 2012).

130. See Anthony Agnello, “Nokia, MSFT Bet Big on Lumia 900, But . . .” *InvestorPlace*, April 2, 2012, www.investorplace.com/2012/04/nokia-msft-bet-big-on-lumia-900-but-att-exclusivity-may-hurt-more-than-it-helps-t-nok-aapl-goog/ (accessed October 1, 2012).

131. Markets involving network effects and multisidedness are often referred to as “platforms” (e.g., television broadcasting as a “platform” that brings together advertisers with viewers), but the concept is subtly different from the modularity-defined IT platforms I described in Section 2. Modularity-defined platforms exhibit supply-side complementarities, but do not necessarily involve demand-side economies of scale or scope. Similarly, the “interoperability” between viewers and advertisers provided by a television station does not necessarily involve the realization of supply-side complementarities between inputs. See Baldwin and Woodard, “The Architecture of Platforms,” 9–11.

132. See, e.g., Rysman, “The Economics of Two-Sided Markets,” 125: “Broadly speaking, a two-sided market is one in which 1) two sets of agents interact through an intermediary or platform, and 2) the decisions of each set of agents affects the outcomes of the other set of agents, typically through an externality.”

133. Telecommunications networks were subject to network effects long before there was an Internet. What has changed, as I discuss, is the interaction between the network and complementary goods—the emergence of platforms of which broadband networks are a part.

134. See Michael L. Katz and Carl Shapiro, “Antitrust in Software Markets,” in *Competition, Innovation and the Microsoft Monopoly*, Eisenach and Lenard, eds., 29–82, at 30. See also Church and Gandal, “Platform Competition in Telecommunications,” 134–6.

135. See generally Rohlfs, *Bandwagon Effects*.

136. As discussed below, there are potential exceptions, including the so-called “terminating monopoly” problem.

137. Philip J. Weiser, “The Internet, Innovation, and Intellectual Property Policy,” *Columbia Law Review* 103, no. 3 (2003): 534–613, at 574–5. Similarly, Jeffrey Rohlfs notes that network effects (which he refers to as “bandwagon effects”) are limited by the existence of “communities of interest” (subsets of relatively homogeneous consumers). See Rohlfs, *Bandwagon Effects*, 21. See also Michael L. Katz and Carl Shapiro, “Systems Competition and Network Effects,” *Journal of Economic Perspectives* 8, no. 2 (Spring 1994): 93–115, at 106: “Consumer heterogeneity and product differentiation tend to limit tipping and sustain multiple networks. If the rival systems have distinct features sought by certain consumers, two or more systems may be able to survive by catering to consumers who care more about product attributes than network size. Here, market equilibrium with multiple incompatible products reflects the social value of variety. In some cases—Apple vs. IBM computers, perhaps—important variety benefits might be lost through standardization.”; Rysman, “The Economics of Two-Sided Markets,” 134–5; and Peter F. Cowhey and Jonathan D. Aronson, *Transforming Global Information and Communications Markets: The Political Economy of Innovation* (Cambridge, MA: MIT Press, 2009), ch. 3.

138. See Nicholas Economides, “The Economics of the Internet Backbone,” in *Handbook of Telecommunications Economics*, ed. Majumdar et al., 373–412, at 401. While Internet peering has become more complex in recent years, ubiquitous interconnection remains the rule. See also Peyman Faratin et al., “The Growing Complexity of Internet Interconnection,” *Communications & Strategies* 72 (4th quarter 2008), 51–71, at 67: “In response to [the growth of asymmetric traffic flows] and resultant changes in the Internet industry landscape, the range of interconnection contracts have expanded to include greater reliance on paid peering and partial transit, reflecting a filling in of the contracting space. . . . There is little evidence, aside from a

few highly visible events such as de-peering actions, that the range of negotiated contracts, whether discriminatory or not, has harmed the overall connectivity of the Internet.”); and Christopher S. Yoo, “Innovations in the Internet’s Architecture that Challenge the Status Quo,” *Journal on Telecommunications and High Technology Law* 8 (2010): 79–99.

139. See, e.g., Rysman, “The Economics of Two-Sided Markets,” 127: “[A] good exhibits an indirect network effect if demand for the good depends on the provision of a complementary good, which in turn depends on demand for the original good.”

140. *Ibid.*

141. Weiser, “The Internet, Innovation,” 589.

142. In the United States, which unlike Europe chose not to mandate a single technology for 2G and 3G wireless technology, interplatform competition between CDMA and GSM standards is credited with generating significant benefits for consumers. See Fifteenth Report, ¶¶106–7: “Competition among mobile wireless providers using incompatible wireless network technologies has other advantages that can benefit consumers, including increased product variety and differentiation of services, more technological competition, and tougher price competition.”

143. Weiser, “The Internet, Innovation,” 586–7.

144. See Li and Whalley, *Deconstruction of the Telecommunications Industry*, 465: “Within the value network a multitude of market entry points exist, where a diverse range of companies can conceivably enter the market through different routes. Hence, many powerful new players from other industries are drawn into the previously neatly defined telecommunications market.”

145. Indeed, Intel’s investment in Clearwire was initially conditioned on Clearwire’s agreement to rely exclusively on WiMAX, a condition which was subsequently renegotiated. See Stephen Lawson, “Clearwire Free to Use LTE under Changed Intel Deal,” May 5, 2012, www.pcworld.com/article/195699/article.html (accessed October 1, 2012). Intel was, of course, not the only early investor in Clearwire. Others included Google and a coalition of cable companies, each of whom had interests—some “vertical,” some “horizontal”—to sponsor a new entrant in the wireless broadband space.

146. See e.g., Abbey Klaassen, “Can Google’s G1Smart Phone Be More Than an Apple Knockoff?” *AdAgeDigital*,

September 23, 2008, <http://adage.com/article/digital/google-s-g1-smart-phone-apple-knockoff/131212/> (accessed October 1, 2012): “Of course, the focus for Google is not just the G1 but the many other Android phones that Google hopes will come after it.”

147. See, generally, Jean-Charles Rochet and Jean Tirole, “Platform Competition in Two-Sided Markets,” *Journal of the European Economic Association*, 1, no. 4 (June 2003): 990–1029.

148. See, e.g., E. Glen Weyl, “A Price Theory of Multi-Sided Platforms,” *American Economic Review* 100, no. 4 (September 2010): 1642–72, especially 1667; see also Rysman, “The Economics of Two-Sided Markets,” 125–143, at 131: “Another important issue in a two-sided framework is price discrimination. In a situation of demand heterogeneity, standard price discrimination—for instance, by manipulating the prices for participation and usage—allows a platform to capture more of the surplus on the side with discrimination. Thus, discrimination increases the value extracted on one side, which leads to lower prices on the other side which has now become more valuable.”

149. The terminating monopoly concept appears to be central to the FCC’s rationale in the Open Internet Order. See ¶24, n. 66.

150. See, e.g., Rysman, “The Economics of Two-Sided Markets,” 131.

151. See Mark Armstrong, “Competition in Two-Sided Markets,” *RAND Journal of Economics* 37, no. 3 (Autumn 2006): 668–91, at 670, n. 2: “This tendency toward high prices for the multi-homing side is tempered when the single-homing side benefits from having many agents from the other side on their platform. Then high prices to the multi-homing side will drive away that side and disadvantage the platform when it tries to attract the single-homing side.”

152. See Brito et al., *Net Neutrality Regulation*, 10–19; see also Kevin W. Caves, “Modeling the Welfare Effects of Net Neutrality Regulation: A Comment on Economides and Tåg” (April 2010), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1585254 (accessed October 1, 2012).

153. Broadband ISPs do not appear to be any less prone to interconnection than other IT firms. For example, horizontal interlinking among broadband ISPs (i.e., peering and transit) is both voluntary and universal (see note 138

and accompanying text). On the other hand, platform leaders in other IT markets (e.g., game platforms) sometimes choose not to interconnect with competing platforms at all. 154. As noted above, entry has occurred and is occurring in the broadband ISP market. Casual observation suggests the frequency of successful entry in broadband ISP markets is not significantly lower than, and may be higher than, the frequency of successful entry in the markets for (for example) social networking platforms, search engines, and computer operating systems.

155. See, e.g., Manne and Wright, “Innovation and the Limits of Antitrust.”

156. See, e.g., *Northern Pac. Ry. Co. v. United States*, 356 U.S. 1, 4 (1958): “The Sherman Act was designed to be a comprehensive charter of economic liberty aimed at preserving free and unfettered competition as the rule of trade. It rests on the premise that the unrestrained interaction of competitive forces will yield the best allocation of our economic resources, the lowest prices, the highest quality and the greatest material progress, while at the same time providing an environment conducive to the preservation of our democratic political and social institutions.”

157. See e.g., Powell, “The Great Digital Broadband Migration.”

158. See Open Internet Order, ¶116. Perhaps tellingly, the *National Broadband Plan* speaks not of an “Internet ecosystem” but rather a “broadband ecosystem,” within which it subsumes applications and content. See NBP Report, 15: “The broadband ecosystem includes applications and content: e-mail, search, news, maps, sales and marketing applications used by businesses, user-generated video and hundreds of thousands of more specialized uses.”

159. As noted above, the FCC’s recent data roaming and universal service orders explicitly implicate broadband services.

160. Communications services remain subject to traditional antitrust principles, though the Supreme Court has found that the existence of ex ante regulation makes it unlikely that the antitrust laws “contemplate . . . additional scrutiny.” *Verizon Communications Inc. v. Law Offices of Curtis V. Trinko, LLP* (02-682) 540 U.S. 398 (2004).

161. See Farrell and Weiser, “Modularity, Vertical Integration, and Open Access Policies,” 86.

162. Antitrust Modernization Commission, *Report and Recommendations*, 3.

163. For example, Section 706 of the Communications Act directs the FCC to “encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans.” See 47 U.S.C. § 1302(a). The commission bases its authority to issue net neutrality regulations—i.e., to regulate broadband—largely on this provision, which opponents argue does not constitute a separate grant of regulatory authority.

164. The notion that the commission’s role properly includes “promoting” the industries it oversees is not limited to one party or ideology. See, e.g., Statement of Chairman Kevin Martin, En Banc Hearing of the Federal Communications Commission, Cambridge, Massachusetts (February 25, 2009) (“The intent [of the FCC’s ‘four net neutrality principles’] was ... to *foster the creation, adoption and use of Internet broadband content, applications, and services.*”) (emphasis added). See also Farrell and Weiser, “Modularity, Vertical Integration, and Open Access Policies,” 134: “In particular, regulation sometimes adopts measures rationalized as infant industry protection that seek to produce certain innovative benefits—at the risk of falling victim to the perilous exercise of predicting winners and losers.”

165. For a contrary view, see Jonathan B. Baker, “Sector-Specific Competition Enforcement at the FCC,” *New York University Annual Survey of American Law* 66 (2011): 413–18, at 418: “The sector-specific agency has the expertise and ability to take a longer view of how the industry should evolve, allowing it to identify and address competitive issues that go beyond the practical ambit of antitrust enforcement. By drawing on the strengths of the sector-specific agency and the competition agency, concurrent review can thus enhance competition enforcement as a whole.” The issue of jurisdiction—which agency or agencies should enforce competition policy in the broadband sector—is at least theoretically separate from the substantive issues addressed here.

166. See Andrea Renda, “Neutrality and Diversity in the Internet Ecosystem” (August 19, 2010), 32–33, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1680446 (accessed October 1, 2012).

167. The notion of “promoting” competition in telecommunications markets grew at least in part out of the 1996 Telecommunications Act, which was designed to transform the industry from its legacy-regulated monopoly

structure to a more competitive structure as expeditiously as possible. In that context, “promoting competition” meant, in part, removing government barriers to entry (the statutory monopolies enjoyed by local telephone companies). To the extent government continues to erect barriers to entry (e.g., as, until recently, in local cable franchising regulations or by creating false scarcity in the market for spectrum), it is entirely appropriate for competition authorities to seek to lower them.

168. See, e.g., Jonathan Sallet, “The Internet Ecosystem and Legal Regimes: Economic Regulation Supporting Innovation Dynamism” (November 2011), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1957715 (accessed October 1, 2012), 3: “Because rulemaking is necessarily based on a current state of understanding about the market, it is ill-equipped to deal flexibly with the rapidly changing and ever-evolving nature of competition in the Internet marketplace.”

169. NBP Report, 41.

170. See, e.g., Julius Genachowski, Hearing on “Ensuring Competition on the Internet: Network Neutrality and Antitrust Law,” Statement before the Subcommittee on Intellectual Property, Competition, and the Internet Committee on the Judiciary, US House of Representatives (May 5, 2011), 4: “As we heard during our FCC proceeding, antitrust enforcement is expensive to pursue, takes a long time, and kicks in only after damage is done. Especially for start-ups in a fast-moving area like the Internet, that’s not a practical solution.”

171. Renda, “Neutrality and Diversity,” 51–52: “One may wonder the difficulty of an antitrust authority in having to deal with competition between layers. The Internet ecosystem is indeed evolving towards a competitive arena in which some big players, having reached a strong position in the provision of a key gateway service, try to extend their control over the value chain to secure a bigger share of the value that is created by the whole system architecture. This is how powerful search engines, OS vendors, mainframe champions, mobile operators, fixed-line broadband providers, microprocessor manufacturers and conglomerate producers of proprietary goods ended up challenging themselves on countless battlefields and with a mix of open, semi-open and proprietary standards. Plus, all this is happening in a constantly changing environment, and—

even if one should resist the temptation to predict the future based exclusively on past experience—there is clear evidence that markets have been able to fix in the medium term most of the short-term concerns voiced by industry stakeholders. And there is also sufficient evidence that market developments have been quicker and more effective than antitrust decisions—let alone sectoral regulation—in fixing those problems.”

172. See, e.g., Shapiro and Varian, *Information Rules*, 310.

173. Some regulatory regimes seem to attract sufficient constituencies as to be practically impossible to reform. The FCC’s efforts to reform its rules for intercarrier compensation, for example, have been ongoing for more than fifteen years since passage of the 1996 Telecommunications Act. By contrast, remedies associated with traditional antitrust enforcement are typically time-limited, and thus subject to automatic “sunset.”

174. See Brito et al., *Net Neutrality Regulation*, 2. See also Jonathan B. Baker, “Promoting Innovation Competition through the Aspen/Kodak Rule,” *George Mason Law Review* 7 (Spring 1999): 495–521, at 521 (“[W]hen the goal is to promote innovation, it is difficult to devise a general [monopolization] rule appropriate to the circumstances of all industries.”)

175. Farrell and Weiser conclude that the lack of an adequate analytical framework to support its regulations has led to policy “vacillation” at the FCC. See Farrell and Weiser, “Modularity, Vertical Integration, and Open Access Policies,” 132–33: “We see little evidence of subtle balancing to suggest that changes in circumstances explain the changes in policy, so it is tempting instead to describe the variation as ‘vacillating’ in an inadequate analytical framework.”

176. See Shapiro and Varian, *Information Rules*, 311. The propensity of regulatory agencies to engage in such cross-subsidization is well-documented. See, e.g., Ronald H. Coase, “The Federal Communications Commission,” *Journal of Law and Economics* 2 (1959): 1–40, and Richard A. Posner, “Taxation by Regulation,” *Bell Journal of Economics and Management Science* 3, no. 1 (Spring 1972): 98–129.

177. See, e.g., Robin S. Lee and Tim Wu, “Subsidizing Creativity through Network Design: Zero-Pricing and Net Neutrality,” *Journal of Economic Perspectives* 23, no. 3 (Summer 2009): 61–76, at 67: “Of course, for a given price level,

subsidizing content comes at the expense of not subsidizing users, and subsidizing users could also lead to greater consumer adoption of broadband. It is an open question whether, in subsidizing content, the welfare gains from the invention of the next killer app or the addition of new content offset the price reductions consumers might otherwise enjoy or the benefit of expanding service to new users.”

178. For a discussion of difficulties of identifying predatory pricing in network markets, even on a case-by-case basis, see Joseph Farrell and Michael L. Katz, “Competition or Predation? Consumer Coordination, Strategic Pricing and Price Floors in Network Markets,” *Journal of Industrial Economics* 53, no. 2 (June 2005): 203–31.

179. See Carl Shapiro, “Exclusivity in Network Industries,” *George Mason Law Review* 7 (Spring 1999): 673–82, at 678.

180. Baker, “Competitive Price Discrimination,” 649.

181. Renda, “Neutrality and Diversity,” 47.

182. *Ibid.*, 51. See also Rysman, “The Economics of Two-Sided Markets,” 132: “Perhaps it is more natural to observe firms begin with a one-sided model and switch to a two-sided model as they become more established. Doing so allows potential platforms to overcome the ‘chicken-and-egg’ problem by first providing complementary goods themselves (sometimes requiring daunting capital expenditures). For example, Amazon first established itself as a fairly standard on-line book retailer before introducing its ‘marketplace’ options where sellers set prices and interact with consumers.”

183. For a “new-economy” based critique of the Open Internet Order, see Bruce W. Owen, “Antitrust and Vertical Integration in ‘New Economy’ Industries with Application to Broadband Access,” *Review of Industrial Organization* 38, no. 4 (2011): 363–86.

184. See Federal Communications Commission, *Video Device Competition, Implementation of Section 304 of the Telecommunications Act of 1996, Commercial Availability of Navigation Devices, Compatibility Between Cable Systems and Consumer Electronics Equipment, Notice of Inquiry*, MB Docket No. 10-91, CS Docket No. 97-80, PP Docket No. 00-67, FCC 10-60 (April 21, 2010).

185. On handset exclusivity, see Jeffrey Paul Jarosch, “Reassessing Tying Arrangements at the End of AT&T’s iPhone Exclusivity,” *Columbia Business Law Review* 2, no. 2 (2011): 296–362, at 361: “iPhone exclusivity has had

meaningfully pro-competitive effects in fostering innovation and differentiation among wireless networks.”

186. See, e.g., Ehrlich et al., “The Impact of Regulation on Innovation,” 22–23.

187. Weiser, “The Internet, Innovation,” 585.

188. *Ibid.*, 590–91. See also *Berkey Photo, Inc. v. Eastman Kodak Co.*, 603 F.2d 263 (2d Cir. 1979), 281: “It is the possibility of success in the marketplace, attributable to superior performance, that provides the incentives on which the proper functioning of our competitive economy rests. If a firm that has engaged in the risks and expenses of research and development were required in all circumstances to share with its rivals the benefits of those endeavors, this incentive would very likely be vitiated.”

189. See, e.g., *United States v. Google Inc. and ITA Software, Inc., Competitive Impact Statement* (April 8, 2011), www.justice.gov/atr/cases/f269600/269620.pdf (accessed October 1, 2012), 3: “The proposed Final Judgment therefore strikes an appropriate balance between competing interests by preserving the potential significant efficiencies from the combination of Google’s and ITA’s complementary expertise while redressing the potential for anticompetitive foreclosure that could result from the acquisition.”

190. See Herbert Hovenkamp, “Antitrust and Innovation: Where We Are and Where We Should Be Going,” *Antitrust Law Journal* 77, no. 3 (2011): 749–56, at 754. For a dynamic competition-focused critique of mandatory unbundling policies, see Glen O. Robinson and Dennis L. Weisman, “Designing Competition Policy for Telecommunications,” *Review of Network Economics* 7, no. 4 (December 2008): 509–46. See also Crandall et al., *The Long-Run Effects of Copper Unbundling*.

191. Renda, “Neutrality and Diversity,” 54.

192. For a discussion of proposals for fiber unbundling, for example, see e.g. Crandall et al., *The Long-Run Effects of Copper Unbundling*.

193. On the wisdom of adopting rules for “IP interconnection,” see Faratin et al., “The Growing Complexity of Internet Interconnection,” 64: “We also have a cautionary conclusion: if one should be motivated (for whatever reason)

to contemplate some regulatory rule to manage interconnection, the design of such a rule will be both complex and informationally demanding. Partial transit and paid peering may be seen as efficiency-enhancing responses to changing market conditions. While there may be opportunities for abuse by providers with excessive bargaining power, the complexity of what is in place today, and what seems to be working today, would argue that the best way to address any potential concern would be to focus on the sources of bargaining power and identify anti-competitive opportunism, rather than to impose *ex ante* restrictions on the range of bilateral contracts.” See also Analysys Mason, *Overview of Recent Changes in the IP Interconnection Ecosystem* (May 2011), 32: “The commercially-driven evolution of Internet interconnection stands in contrast to the regulation that governs interconnection of telecommunications services, which may share the same network infrastructure with the Internet, and involve many of the same players. For example, in the past decade, during which the evolution in the Internet described above took place, the FCC has made countless attempts to modify the inter-carrier compensation system in response to changes in telecommunications—a process that is still ongoing. In contrast, since the commercialization of the Internet backbone, the Internet ecosystem has long proven itself to be able to develop and sustain interconnection in the absence of sector-specific regulation—and it now has shown itself to also be able to adapt well to rapid and profound market changes without regulatory intervention.”

194. See US DOJ and FTC, *Horizontal Merger Guidelines*, 21–22.

195. See e.g., David S. Evans and Michael D. Noel, “The Analysis of Mergers that Involve Multisided Platform Businesses,” *Journal of Competition Law and Economics* 4, no. 3 (2008): 663–95, and Lapo Filistrucchi, Tobias J. Klein, and Thomans Michielsen, “Assessing Unilateral Merger Effects in a Two-Sided Market: An Application to the Dutch Daily Newspaper Market” (Tilberg Law and Economics Center, October 2011), <http://ssrn.com/abstract=1946163> (accessed October 1, 2012).

About the Author

Jeffrey Eisenach has served in senior positions at the Federal Trade Commission and the Office of Management and Budget. As a visiting scholar at AEI, he focuses on policies affecting the information technology sector, innovation, and entrepreneurship. Eisenach is also a managing director and a principal at Navigant Economics and an adjunct professor at the George Mason University School of Law, where he teaches Regulated Industries. He writes on a wide range of issues, including industrial organization, communications policy and the Internet, government regulations, labor economics, and public finance. He has also taught at Harvard University's Kennedy School of Government and at the Virginia Polytechnic Institute.



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June 13, 2014

Committee on Energy and Commerce
U.S. House of Representatives
2125 Rayburn House Office Building
Washington, DC 20515

RE: Response to #CommActUpdate White Paper No. 3
Competition Policy and the Role of the Federal Communications Commission

**COMMENTS OF THE
ALARM INDUSTRY COMMUNICATIONS COMMITTEE**

The Alarm Industry Communications Committee (AICC), on behalf of its members¹ hereby files comments on competition in communications and the role of the Federal Communications Commission (FCC). Alarm service providers utilize many types of communication technologies and services in their provision of alarm services, including

¹ Central Station Alarm Association (CSAA), Electronic Security Association (ESA), Security Industry Association (SIA), Bosch Security Systems, Digital Monitoring Products, Digital Security Control, Telular Corp, Honeywell Security, Vector Security, Inc., ADT LLC ., AES-IntelliNet, Alarm.com, Bay Alarm, Intertek Testing, NetOne, Inc. (formerly, Security Network of America), United Central Control, AFA Protective Systems, Vivint (formerly APX Alarm), COPS Monitoring, DGA Security, Security Networks, Universal Atlantic Systems, Axis Communications, Interlogix, LogicMark, Napco Security, Alarm Detection, ASG Security, Security Networks, Select Security, Inovonics, Linear Corp., Numerex, Tyco Integrated Security, FM Approvals, the Underwriters Laboratories, CRN Wireless, LLC and Axesstel.

traditional telephone service, wireline and wireless broadband services, and the Internet. AICC's primary concerns are to ensure (1) that there are reliable and stable communications networks and services, no matter the technology, and that those networks are consistent; (2) that spectrum should be available for alarm services and the rules applicable for spectrum use should be fair and stable; and (3) that alarm data is not blocked or hindered in its transmission by any network or service provider. It is not clear that a hands-off regulatory environment will achieve these results.

AICC member companies protect over 30 million residential, business and sensitive facilities and their occupants from fire, burglaries, sabotage and other emergencies and, consequently, are an integral part of the public safety network. Protected facilities include government offices, power plants, hospitals, dam and water authorities, pharmaceutical plants, chemical plants, banks, schools and universities. In addition to these commercial and governmental applications, alarm companies protect a large and increasing number of residences and their occupants from fire, intruders, and carbon monoxide poisoning. Alarm companies also provide Personal Emergency Response System (PERS) service for obtaining medical services and ambulances in the event of medical emergencies. Because AICC's members act as the first line of defense during emergency situations for so many homes and businesses, it is essential that the communication networks they utilize are reliable and stable and transmit alarm data and signals accurately. The ability to promptly and accurately respond to an emergency can mean the difference between life and death for those we protect.

The majority of alarm customers still rely on TDM-based telephone service as their underlying communication service and a majority of customers of PERS service are connected by TDM-based telephone service. Because the TDM-based network was engineered to be highly

reliable, with quality of service standards and with an independent power source, traditional TDM-based telephone service provides alarm customers with a highly reliable service that met the standards necessary for fire protection and other life/safety applications. In addition, TDM-based service allows other necessary functions for alarm services, including line seizure, the detection of a loss in communications path and the proper encoding and decoding of tone messages sent by the alarm panel.

As TDM-based networks are transitioned to Internet Protocol (IP)-based networks and with the advent of alternative communication providers and services, these traits must be preserved, and support for the millions of existing alarm systems currently installed at customers' premises should be continued, through compliance with appropriate standards.²

The National Fire Protection Association (NFPA) developed a standard for voice services used in connection with fire protection, NFPA 72, to ensure that service providers using new technologies continue to meet the rigorous quality assurance, operational stability and consistent features that were the hallmarks of the traditional networks operated by telephone companies. Although these standards were developed for communication networks used for fire protection, the standards also ensure reliable and accurate communications for all alarm services, including premise intrusions and the dispatch of medical emergency services.

² Alarm systems in millions of homes , although installed in most cases in a TDM-world, are technologically sufficient to work with all communication technologies, if the appropriate standards are incorporated into the new technologies. As these wired and wireless broadband systems are installed, customers do not have to-- and should not be required to - "upgrade" their alarm systems. Further, alarm systems being designed by broadband providers and offered as part of service bundles, do not offer enhanced life-saving protection.

Pursuant to NFPA 72, a managed facilities-based voice network (MFVN) should be functionally equivalent to traditional TDM-based telephone service provided by authorized common carriers with respect to dialing, dial plan, call completion, carriage of signals and protocols, and loop voltage treatment. In addition, MFVN must provide a number of features, including 8 hours of standby power supply capacity for MFVN communications equipment located at the protected premise or field deployed and 24 hours of standby power supply capacity for MFVN communications equipment located at the communication service provider's central office. NFPA 72 also requires MFVN providers, when providing service to a new customer, to give notice to the customer of the need to have any connected alarm system tested by authorized fire alarm service personnel to make certain that all signal transmission features have remained operational, including the proper functioning of line seizure and the successful transmission of signals to the supervising station.³

It is not clear if any broadband networks and service providers provide a voice or data service that meets all of these standards throughout their networks. Most broadband service providers do not provide sufficient back up power at the customer premise and throughout their network to ensure operation during emergencies. For example, it is AICC's understanding that AT&T U-verse customer service equipment is provided with only four (4) hours of back-up power and not the required eight (8) hours of back-up power. Some broadband providers continue to unintentionally disconnect the customer's alarm system during the installation of

³ In addition to ensuring that life-saving functions are preserved, following these standards will ensure that millions of current users are not forced to incur costs to unnecessarily, and potentially inappropriately, change components and systems or amend personal utilization habits that have proven to be very reliable. Failing to do so threatens to impede the advancement of broadband as it may cause consumers to channel resources in an inefficient direction. Existing alarm systems work well now and will work well in the IP world if the standards are followed and provided broadband installers are trained to reinstall alarms and full functionality is tested.

broadband service, without providing notice to the customer that the customer should contact his or her alarm provider to ensure that the alarm system is made compatible with broadband services. Some IP-based services do not properly encode and decode alarm signals or may do so on an inconsistent basis. Some IP-based service providers have made changes to software or hardware that affect the proper transmission of alarm signals. For example, some IP-based broadband providers make periodic and sometimes automatic changes to various technical parameters of their service, like compression, without notification, which impacts the functioning of alarm services.

It is important to note that there are millions of installed alarm devices in homes and businesses that cannot automatically detect if the line seizure feature has been disconnected or bypassed or if alarm signals are not properly encoded or decoded. In this circumstance, the first time a customer may realize his or her alarm service is not working properly may be after an emergency because the appropriate emergency service personnel are not dispatched to the premise. Anytime an alarm customer's communication service is changed, the communications provider and its technicians must fulfill the notification obligation in NFPA 72, as it is critical to the lifesaving element of alarm systems.

However, it appears that broadband providers are capable of meeting these standards. For example, Verizon has represented to the FCC that they meet these standards in New York City. Therefore, regulation may be necessary to obtain compliance with these standards. And, the importance of meeting these standards would justify regulation.

Commercial Mobile Radio Service (CMRS) providers and Internet Service Providers (ISPs) also should comply with minimum backup power requirements, to ensure the reliability of

these networks and services. Specifically, every cell site in a CMRS system should have a mandatory eight (8) hours of power backup and every Internet Service Provider also should have a mandatory eight (8) hours of power backup.

With regard to other aspects of regulating telecommunications under the Communications Act, AICC has the following observations/requests:

- Competition in the provision of licensed wireless services is vital; but history has also shown that the availability of unlicensed spectrum has spawned a revolution in technology development that has significantly changed our professional and personal lives. Alarm service subscribers have benefited from this revolution, as the alarm industry has been able to develop dozens of technologies such as wireless cameras, window contacts, and panic buttons that provide enhanced capabilities at a reduced cost. Unlicensed devices can be deployed quickly and with a minimum of disturbance and/or impact to protected premises (which may include historic properties). A revised Communications Act should ensure that for most future spectrum allocations, a portion is set aside for addressing the exploding need for unlicensed spectrum. The FCC is to be credited with taking this approach in formulating the licensing scheme for the upcoming 600 MHz incentive auction, wherein the Commission has created certain guardbands that will help prevent interference in the case of full power broadband operations, but will also provide an opportunity for low power unlicensed operations.
- In addition, when an unlicensed allocation is made, it must be protected to the greatest extent possible against incursions by higher powered operations that can deprive the unlicensed band of its usefulness. When all unlicensed users play by the same rules, it is possible to have tens of millions of consumers utilizing devices ranging from baby monitors to garage door openers. If the rules are changed mid-stream, consumers suffer because they have spent billions of dollars investing in radios that can be compromised and must be replaced.

- In a similar vein, when a wireless common carrier provides a radio service that spawns the deployment of millions of devices by consumers and businesses, the Communications Act should ensure that any termination of the service will make reasonable accommodation for the transition of existing users without creating undue costs. With respect to the rollout of newer digital technologies, allowing wireless common carriers to shut down their older “2G” networks without sufficient guidelines and regulations to protect individuals and businesses who rely on these networks creates a problem for AICC and its members that is similar to the “AMPS” analog cellular shutdown several years ago. Allowing wireless common carriers to make a purely economic decision of whether and when to shut down their 2G wireless networks, without reasonable regulation to ensure adequate notice and transition rights to users (allowing for a reasonable opportunity to recoup costs) is not in the public interest. The same holds true for more advanced wireless networks that are being deployed now and in the future.
- In making future spectrum allocations, the FCC should ensure that some portion of at least one band suitable for higher powered land mobile voice and broadband be made available for quasi-safety entity use, by entities such as central station alarm companies and the FCC-designated Critical Infrastructure activities. As broadband capabilities develop, alarm companies need to be able to transmit video images to field personnel, armed guard responders, and public safety personnel. Other advanced capabilities are under development for the alarm industry, and no doubt for other Critical Infrastructure industries. Such entities may be able to gain maximum use of such spectrum through the use of cognitive radio and other advanced technologies to avoid interference.

Finally, to ensure the continued effectiveness of the alarm systems protecting millions of Americans, alarm data must be transmitted accurately and promptly from the end user premise to the central station along the entire communications path. Thus, it is vital that alarm data is not blocked or hindered by any communications service provider, including broadband Internet

access service providers and ISPs. Moreover, communications service providers (including broadband Internet access service providers and ISPs) should not be allowed to discriminate in favor of their own offerings over those of an unaffiliated provider.⁴ Further, communications providers should disclose information concerning their practices that would impact or interfere with the proper functioning of the end user customer's alarm system.

Respectfully submitted,

**ALARM INDUSTRY
COMMUNICATIONS COMMITTEE**

A handwritten signature in black ink that reads "Louis T. Fiore". The signature is written in a cursive, flowing style.

Louis T. Fiore, Chairman

⁴ It also is important during the transition to broadband that technicians installing broadband do not hinder the existing alarm system or use the service call as an opportunity to interfere with the customer's relationship with their existing alarm service provider. This would include a technician that renders the existing alarm inoperable, even accidentally, or who suggests that the existing alarm system is inoperable or inferior with a broadband connection. Such anticompetitive conduct should not be allowed.

Will Rinehart
Director of Technology and Innovation Policy
American Action Forum

A Framework to Reform FCC Competition Policy

The broadband market presents a series of regulatory challenges. Broadband competition is vigorous, facilities-based and intermodal; while the relevant law is largely siloed. While past regulatory choices have led to a robust broadband market, laws governing the communications and technology sector need modernization.¹

Three broad observations should be kept in mind when considering how to conceptualize competition. First, the technical features of the broadband market make onerous regulation unwise. Generally speaking, the Federal Communications Commission (FCC) should strive for regulatory humility, identifying damages only as they occur and imposing appropriate remedies. Second, broadband has flourished because it has been subject to light regulation and intermodal competition. As evidenced by speed increases, usage, and prices, both wireless and wired are competitive markets that in turn compete with each other. Third, any restructuring of the approach of the FCC should be consistent with these market dynamics, and should take a more comprehensive view that ensures the continued development of high speed Internet.

Principles to Guide Competition

Two features of broadband set it apart from other industries. First, convergence has fractured the traditional notion of “the” market. High speed Internet is only as useful as the applications that run on top of it, so what really makes the Internet useful is the ability to send email, watch videos, or make a voice call. As these applications proliferate and are substituted over various networks, they compete with each other in non-traditional ways. Advancements in voice communications recently put copper service in direct competition with voice-over-Internet protocol (VoIP) services and cellular. The change has been swift; since 2000, there has been a loss of nearly 100 million service lines.² As these kinds of substitutions continue in the future with different applications, competitive pressure will be placed on incumbents, which the legal regime should reflect.

Second, the development of Internet access infrastructure is best handled at the local level. No one is sure what form the Internet will take in the future and what works for the development of wireless in New York City cannot be similarly applied to wireline in Topeka. Prescriptive rules like network neutrality made in the name of competition are likely to distort market preferences, thus stunting development and leading to stranded investment.

¹ The House Energy and Commerce Committee decided to focus upon competition for one of its #CommActUpdate whitepapers.

² Craig Moffett, *The State of the Net: 2012*, Advisory Committee to the Congressional Internet Caucus, http://www.netcaucus.org/conference/2012/Bernstein_State_of_the_Net_2012.pdf.

The two features suggest that the best principle to guide decisions is regulatory humility. Regulators are simply not capable of knowing what the future will bring and what kind of competitive elements will enter the market to topple the next large player. When the Internet was privatized its initial growth was spurred. This approach was written into “A Framework for Global Electronic Commerce.” The government’s official position then, as it should be now, is that the private sector should be in the lead. Moreover, governments should avoid undue restrictions on electronic commerce by only getting involved in the market when needed to support and enforce a predictable, minimalist, legal environment.³

Two strands of regulatory humility are present in the Framework. Regulators need to be conscious that they do not lose sight of long-run goals by focusing on immediate solutions. In so doing, they will avoid politically contentious projects and extended regulatory costs that consumers ultimately bear. The current discussion surrounding broadband reclassification exemplifies this concern. In the desire to impose strict network neutrality rules, a chorus of voices has demanded that broadband be placed under Title II of the Telecommunications Act, which would subject these companies to common carrier regulation. Currently, broadband is regulated under Title I, which has far fewer price controls and requirements than Title II. This light touch approach has resulted in the vibrant broadband ecosystem we now enjoy. Notwithstanding the long protracted political fight that would take place, countless business contracts that were freely negotiated would have to be thrown out and settled again under the FCC’s rules if Title II were imposed. Additionally, the Google’s and Facebook’s of the world would be subject to telephone regulation, which could potentially make their current business model illegal. Title II reclassification is a short-term solution with serious long-term costs.

Another related but distinct form of regulatory humility involves the tendency to underappreciate markets. A widespread “tendency to underestimate the benefits of the market mechanism,” undervalues the role of competition and entry.⁴ Contrary to what many said at the time, the AOL-Time Warner merger never ended competition, simply because the winds of consumer preferences changed. It is a lesson in competition that the FCC needs to employ.

U.S. regulators should adopt a three-step analysis for competition policy and new regulations:

1. Prove the existence of market abuse or failure by documenting actual consumer harm, following the approach set by the Federal Trade Commission;
2. Explain that current law or rules are inadequate, and that no alternatives exist including market correctives, deregulatory efforts, or public/private partnerships to solve the market failure; and

³ *The Framework For Global Electronic Commerce*, The White House, <http://clinton4.nara.gov/WH/New/Commerce/read.html>.

⁴ Bryan Caplan, *The Myth of the Rational Voter*

3. Demonstrate how the benefits of regulation will outweigh the potential countervailing benefits, implementation costs and other associated regulatory burdens.

What the U.S. Gets Right with Broadband

Today, the United States ranks as the 10th fastest country in the world for wired broadband, up from a low of 15th fastest just two years ago.⁵ Even though it surpasses many European countries like the United Kingdom and Denmark, it still trails densely populated and urban countries like Japan and South Korea, who face much lower costs in connecting neighborhoods. Nevertheless, average speeds of fixed Internet broadband in America have ticked up by about 20 percent every year, according to the FCC.⁶

As of January 2013, 99.5 percent of Americans have access to some form of broadband including both wired and wireless options. When wired broadband is considered by itself, 90 percent of the population has access to a wireline technology with an excess of 10 Mbps download speed. Just under 18 percent of the population can hook into a super fast fiber network now, up from just 11 percent a couple years ago.⁷ While a lot of attention is paid to the largest firms, there are also nearly 2,000 providers of broadband service across the US.⁸ It is no surprise that the U.S. adds broadband subscribers at among the highest rates in the world and is faster on average than many similarly industrialized countries such as Canada, New Zealand, Austria, France and even Australia, which has dumped billions into a massive fiber project.⁹

While merger discussions between Comcast and Time Warner Cable have placed the focus on fiber, DSL still commands over a third of the fixed broadband market.¹⁰ DSL technologies being adopted now will give consumers faster speeds over a variety of networks, while AT&T's \$6 billion network upgrade will bring the entire telephone network onto the Internet. Even though there is widespread interest in the superfast speeds offered by Google Fiber and Verizon FiOS, a more practical and less costly upgrade for many Americans will be faster DSL. DSL is uniquely situated to serve consumers as it covers just shy of 90 percent of the households in the United States.¹¹ A Google announcement of a fiber project in Kansas City sparked a new wave of interest in fast broadband, and CenturyLink and AT&T have also entered into the fray with fiber projects.

⁵ Akamai's State of the Internet Q4 2013, Akamai, http://www.akamai.com/dl/akamai/akamai-soti-q413.pdf?WT.mc_id=soti_Q413.

⁶ *A Report on Consumer Wireline Broadband Performance in the U.S.*, Federal Communications Commission, <https://www.fcc.gov/measuring-broadband-america/2013/February>.

⁷ *Broadband Statistics Report Access to Broadband Technology by Speed*, National Broadband Map, <http://www.broadbandmap.gov/download/Technology%20by%20Speed.pdf>; Superfast here is 50 Mbps or more.

⁸ *Broadband Statistics Number of Providers by Speed Tier*, National Broadband Map, <http://www.broadbandmap.gov/download/Providers%20by%20Speed%20Tier.pdf>.

⁹ *Household Download Index*, Ookla, <http://netindex.com/download/allcountries/>

¹⁰ *Internet Access Service: Status as of December 31, 2012*, Federal Communications Communication, https://apps.fcc.gov/edocs_public/attachmatch/DOC-324884A1.pdf.

¹¹ National Broadband Plan, *Current State of the Broadband Ecosystem*, <http://download.broadband.gov/plan/national-broadband-plan-chapter-3-current-state-of-the-broadband-ecosystem.pdf>.

Compared to the Europeans, the U.S. tends to have cheaper broadband access on initial tiers below 12 Mbps, which helps to incentivize entry into the market.¹² However, U.S. broadband is more expensive for the higher speed tiers, which is consistent with the fact that the average U.S. user consumes double the data as her European counterpart.

The speed increases and cheap entry prices in turn are leading to the adoption of Internet video services. These are cannibalizing traditional TV and placing further demands on Internet providers to upgrade networks. One survey found that 23 percent of Netflix subscribers have canceled their premium TV service, which is reflected in subscriber losses.¹³ In 2013, cable companies lost 1.7 million video subscribers, while the telecommunications firms, Verizon and AT&T, picked up 1.4 million.¹⁴ Intermodal competition has been hugely successful as a *de facto* policy of the FCC. Both Verizon and AT&T have seen strong growth in their broadband services, suggesting that consumers are switching for bundled TV and Internet. The top five cable companies stand to lose around 10 percent of their customers to cord-cutting or carrier-switching in the next 12 months.¹⁵ While TV is seen as a separate market, it is clearly have an important competitive effect on broadband.

The wireless space is even more impressive. Last year alone, mobile data consumption grew 81 percent, while the speeds doubled.¹⁶ Texts, too, have become more commonplace, jumping over 1,100 percent in a four-year period from December 2005 to 2009. Spectrum auctions led to early adoption, putting the US on the top of the total global 4G connections with 23 percent. Additionally, U.S. mobile data traffic is projected to grow 3 times faster than U.S. fixed IP traffic from 2013 to 2018.¹⁷

The explosion in data use has been driven by the widespread adoption of the smartphone, which is probably the first technological adoption in history that has occurred on every continent simultaneously. The introduction of the iPhone didn't just usher in the current cutthroat handset market, it also upset a balance of power that favored the wireless carriers. Ubiquitous handsets and access to the pipes gave telecommunications firms the upper hand before the smartphone, but in a change of course ushered by Apple,

Carriers are learning that the right phone—even a pricey one—can win customers and bring in revenue. Now, in the pursuit of an Apple-like contract, every manufacturer is racing

¹² Christopher Yoo, *U.S. vs. European Broadband Deployment: What Do the Data Say?*

<https://www.law.upenn.edu/live/files/3352-us-vs-european-broadband-deployment>.

¹³ Erik Gruenwedel, *Survey: Nearly a Quarter of Netflix Subs Cancel Pay-TV Service*, Home Media Magazine, <http://www.homemediamagazine.com/netflix/survey-nearly-quarter-netflix-subs-cancel-pay-tv-service-29671>

¹⁴ Jon Brodtkin, *Comcast and Time Warner Cable lost 1.1 million video customers in 2013*, Ars Technica, <http://arstechnica.com/business/2014/03/comcast-and-time-warner-cable-lost-1-1-million-video-customers-in-2013/>.

¹⁵ Brian Fung, *'A soup of misery': Over half of people say they'd abandon their cable company, if only they could*, Washington Post, <http://www.washingtonpost.com/blogs/the-switch/wp/2014/06/06/a-soup-of-misery-over-half-of-people-say-theyd-abandon-their-cable-company-if-only-they-could/>.

¹⁶ Cisco, *Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2013–2018*, http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-520862.pdf.

¹⁷ Cisco, *VNI Forecast Highlights*, http://www.cisco.com/web/solutions/sp/vni/vni_forecast_highlights/index.html.

to create a phone that consumers will love, instead of one that the carriers approve of.¹⁸

For AT&T, the introduction of the iPhone was a game changer. From 2007 to 2010, data traffic increased over 8,000 percent, requiring vast upgrades in its network.¹⁹ The kind of investment needed to keep up with smartphone use is costly to be sure, but even as consumers have increased their use of data, prices have dropped. Wireless prices, according to the Bureau of Labor Statistics, are considerably lower than when collection began, which suggests that prices have dipped below inflation.²⁰

Taken together, prices have declined, handsets now have more technological features, and the quality of the networks has advanced. By conventional standards, the markets seemingly have become more concentrated. However, far from harming competition, consumers are clearly seeing huge improvements.

Because of the swift advances in technology, the smartphone has become the broadband choice for some. Half of cell Internet users ages 18-29 mostly use their cell phone to go online, forgoing either computers or tablets. Even the FCC noted in the 16th Wireless Report, that there is huge potential in smartphones,

Mobile wireless Internet access service could provide an alternative to wireline service for consumers who are willing to trade speed for mobility, as well as consumers who are relatively indifferent with regard to the attributes, performance, and pricing of mobile and fixed platforms.

As speed ticks up and the applications continue to flourish, the differences between fixed and wireless broadband will diminish considerably, leading to even more substitution between them and even more competitive pressure.

Putting Together the Pieces for Regulatory Reform

The past two decades have been a time of immense change for the Internet ecosystem: intermodal rivalry between cable and telecommunications stretching across both TV and broadband, the rise of content owners over the net, new business constraints on wireless carriers, and substitution between fixed and wireless have all placed new competitive pressures on these industries. Definitions of competition need to incorporate these changes, by considering more carefully technology substitution and quality changes.

The lighter touch regime afforded to broadband companies under Title I has been part of the reason

¹⁸ Fred Vogelstein, *Weapon of Mass Disruption*, WIRED, <http://www.wired.com/images/press/pdf/wmd.pdf>

¹⁹ Marguerite Reardon, *Is AT&T considering throttling heavy data users?*, CNET, http://news.cnet.com/8301-30686_3-20085179-266/is-at-t-considering-throttling-heavy-data-users/.

²⁰ *Databases, Tables & Calculations by Subject*, Bureau of Labor Statistics, <http://data.bls.gov/timeseries/PCU517210517210>.

for the rapid deployment of these networked technologies. In contrast, the old regulatory style of Title II is exactly the wrong option. AT&T's multiyear process in upgrading their old telephone networks to an Internet based architecture exemplifies just how problematic Title II regulation is. While changes have been made throughout the AT&T networks, the end mile that is heavily regulated is still on legacy technology, some of which has not been manufactured in decades. Ensuring that consumer continue to get benefits requires that we reconsider the title classification system. This means that we should pursue technology neutral regulation that sees the market as converged and regulates after harms occur. Clearly, then we are talking about moving the FCC to an enforcement role.

Moving in this direction presents its own set of challenges, namely, that the FCC operates in the "public interest, convenience and necessity." This phrase, which was never meant to have the power that it does, has never been defined in its 70 some years of use and has been the subject of much debate. Moving away from this standard to something more like the Federal Trade Commission's consumer harm standard would be preferable, however it would create duplicative regulatory agencies. Thus, it begs a bigger question: What exactly should be the FCC's role in the future?

Some have suggested that the FCC be folded into the FTC.²¹ Even though it would be a laborious task, the current competitive environment requires fresh thinking. The Spectrum functions could be handed off to the National Telecommunications Information Agency (NTIA). Public safety concerns could be housed under the Department of Homeland Security, while the Universal Service Fund could be transferred to the Department of Education. Such a move should be an option on the table. At the end of the day, consumer harm is the standard by which we need to gauge business actions, not the public interest. The FTC has a long legal history of this and a bureau dedicated to economic understandings to back up their work.

A clear example of the difference in approaches is the issue of network neutrality. While the FCC has spent nearly a decade trying to grab power to regulate, the FTC instead,

...Recommends that policy makers precede with caution in the evolving, dynamic industry of broadband Internet access, which generally is moving toward more – not less – competition. In the absence of significant market failure or demonstrated consumer harm, policy makers should be particularly hesitant to enact new regulation in this area.²²

Simply put, network neutrality threatens to derail investment all in the name of public interest.

Considering that a merger between the agencies is unlikely for political reasons, the Commission

²¹ Richard Bennett, Jeffrey A Eisenach, et al, *Comments on Communications Act Modernization, Social Science Research Network*, http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2388723.

²² *Broadband Connectivity Competition Policy*, Federal Trade Commission, <http://www.ftc.gov/sites/default/files/documents/reports/broadband-connectivity-competition-policy/v070000report.pdf>.

would benefit from adopting a multi-stakeholder approach to broadband problems. In his dissent of the most recent network neutrality rules, Commissioner McDowell explored the general layout of such a program,

In lieu of new rules, which will be tied up in court for years, the FCC could create a new role for itself by partnering with already established, nongovernmental Internet governance groups, engineers, consumer groups, academics, economists, antitrust experts, consumer protection agencies, industry associations, and others to spotlight allegations of anticompetitive conduct in the broadband market, and work together to resolve them. Since it was privatized, Internet governance has always been based on a foundation of bottom-up collaboration and cooperation rather than top-down regulation. This truly 'light touch' approach has created a near-perfect track record of resolving Internet management conflicts without government intervention.²³

In leading this way, the FCC could more efficiently solve the problems that afflict consumers. It would also provide guidance for future developments and bring together the FCC and the FTC to stand as the US government's unified voice on technology regulation.

Conclusion

Three broad themes provide an intellectual grounding to make sound policy in the coming years. First, broadband is a quickly changing market, which makes onerous regulation unwise. We should be agnostic about how these networks develop because no one is sure what the Internet should look like. Thus, the Commission should strive for regulatory humility and regulate after problems occur. Second, the market has flourished due to intense intermodal competition and smart regulatory practices, as evidence by the prices, speeds and quality increases. This light touch legal regime needs to continue in the future. Third, any restructuring of the FCC should be consistent with these market dynamics to ensure the continued development of high speed Internet. The FCC has the power to move huge network industries with their regulatory regime. Time has shown that when they keep their hands off and let consumers decide, everyone wins. When the Communications Act is updated, it needs to incorporate these lessons.

²³ Dissenting Statement of Commissioner Robert M. McDowell, *Preserving the Open Internet*, GN Docket No. 09-191; *Broadband Industry Practices*, WC Docket No. 07-52; Report & Order, FCC 10-201

June 12, 2014

Representatives Greg Walden and Fred Upton

House of Representatives

Congress of the United States of America

Washington, DC

Re: Communications Act Update

Dear Representatives Upton and Walden,

This letter comes as part of the process to support your effort to reform the Communications Act. My colleagues and I are academic researchers at KTH School of Information and Communication Technology & Wireless@KTH (one of the world's leading research centers in wireless communications <http://wireless.kth.se/>), and department of Industrial Economics and Management at KTH, the Royal Institute of Technology, Stockholm, Sweden. KTH was founded in 1827 as Sweden's first polytechnic and is one of Scandinavia's largest institutions of higher education in technology.

Application programming interfaces or APIs are gateways to software and computer systems to tap functionality and intelligence among databases. There are a set of APIs related to the data in telecom operators' wireless networks. Operators expose this data to third party developers so they can build useful applications. Some of the most popular API are for mobile payments.

Payments APIs allows a third party to charge a purchase to the user's subscription. Application developers can leverage operators' existing relationships and payment credentials with their customers. Startups don't need to invest in costly, cumbersome billing systems, and users don't have to re-enter their payment information. Such functionality is particularly demanded in the Android operating environment where there is not a standard billing solution as is available in iTunes. It is also desirable in online payment environments as an alternative to using credit cards.

Mobile payments can be found in different forms around the world. For example, the operator Telefonica focuses on mobile billing and aims to compete with established credit card companies and banks. AT&T in the US offers mobile payments on phones and tablets, allowing third parties to sell premium content and subscriptions directly within their applications and charge them to their mobile subscriptions. Mobile business models are extant across Africa, as telecommunications has substituted for a nonexistent banking sector.

What the U.S. can learn from mobile payment in Sweden

A lesson from the world of mobile payments may be illustrative for the Communications Act update.

Sweden, like the US, is a country with high mobile penetration. Mobile payment has existed as a form payment since at least 2007. It as seen as a business opportunity for mobile providers to transfer payments of small amounts (less than \$10) or micro-payments. In 2012 the EU released the Payment Service Directive (PSD) stating that the mobile operators cannot handle payments and transactions for non-telecom services without being a payment providers. This means that mobile operators need a banking license [1,2]. In addition, payment providers need to know the identity of users making mobile payment transactions.

Users were dissatisfied with a need to provide personal data. Some became reluctant to use mobile wallets. This added to users' frustration with the imperfect design of mobile wallets.

Today mobile operators have lost an opportunity to participate in the mobile payments market market. Usage of services based on premium SMS has decreased dramatically. This has also had ripple effect on other areas of the economy. Consider the non-profit organization Red Cross, which lost some 95% of revenue it had earlier received as donation through mobile payments [1].

While the EU directive may have been made with good intentions in mind (e.g. protecting consumers and deterring money laundering), it effectively obliterated a new innovation by mobile providers.

The experience suggests that rather than make burdensome obligations outright, it is better to wait to see whether there is harm before applying the rule.

Additionally there is little evidence that mobile payments, essentially micro-payments, are used for money-laundering. As for personal authority, should authorities need users' identity, they can obtain it from the mobile operator.

It is a missed opportunity for innovation in Sweden because banks are often too big and reluctant to try new services. They don't see the business opportunity in the same way as a mobile operator or other entrepreneur.

The additional requirement of a banking license has been another deterrent. Mobile operators either need to partner with bank or pay for the license outright. This adds unnecessary complexity. In the case of partnership with banks, there is a risk that the parties can't agree how to share revenues and risks and what value each party brings.

The references attached provide further explanation.

In summary the message for the Committee is that that any new Communications Act needs to needs to have the flexibility to allow new innovations to emerge and new parties to experiment with services and business models. In fact, business models are themselves a form of innovation. It is important for Congress to understand that any efforts to outlaw business models outright can have negative impacts on the innovation ecosystem. Mobile payment, in order to go forward, needs to overcome a number of barriers, not just users who are unfamiliar with paying with a mobile phone but the established banking infrastructure, which may resent a new competitor entering the market. Partnering with communications providers is one of the most important and effective ways to introduce this new method of payment. As such rather than regulate things that have not been tried (and speculate to the outcome), it is better to allow the model in the market. Should abuses happen, then employ a robust regime of competition law and antitrust that uses evidenced-investigation to address problems.

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2. Tatjana Apanasevic, Jan Markendahl and Niklas Arvidsson, 2013. An exploratory study of consumer attitudes towards mobile ticketing in Sweden. *24th European Regional Conference of the International Telecommunications Society (ICT)*, Florence, Italy, 20 - 23 October 2013. [online] Available at <http://wireless.kth.se/wp-content/uploads/2013/12/Apanasevic_Markendahl_Arvidsson_Exploratory_Study_of_Consumer_Attitudes_Towards_Mobile_Ticketing_in_Sweden.pdf>



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June 13, 2014

Honorable Fred Upton
Chair
Committee on Energy & Commerce
U.S. House of Representatives
Washington, DC 20515

Honorable Henry Waxman
Ranking Member
Committee on Energy & Commerce
U.S. House of Representatives
Washington, DC 20515

**Re: Comments to Committee on Energy & Commerce White Paper –
“Competition Policy and the Role of the Federal Communications
Commission”**

Dear Chairman Upton and Ranking Member Waxman:

On behalf of AT&T Services, Inc., I am pleased to submit our comments to the Committee on Energy & Commerce’s White Paper – “Competition Policy and the Role of the Federal Communications Commission”. We appreciate the Committee taking on this important effort. We look forward to working with the Committee as this process moves forward.

Sincerely,

Competition Policy and the Role of the Federal Communications Commission
House Committee on Energy & Commerce
June 13, 2014

AT&T welcomes the opportunity to address the Committee's questions about the approach that Congress should take toward competition policy in reforming the Communications Act.

As the Committee notes in its most recent White Paper, the broader market for information and communications technology products and services has become intensely competitive and involves a wide variety of players. For their communications needs, consumers can choose between, for example, VOIP service from either a cable company, a telco, broadband service provider, wireless service, over-the-top services such as Vonage, Skype or Google Voice carried on the wireline or wireless networks, carrier-provided SMS service, over-the-top text services, video SMS, Facebook messaging, G-chat. The list seems to grow by the month. Conversely, the number of consumers choosing legacy circuit switched voice service is dwindling every month, if not every day.¹ The market for video services/applications is similarly crowded, competitive and rapidly evolving. Moreover, companies once operating in only one part of the industry have crossed over into other, formerly discrete markets. Cable companies offer voice service; telcos offer video service over wireless and wireline platforms; Google is becoming a broadband provider; and Apple has built its own SMS platform. Online, over-the-top ("OTT") video providers such as Netflix, Amazon, Google, and Hulu offer consumers access to video content delivered over broadband networks as a complement, and increasingly a substitute, for traditional video service.

In approaching this broad and multi-layered competitive landscape, AT&T respectfully suggests that Congress act with great caution in conferring regulatory authority for the future, especially any economic regulation that relies on a sector specific perspective on competition. Robustly functioning competitive markets need little regulation to function efficiently and to maximize consumer welfare. Indeed, government intervention in such markets in the name of competition policy is significantly more likely to reduce than to enhance efficiency and consumer welfare. Accordingly, AT&T suggests that three over-arching considerations should guide this examination of how best to further competition policy through the Communications Act.

- First, Congress should take a green-field approach to promoting competition by statute. Legacy justifications for regulation and distinctions between industry players should be rejected wholesale. In determining whether and how to intervene in the information and communications market, Congress should approach its task as if it were addressing the market for the first time, because today's information and communications marketplace

¹ *cf* AT&T's Annual Reports for 2013 and 2006 reporting data as of 12/31. Per the 2013 report, total switched access lines (including wholesale) were 24.6 million. Consumer retail switched access lines were 12.4 million. In 2006, total switched access lines were 66.5 million, and consumer retail switched access lines were 37.1 million.

bears little or no meaningful resemblance to the single service, technologically-siloed markets assumed under the previous regulatory model.

- Second, the main goal of this rewrite should be to promote innovation and investment. A new Communications Act should recognize that sustainable competition is most likely to develop if market participants are free to invest and innovate to meet consumer demand. Regulatory intervention is appropriate only in the event of a highly significant and durable market failure and any such intervention should be limited to the minimum necessary to address that failure without harming investment and innovation. If a market is characterized by innovation, robust competition and multiple participants making significant investment, Congress should trust market dynamics to promote consumer welfare, rather than attempting to micromanage competition. The areas of greatest economic growth and consumer benefit in recent years have been the portions of the broader communication and information market in which Congress and the FCC have abstained from significant regulation.
- Third, in those instances where regulatory intervention may be justified, Congress should take, as the first option, an adjudicatory, rather than a rule-making approach to the task. The pace of change and innovation in today's information and communications market is much faster than any government regulator can hope to match. A regulatory model that relies on prescriptive rule-making is destined to retard innovation and harm investment. An adjudicatory model can better respond to problems that may arise in a more targeted fashion, without sapping incentives for investment and restricting innovation in an attempt to force the market to develop along a regulator's pre-conceived pathways.

1. How should Congress define competition in the modern communications marketplace? How can we ensure that this definition is flexible enough to accommodate this rapidly changing industry?

In examining competition in the modern communications and information marketplace, Congress should consider the ecosystem as a whole, rather than attempting to divide it into multiple, discrete markets for particular inputs. This approach is compelled by the rapid pace of change in the market and the speed with which players are continually evolving their business models to meet new challenges and take advantage of new opportunities. The nation's information and communications landscape is no longer characterized by companies that operate within a single, narrow field of operations and can therefore be effectively regulated as a single input. New competitors enter markets directly or indirectly as broadband IP platforms enable an ecosystem of horizontal and vertical competition. Moreover, the threat of new competitors devising a better and cheaper way to provide not just the same service, but a new service that makes the existing one quickly irrelevant, is a constant competitive factor. As we note above, today's market players are continually innovating and working to expand their operations to meet the next market opportunity – or the next competitive challenge. Comcast moved into content with its acquisition of NBC-Universal. Microsoft has moved beyond its original work on desktop operating systems to provide cloud services and a mobile operating system. Verizon, AT&T and other telephone companies have rolled out competitive alternatives to traditional cable video service in parts of the country, while OTT providers of video services, like Netflix and Hulu, also continue to grow rapidly. In turn, cable operators have moved into wireline voice, data services and mobile wireless services through their Wi-Fi offerings. Google has

deployed an ultra high-speed broadband network, which it also offers with a multichannel video product, in Kansas City, with plans to expand to Provo, Austin and up to 34 additional cities in nine metro areas. Device manufacturers now operate their own communications platforms, and Amazon, which started as an online shopping portal, now operates significant portions of the cloud infrastructure and offers its own extensive, over-the-top video service. DISH, traditionally a DBS video provider, has invested heavily in wireless spectrum in order to offer mobile broadband services.

In this competitive ecosystem, the legacy roles of different companies have become irrelevant. The enterprises that operate in the information and communications space work in numerous different lines of business and face different, committed and powerful competitors in their various endeavors. When addressing such a dynamic, competitive sector of the economy, Congress and the FCC should intervene in the name of competition only in the event of a serious and durable market failure. This is not a space in which policy makers should indulge in regulatory intervention in an attempt to achieve a preferred outcome. Rather, it is an ecosystem in which market dynamics should be left to sort themselves out. Innovation and competition, tempered only by the judicious application of antitrust principles in the event of a market failure, is the surest path to creating and maintaining consumer welfare and economic growth.

It is inconceivable that regulators in the 1990's could have foreseen and guided the market toward the immense consumer benefits that the internet and mobile services have created by 2014. These technologies saw their full potential because of the light-touch regulation to which they were subject and because of the massive investment that it created. So today, policy makers and regulators should step back and resist the temptation to employ regulation to attempt what they consider to be improvements or to achieve their personal visions of a different competitive market.

Even in the area of last-mile connectivity, it is vital to create this hands-off mindset. Consumers are connecting to networks by an increasing variety of different technologies. In addition to cable and wireline platforms, fixed and mobile wireless connectivity over multiple, competitive 4G LTE networks provides consumers with another route to their internet experience. Wi-Fi and other unlicensed networks are also seeing significant increases in the both the numbers of users and the amount of data they consume. This is emphatically not an instance of market failure. In the face of this evolving competitive landscape, regulatory intervention would be no more justified with respect to network connectivity than it would be with respect to the mobile operating systems or cloud services that are evolving in the same space.

Accordingly, it is of paramount importance that policy makers reject the legacy, utility-based regulatory mindset and approach this rewrite of the Communications Act as if they were writing on a blank slate. The goal should be to avoid interfering with the virtuous cycle of innovation, investment and competition that characterizes the broader information and communications market, rather than continuing a regulatory structure based on monopoly markets that no longer exist. Examine the market as it exists today, without the preconceived notions that are a hold-over from the days of monopoly regulation or managed competition. Today's market no longer has monopoly providers and prescriptive economic regulation will

only harm the robust and dynamic innovation and competition that characterizes this broader market.

Competition should be analyzed in the broader information and communications ecosystem as it is in every other sector of the economy. That said, traditional tools, such as market definition and market structure, are of much less use in this space.² The rapid pace of technological innovation as well as product and service innovation, the tremendous rates of increase in output and consumption, the precipitous and continuing declines in quality-adjusted unit prices for data, these are all in evidence and are hallmarks of robustly competitive markets. They also confound efforts to impose concrete market definitions. New entrants continue to arrive, older participants, like Comcast, Microsoft and Google, continue to adjust the products and services they offer. Over the top video competes with both broadcast TV and with more traditional subscription video from fixed platforms like cable and IP and satellite. Operating systems from Google and Apple have disproven the assumptions of the past-- that Microsoft's overwhelming market share would confer market power. The broader market is incredibly dynamic, with innovation disrupting and reshaping it day by day. Market structure is likely to be difficult to define, and in any event, less reliable in measuring competition, than more direct evidence of disruptive innovation in technologies, products and services, and the rates of change in output, consumption, and pricing.

2. What principles should form the basis of competition policy in the oversight of the modern communications ecosystem?

Policies that promote continued investment and rapid innovation will lead most directly and reliably to continued, intense competition in the information and communications market, and the immense consumer benefit that it engenders. Recent market history teaches this lesson with abundant clarity. Broadband, wireless services and the internet ecosystem more generally have mushroomed over the last 15 years, reaching levels of penetration and consumer adoption more quickly than could possibly have been foreseen in the early 1990's. This rapid growth was due in significant part to regulatory restraint. At virtually each turn, policy makers wisely stood back, allowing the market to develop so as to satisfy consumer demand. Indeed, significant portions of the ecosystem, such as operating systems, search engines, content delivery networks, were beyond the scope of the FCC's authority to regulate. This in turn led to unparalleled private sector investment and innovation both by players providing and using telecommunications services. AT&T alone has invested in the neighborhood of \$20 billion annually in its next generation networks for the last several years.

² It should be noted that market concentration is often mistakenly assumed to be a measure of market competition. This is incorrect. It is merely a tool that is often used to determine whether a market may require further analysis. Relatively unconcentrated markets can be less than effectively competitive, particularly if they are subject to cartel behavior or participants are unable to achieve sufficient scale to operate efficiently. Moreover, markets with relatively few participants may be highly competitive, particularly in markets characterized by scale economies and network effects, like the information and communications ecosystem. Given the difficulty inherent in defining a market precisely in the case of the information and communications ecosystem, and the abundance of facts regarding rapid innovation, increasing output and declining unit prices, all of which indicate robust competition, it would be particularly misleading in this instance to attempt to use any estimate of market concentration as a rough measure of competition.

Directly benefitting from these huge investments in new broadband platforms have been a host of new services and applications, developed by a wide array of technology companies. For example, Netflix and Hulu have fundamentally redefined how the nation consumes video entertainment. Social networks, over-the-top video-calling and texting platforms, innovative cloud services and numerous, web-based gaming options have revolutionized how we spend our free time, stay in touch and organize our lives. These are the direct, competitive benefits of light-touch regulation.

By contrast, the wireline, circuit-switched voice network, a remaining province of significant regulation, has been progressively withering with each passing year, losing subscribers to a variety of newer technologies. In many areas, AT&T's circuit-switched voice subscribership has dropped below 30 percent of the residential market. Far from creating incentives for innovation and investment, the regulatory model applicable to this aging technology merely serves as an impediment to progress in next generation products and services, requiring the continued devotion of significant resources to support a diminishing customer base and a fading technology platform. With its heavy regulation and government-directed allocation of private capital, this sphere is the antithesis of the model that policy makers should pursue to drive development of innovative services for the future.

3. How should intermodal competition factor into an analysis of competition in the communications market?

In many respects, AT&T submits that inquiring about intermodal competition is asking the wrong question and runs the risk of trapping this rewrite effort in yesterday's model of regulated, monopoly providers. Intermodal competition was an important concept that recognized, in the 1990's, that cable providers were moving into markets that had previously been the exclusive province of wireline providers. As cable companies began to offer broadband services, they presented an intermodal challenge to wireline providers' DSL services. But the notion of distinguishing intermodal competition as something different from the broader information and communications marketplace is firmly rooted in a world in which monopoly providers have a lock on last-mile access to subscribers. Moreover, the very term "intermodal" suggests static market definitions of separate phone, cable and wireless markets—market definitions that are not accurate or helpful in analyzing competition today.

As we have described above, today's information and communications market is dramatically more dynamic and involves multiple broadband platforms and numerous providers competing across various dimensions of a broader market, a market that is characterized most importantly by the rapid appearance of disruptive technologies. Policy makers are no longer justified in looking only at traditional, "last-mile" providers as a focus for regulation. Such providers of network connectivity compete to offer only one input into the broader market for consumer information and communications services. As such, it is no more worthy of regulation in the name of competition than are search engines, or mobile operating systems – both of which are dominated by a small number of providers with huge global market shares.

Accordingly, the notion of "intermodal competition," with its last-mile focus misses the boat. The relevant inquiry for competition policy is whether, in any portion of the information

and communication market, there is a legitimate market failure. Only then would regulatory intervention be appropriate.

4. Some have suggested that the FCC be transitioned to an enforcement agency, along the lines of the operation of the Federal Trade Commission, rather than use broad rulemaking authority to set rules a priori. What role should the FCC play in competition policy?

As AT&T indicated in comments to the Committee's first White Paper, to the extent that the Commission takes a role in competition policy, AT&T firmly supports transitioning much of FCC's work to the enforcement or adjudicatory model that the Federal Trade Commission employs. Intervening in a competitive market through prescriptive, economic rulemaking distorts competition and runs a serious risk of suppressing investment and stifling innovation.

Questions 5, 6 and 7 inquire about the effect of intermodal competition on the FCC's jurisdiction, spectrum policy and the agency's merger-review function. As we outline above, AT&T believes that the term "intermodal competition" assumes static, narrow, technology-specific market definitions that are not accurate or useful for purposes of analyzing competition in the broader information and communications market. Not only does attempting to measure competition or impose regulation on each separate "mode" of technology no longer make sense, the notion of separately focusing on "intermodal" competition between last mile providers no longer has relevance in today's marketplace. The type of competition that exists today in the market for information and communications services goes well beyond the last-mile space connoted by that phrase. It extends to cloud services, mobile handsets, mobile operating systems, search engines and the nearly infinite variety of applications – many yet to be conceived – that will further disrupt the marketplace and gain market share over the coming years.

This intense competition, across multiple dimensions of the information and communications market, calls for a significantly diminished role for the FCC across many of its previous functions. As we have stated before, given that regulation has its own costs, regulatory intervention is appropriate only in the case of a serious market failure – not a potential failure and not as a means by which an agency can micromanage competition in the manner that the agency would prefer.

As we have stated, such regulatory intervention should be adjudicatory in nature, rather than prescriptive, guided by the application of antitrust principles. Private plaintiffs can, of course, bring actions under the antitrust laws to serve this function. Moreover, the Department of Justice and the Federal Trade Commission are the expert competition policy agencies, and it would likely be most efficient to reserve questions of whether a market failure exists and whether regulatory intervention is therefore needed to protect competition to these agencies alone. This would avoid the problems that arise today from the fact that some participants in this market—those who own facilities subject to traditional FCC regulation, are subject to FCC jurisdiction, while many of their competitors are not. The antitrust laws are not only sufficient to protect competition, they apply to all market participants.

The FCC's most important role in competition policy should be to continue to foster competition by ensuring an adequate supply of spectrum, both licensed and unlicensed, protecting spectrum users from harmful interference, and adopting methods of allocation and assignment that allow competition to assign spectrum to its best and highest use. Market participants, both consumers and providers, increasingly rely on access to radio spectrum to move information, from device to device, and from devices to networks, and between and within networks. This includes large satellite providers, fixed wireless ISPs, commercial video and audio broadcasters, commercial mobile services providers, providers of microwave transport, unlicensed network access points, wireless microphones, medical telemetry, security systems, and other applications. The information and communications ecosystem is increasingly relying on spectrum, as consumers demand mobile, wireless access anytime and anywhere.

Congress and the Commission have worked successfully to ensure that the supply of licensed and unlicensed spectrum is allocated and reallocated to adjust to market realities. First Congress has given the Commission the authority (and obligation) to assign licenses through the application of market forces—through competitive bidding in open auctions. Spectrum has been reallocated from federal to commercial use when necessary such as in the PCS, AWS-1 and now AWS-3 bands. Moreover, Congress recently adopted, and the FCC is implementing, an innovative new way to reallocate spectrum, through the creation of a voluntary incentive auction that will harness market forces to reallocate UHF-TV spectrum for commercial broadband use. Innovative secondary market rules have facilitated the transfer and leasing of spectrum rights among private parties, to promote competition and increase spectrum utilization and efficiency. Moreover, Congress and the Commission have also spurred innovation and competition by making satellite spectrum available for video and audio providers like DISH, Direct TV and SiriusXM, and by allocating unlicensed spectrum that spawned WiFi, Bluetooth, RFID, cordless phones, garage door openers, and wireless internet access networks provided by WISPs. The Commission is currently moving to make substantial additional unlicensed spectrum available to innovators in the 3.5 GHz and 5 GHz bands. These policies, which favor exclusive, licensed allocation in the bands below 3 GHz, and unlicensed and shared uses in the bands above 3 GHz, have served to foster a robustly competitive and innovating wireless ecosystem in the U.S. that leads the world.

The FCC also protects competition by allowing for flexible use of licensed spectrum, adopting rules that protect users of spectrum from harmful interference, and device certification rules that require wireless device makers, makers of wireless networking equipment and others to certify equipment, but afford all participants in the wireless ecosystem the widest possible latitude to innovate, to work through private industry organizations to set standards that incent investment and result in efficiencies while pushing the edge of technological advancement. Historically, the FCC has struck a good balance, effectively protecting against interference while preserving to the greatest extent possible, the space needed for innovation.

Spectrum policy is the single most important role that the Commission should play in fostering and protecting competition in the broader information and communications ecosystem. It should continue to ensure that an adequate supply of both exclusively licensed and unlicensed spectrum is available. It should continue to adopt rules that protect spectrum users from harmful interference but that allow for flexible use. Moreover, it must ensure that spectrum is put to its

best and highest use by allowing competition, in the form of open auctions and secondary market transactions, to efficiently allocate spectrum. Congress also will need to continue to play an important role in ensuring an adequate supply of spectrum. But Congress also should be vigilant to ensure that spectrum policy, which should foster and protect competition, does not become a backdoor method by which prescriptive economic regulation is imposed on a portion of the ecosystem, distorting competition and inhibiting investment and innovation.

With respect to merger review, AT&T submits that the sole appropriate inquiry is one based on antitrust principles. This type of review should fall exclusively in the jurisdiction of the Justice Department or the FTC, whichever agency is tasked with reviewing a particular transaction under the applicable rules. In the market of such intense competition – which necessarily redounds to the benefit of the consuming public – there is no longer any legitimate place for the FCC’s separate public interest standard review. It is the settled national policy that competition is in the public interest. The very purpose of the antitrust laws is to protect and preserve competition. Thus, in a robustly competitive industry such as this, a transaction that is not harmful to competition is, by definition, not contrary to the public interest.

Questions 9 and 10 inquire about how to future-proof the Communications Act, how to keep it relevant in the face of the massive and unforeseen market changes that likely will continue to buffet this space.

AT&T offers a few considerations that could help in this regard:

Adjudicatory model: As noted above, the FCC could be changed to a largely adjudicatory, rather than rule-making agency. This has the benefit of avoiding ex-ante regulation, which can stifle innovation and investment, in favor of allowing innovation and competition to shape the market, along the path that best benefits consumers, rather than imposing particular regulators’ views of how the market should look.

Periodic Reexamination: Any FCC rules, whether already existing or adopted in the future, should be subject to some sort of period reexamination and required rejustification. An important part of this rejustification should be a rigorous cost-benefit analysis. The reexamination process could be housed in the Government Accountability Office, which routinely engages in thorough, non-partisan research and economic analysis. Alternatively, the FCC itself could be charged with the reexamination process. However, in the event that the FCC rejustifies its rules, the cost-benefit analysis should be subject to thorough review by the Office of Management and Budget, as is currently required for executive agency rules.

**American Television Alliance
Comments on House Energy and Commerce Committee
White Paper of May 19, 2014**

I. Introduction

The American Television Alliance (“ATVA”)¹ appreciates the opportunity to respond to the Committee’s white paper on “Competition Policy and the Role of the Federal Communications Commission.”² These comments focus solely on retransmission consent, a monopoly right created by Congress in 1992 that has failed to keep pace with the many changes to the video programming marketplace in the decades since its enactment. The current market for retransmission consent is broken, as evidenced by the soaring costs of retransmission consent agreements and the increasing frequency of “retrans” blackouts.

The Competition Policy White Paper calls into question the “monopolistic assumptions” on which the current Communications Act is based.³ ATVA submits these comments to highlight merely one of the monopolistic assumptions that can no longer bear the weight of the current retransmission consent regime: the assumption that the geographic exclusivity system for the four broadcast networks serves the public interest. It does not, and its disservice to the public is becoming all the greater as broadcasters increasingly flex their monopolistic muscles in retransmission consent negotiations. The result: exponentially higher fees and a greater number of service interruptions.

This problem calls for immediate retransmission consent reform. Measures such as expanding and clarifying good faith negotiation requirements, requiring *bona fide* offers for standalone carriage of broadcast stations, eliminating the “must buy” requirement, and prohibiting joint negotiation among unaffiliated stations would curtail broadcasters’ abuse of

¹ ATVA Membership: The Africa Channel, American Cable Association, American Public Power Association (APPA), BendBroadband, Bright House Networks, Cablevision Systems Corp., CenturyLink, Charter Communications, Comporium, DIRECTV, Discovery Communications, DISH Network, Eastern Rural Telecom Association, GMC, Harron Communications, The Independent Telephone and Telecommunications Alliance, Massillon Cable TV, Mediacom Communications, Midcontinent Communications, New America Foundation, NTCA – The Rural Broadband Association, Outdoor Channel, Parents Television Council, Public Knowledge, Retirement Living TV, Rural Independent Competitive Alliance, NUVOtv, Starz Entertainment, Suddenlink Communications, Time Warner Cable, USTelecom, Verizon, and Wave Broadband and Astound Broadband.

² House Energy and Commerce Committee, “Competition Policy and the Role of the Federal Communications Commission,” May 19, 2014 (*available at* <http://energycommerce.house.gov/sites/republicans.energycommerce.house.gov/files/analysis/CommActUpdate/20140519WhitePaper-Competition.pdf>) (“Competition Policy White Paper”).

³ *Id.* at 3.

market power in retransmission consent negotiations. In a more holistic approach, Congress should make broadcasters accountable and responsive to competitive forces within DMAs and encourage competition between affiliates of the same network.

II. Retransmission consent has become an artificial monopoly that harms competition and consumers

The Committee has asked “[w]hat principles should form the basis of competition policy in the oversight of the modern communications ecosystem[.]”⁴ One basic, unremarkable principle is that the laws and regulations that govern the communications ecosystem should neither create nor preserve artificial monopolies.

Much to the detriment of consumers and competition, the current retransmission consent marketplace is wholly at odds with this simple principle. Rules barring the importation of the distant signal of a broadcast station into markets where a local affiliate of the same station is available insulate the local affiliate from competition. Other statutory provisions reinforce local affiliates’ monopoly power by requiring cable and telco operators to place all broadcast signals on the basic, most widely distributed tier of service.⁵ Leveraging these regulatory barriers to competition, television networks and broadcast stations have engineered a network franchising system that further insulates local broadcast stations from market forces. Affiliation agreements give television broadcast stations territorial exclusivity and near-complete protection from competition because, in that local market, there is no alternate source for the programming of each national network.

The exercise of monopoly power by local broadcasters has led to a stunning extent of rent seeking and consumer harm. Broadcasters’ ability to play multichannel video programming distributors (“MVPDs” or “distributors”) off against one another, while facing no competition themselves, has led to unchecked increases in retransmission consent fees. In 2009, distributors spent \$758 million in retransmission consent fees. This year, the tab will reach \$7.6 billion, an increase of more than 1000 percent. In addition to hikes in retransmission consent fees, some broadcasters also leverage their market power to demand product-tying arrangements (i.e., channel bundling) that require carriage of unpopular non-broadcast programming as additional compensation for retransmission consent which also squeezes out independent programmers.

Spiraling costs and the lack of marketplace alternatives for “must have” programming allow broadcasters to engage in brinkmanship negotiating tactics that harms consumers. In 2010, there were only 12 service disruptions due to retransmission consent disputes. The number of “retrans” blackouts reached 51 in 2011 and 96 in 2012. Last year, broadcasters reached a triple-digit milestone, forcing 127 blackouts. Recently, broadcasters have started to engage in a further anti-competitive tactic. Not only are consumers unable to watch [blacked out] programming on their TV screen in the MVPD lineup. They are also unable to access it on their TV or computer through their broadband connections.

⁴ *Id.*

⁵ 47 U.S.C. §543(b)(7).

III. Congress should protect consumers from the networks' monopoly power and ultimately curb that power

The market failure of the current retransmission consent regime requires immediate reforms. Congress should swiftly implement measures to curtail specific abuses of market power in retransmission consent negotiations and remove the regulatory barriers that prevent competition among network affiliates.

A. Targeted reforms

The following surgical reforms could impose a measure of fairness, rationality, and discipline on retransmission consent negotiations, resulting in fewer blackouts and more competitive pricing of retransmission consent.

1. Expansion and clarification of good faith requirements

Although Congress directed the Federal Communications Commission (“FCC”) to issue regulations requiring both broadcasters and MVPDs to negotiate in good faith, neither the relevant statute nor implementing regulations provide clear guidance as to the behavior that would violate that requirement. Indeed, the FCC has never once found an instance of bad-faith conduct in retransmission consent negotiations when applying its “totality of the circumstances” standard. Moreover, the requirement itself will sunset at the end of this year. Congress should make the good-faith requirement permanent, but more is required. Given the inefficacy of the current requirement and implementing regulations, plain guidance is necessary. Moreover, it should be a *per se* violation for a broadcast station that has not granted retransmission consent to exercise network non-duplication or syndicated exclusivity rights or refuse subscriber requests for a waiver to allow importation of the distant signal of a station affiliated with the same network throughout the relevant local market. Rejecting a standstill proposal and subjecting consumers to needless blackouts should at least raise a presumption that a broadcaster is negotiating in bad faith when the MVPD offers a “true-up” (i.e., the subsequently determined rate applies retroactively during the standstill).

2. *Bona fide* offers of standalone carriage

Broadcasters often wield market power by tying retransmission consent to an MVPDs' agreement to carry affiliated, non-broadcast programming. Congress should require broadcasters to provide a *bona fide* offer for stand-alone carriage when requested by the distributor. Rules of reason are available to distinguish *bona fide* offers from sham ones. A demand for significant price increases over the prior agreement if the distributor purchases retransmission on a stand-alone basis, for example, would be an example of a sham offer. ATVA notes that such rules are administrable in practice and have been used by the FCC in the past. In the Comcast/NBCU merger, for instance, the FCC required Comcast to offer stand-alone broadband service “at

reasonable market-based prices” and “on equivalent terms and conditions” to the most comparable bundled offering.⁶

3. Prohibiting joint negotiation among unaffiliated stations

Unaffiliated broadcasters can further concentrate their market power through joint negotiation of retransmission consent agreements. Although putative competitors, broadcasters increasingly collude to fix the prices for retransmission consent by using the same third-party negotiator on their behalf. Similarly, networks use their national footprint and leverage to negotiate on behalf of multiple “independent” affiliates. This places MVPDs in the unenviable position of negotiating with multiple regional monopolists who are coordinating their efforts and strategies. One of ATVA’s members, DIRECTV, has said that in nearly half of the markets in which it carries local signals, it must negotiate with a party controlling multiple network affiliates. To level the playing field and lower inflated retransmission consent fees, Congress should prohibit joint negotiations among unaffiliated stations and closely scrutinize networks negotiating on behalf of their affiliates. In that vein, ATVA commends Chairmen Upton and Walden, and Ranking Members Waxman and Eshoo, for addressing joint retransmission consent negotiations in legislation to reauthorize the Satellite Television Extension and Localism Act.

4. Elimination of the “must buy” requirement

While broadcasters enjoy considerable flexibility in the terms they can demand in retransmission consent negotiations, such as insisting on channel bundling, cable and telco operators have no similar flexibility with respect to the tiers on which they must carry broadcast stations. The must-buy requirement unreasonably restrains cable operators in retransmission consent negotiations and also deprives consumers of the freedom to decide whether they want local broadcast stations as part of their basic cable packages. Given the monopoly power that broadcasters already wield, this additional regulatory advantage is unwarranted. Congress should eliminate the must-buy requirement.

B. Comprehensive reforms

In addition to the immediate, targeted reforms above, Congress should consider fundamental reforms that would inject much-needed competition and consumer choice into the market for retransmission consent and broadcast television.

For instance, Congress should consider removing the barriers that prevent competition among network affiliates. Because local broadcast stations do not have to compete with rival sources of affiliated network programming, they are free to demand retransmission consent fees far in excess of the fair market value of their signals and weaponize their demands with the threat of blackouts. Existing law and the network affiliate system protect the geographic monopolies that make this behavior increasingly common and a growing problem for consumers. A market in which MVPDs are able to negotiate with competing sources for network programming in the

⁶ *Comcast Corp., General Elec. Co. and NBC Universal, Inc.*, Memorandum Opinion and Order, 26 FCC Rcd. 4238, 4279 ¶ 103 (2011).

same market would yield fair and efficient negotiations as well as competitive prices and terms for retransmission consent. Moreover, competition among broadcasters affiliated with the same network or the same market would put an end to needless and costly blackouts. All consumers would benefit from increased competition for network programming and among broadcasters in a local market. The Committee should carefully consider this concept and other broad changes to existing law.

IV. Conclusion

As the Committee considers how communications law can be rationalized to address the 21st century communications landscape and inject more competition, it should consider alleviating immediately the effect of network monopoly power, and ultimately eliminate antiquated and irrational impediments to more competition in that landscape, beginning with the current restraints on competition among television broadcast stations in the market for retransmission consent and the eyeballs of consumers. ATVA is eager to work with the Committee to bring about a more competitive and consumer-friendly video marketplace.



June 10, 2014

Fred Upton
Greg Walden
House of Representatives
730 12th Street NW
Washington, DC 20005

Dear Congressmen Upton and Walden,

As you continue your process to update America's Communications Act, I share my thoughts with you from Europe, namely avoiding the mistakes. Essentially Europe has relied on utility style regulation and service-based competition. This encourages new entrants but not new networks. The US, on the other hand, has relied on dynamic, facilities-based competition where operators compete on different technologies, as well as with over the top technologies. The results are clear. The US has more investment per capita and better coverage with next generation technologies. In fact EU leaders realize that their approach has not well worked. The attached editorial from the *Washington Examiner* explains further.

Additionally I perform economic research on net neutrality and presented last year at the Telecommunications Policy Research Conference. My research finds that allowing operators to deliver content with improved quality (called paid prioritization in the US) may enhance consumer surplus as creates an incentive for operators to invest in networks. This would suggest that should you want to encourage continued investment and increase consumer welfare, then net neutrality is not a favorable policy. You can read my paper here.

http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2241191

Good luck on your process.

Sincerely,
Edmond Baranes
Professor of economics
Department of economics, University of Montpellier, France
Edmond.baranes@univ-montp1.fr

<http://washingtonexaminer.com/learn-from-europes-mistakes-in-crafting-telecommunications-laws-for-the-future/article/2548862>

Learn from Europe's mistakes in crafting telecommunications laws for the future

EDMOND BARANES • | MAY 25, 2014 | 6:00 AM

"Net neutrality" continues to inundate American airwaves, [social media](#) and print, causing some to once again dubiously mark the "end of the [Internet](#)."

But a larger and more important issue remains overlooked: the 18-year-old [U.S. Telecommunications Act](#). Given the immense change that has occurred in that time, coupled with momentum among policymakers to overhaul the law, this should be the focus of our attention. And as a European telecom economist, my advice is simple: forego a drastic [regulatory](#) regime and ensure one that recognizes the inherently competitive communications landscape of today.

As Winston Churchill once said, "If you make ten thousand regulations you destroy all respect for the law."

The law that governs America's communications networks was designed in a very different world in 1934. Despite some amendments, the last comprehensive overhaul took place in 1996. The rewrite removed many unnecessary regulatory hurdles, allowing the Internet to boom, but 18 years is a significant amount of time in the communications industry, and now we are left with a so-called "silo" regime whereby varying regulatory burdens are unwisely applied to different types of technologies that offer similar services.

Convergence in the Internet ecosystem has opened the market to new players for network access, content, applications and devices. In doing so, it has rendered the siloed nature of the 1934 Communications Act intractable and unworkable.

For instance, consumers now have the choice between several network operators, different network access technologies (whether fixed, wireless, or Wi-Fi), a dizzying array of devices, and a plethora of content and applications. Consider the proliferation of [smartphones](#). Consumers are increasingly using non-voice services on their smartphones like text messages, e-mails, and messaging through social media apps. To a large extent, all of these technologies can act as substitutes or complements.

[Federal Communications Commission](#) Chairman Tom Wheeler seems to agree, recently stating, "all of us have observed the growing convergence of previously separate and distinct communications services and with it, inevitably, the growing obsolescence of the Communications Act's categories."

The transition from a single-sided market (telecommunications providers and consumers) to a multi-sided market (broadband providers, consumers, content providers, applications and devices) lies at the heart of this convergence. The market today is characterized both by competition and cooperation, also called co-opetition – highlighting both differences and interdependencies between technologies.

As such, American policymakers should adopt a regulatory approach that treats these technologies equally across all sectors and relies on the existing, robust antitrust protections in the U.S.

Legislators should embrace a consensus approach to creating a legal and regulatory environment that fosters innovation and competition while promoting consumer choice, similar to Wheeler's proposed framework for an open Internet. Unlike European regulators who recently adopted net neutrality rules that could potentially ignore the realities and demands of modern communications services, Wheeler's approach recognizes the long-standing use of mutually-beneficial agreements between ISPs and content providers – a two-sided market – to better meet consumer needs.

Indeed, the heavy-handed regulatory model adopted by the European Union is a parable for what the U.S. should not do regarding broadband regulation. Europe's shortsighted insistence on unbundling regulation that essentially sets a regulated price for access to a network and other policies have probably contributed to scaring off critical investments in network infrastructure that are the precursors to improved services and newer technologies. One need not look further for evidence than the figures that show per capita investment in broadband networks in the EU is less than half of that in the U.S. Or for that matter, the fact that 96 percent of Americans have access to superfast LTE wireless networks, demonstrably outpacing the 26 percent of Europeans who have that kind of access.

American officials would be wise to learn from Europe's mistakes.

Edmond Baranes is a professor of economics at the University of Montpellier in France, and this year filed a submission to Congress' Communications Act review.



Representatives Greg Walden and Fred Upton

House of Representatives

Congress of the United States of America

Washington, DC

June 11, 2014

Re: Communications Act Update

Dear Representatives Upton and Walden,

My name is Michael Reibel Boesen. I work in the startup, innovation and academic research community. I earned my PhD in adaptive embedded systems from the Technical University of Denmark and hold a patent in a self-repairing chip technology. My research afforded me the opportunity to work with a team at NASA's Jet Propulsion Laboratory, Flight System Avionics section as a research affiliate while working to get my PhD. Now I am the manager of AppGarage, an incubator project of the Technical University of Denmark, Department of Mathematics and Computer Science. I also have my own startup still in stealth mode but working with telecommunication technology and the retail segment. Additionally I am the Vice President of the Copenhagen Chapter of Silicon Vikings, a networking association building bridges between Silicon Valley and the Nordic countries as well as Co-Director of the Copenhagen Startup Grind chapter which aims to build a global network of entrepreneurs glued together by interviews with great and successful entrepreneurs of our local startup communities.

There is no doubt that American innovation and entrepreneurship is a source of inspiration for the Nordic countries. Indeed our countries enjoy a rich exchange of education, culture and business. It is fitting that Congress has launched an effort to modernize the Communications Act, the laws that govern the ICT sector.

For the most part, entrepreneurs and innovators have not needed to be concerned about regulation. This is an exhibit of the success of the American light regulatory approach, allowing innovations to emerge and flourish. However with the convergence of communications, computing and content, there is a danger that obsolete rules will apply to new industries, innovations, and business models. It's important to ensure that there is a single, modern, simple regulatory framework to support all these activities and that imposes as little burden as possible. It makes no sense to govern highly evolving industries with rules and classifications from 1934.

Moving toward a general competition framework that treats all players equally and ensures uniform consumer protects across the board is the way to go.

Sincerely,

Michael Reibel Boesen

Rantzausgade 22A, 2., 1

2200 Copenhagen N

Denmark



June 13, 2014

The Honorable Fred Upton
Chairman
Energy and Commerce Committee
U.S. House of Representatives
Washington, DC 20515

The Honorable Greg Walden
Chairman
Communications and Technology Subcommittee
U.S. House of Representatives
Washington, DC 20515

Dear Representatives Upton and Walden:

Broadband for America (BFA) is dedicated to ensuring every American citizen has high quality access to the Internet, and promotes well-informed public policy choices to create the right incentives for the private sector to build advanced networks offering innovative services. BFA stakeholders see first-hand – day in and day out – the dramatic changes in the communications landscape, the dynamic competition in the Internet ecosystem, and the technological evolution referenced by the Subcommittee’s White Paper on Competition Policy and the Role of the Federal Communications Commission.

BFA therefore appreciates this opportunity to comment on U.S. competition policy and the role of the FCC. This discussion and the White Paper’s thoughtful questions provide a timely avenue to “discuss the adequacy of the current Communications Act and the monopolistic assumptions on which it is based.”

As the Subcommittee is aware, the FCC is considering a regulatory framework in the name of protecting the open Internet that includes the possibility of reclassifying broadband Internet access services as a Title II service. Instead of helping broadband stakeholders focus on developing the next-generation networks, applications, and services that will be critical to creating opportunities for all Americans as well as enhancing our global competitiveness, the FCC is considering this legally questionable, market-distorting regulatory regime that contravenes almost two decades of bipartisan Internet policy. New service offerings, options, and features could be delayed or altogether foregone as a result of this proposed shift. Consumers would ultimately face less choice and a less adaptive and responsive Internet. An era of differentiation, innovation, and experimentation would be replaced with a series of “Government may I?” requests from American entrepreneurs. Our global leadership would be jeopardized and competition chilled. That cannot be, and must not become, the U.S. Internet of tomorrow – which underlines why the Subcommittee’s White Paper on competition policy is so opportune.

Competition Policy Framework. Rather than returning to rules designed for monopoly telephone service in the early 20th century, Congress should adopt a competition policy that promotes investment and opportunity across the Internet economy, from network providers to app developers, for the benefit of American consumers. Specifically, BFA offers the following comments to help the Subcommittee address competition policy and the convergence and evolution of communications services.

A single truth underscores the importance of any modern communications policy: Fierce competition occurs throughout the Internet ecosystem, among its myriad components and among “vertical” platforms of integrated components, and competitive shifts occur constantly, rapidly, and unpredictably. A legal and regulatory structure that does not account for this fundamental dynamism will disincentivize innovation and investment, sending ripples of harm throughout the U.S. economy. In this light, certain principles follow – principles that should form the basis of any sound competition policy.

First, public policy must treat every business participating in the Internet ecosystem in a consistent manner. Every participant across the digital economy must have the freedom to innovate and invest without permission. It is time to move away from industry-specific, anticipatory regulation and instead treat communications companies like other businesses throughout the economy that are disciplined in the first instance by competition, not regulation.

Accordingly, legislative reforms should dispense with antiquated presumptions about natural monopoly in the communications marketplace. The default presumption now should be that regulatory mandates are necessary only in the face of demonstrated market failures. To that end, the FCC should no longer adopt *ex ante* rules absent a demonstrated and enduring market failure. Instead, narrowly tailored *ex post* approaches should be preferred over *ex ante* rules, and the latter only when the benefits clearly exceed the closely analyzed costs. In addition, such policies should promote a more harmonized regime that honors and respects the Internet’s national, and indeed, international scope.

Second, a competition policy for a broadband marketplace featuring intermodal competition must not use the mere presence of technological differences as a basis for regulatory or jurisdictional distinctions. Any rules intended to advance social responsibilities must be borne equitably by all participants in the Internet ecosystem who serve consumers in a functionally similar way. The FCC has recognized that network services are but a component of a larger “broadband ecosystem” that includes “devices, applications and content.” Yet both its organizational structure and substantive rules remain locked in regulatory silos. The result: a communications industry marked by intermodal competition forced to navigate inconsistently applied rules that place competitors on unevenly tilted regulatory fields, skewing consumer choice and limiting value.

Policymakers should recognize that broadband providers simultaneously collaborate and compete with a wide array of market participants across the Internet space – from software makers to device manufacturers – to offer services that can attract the attention of consumers in this very competitive environment. Illustrations of this technological convergence emerge nearly every day – for example, in the communications and Internet access arena, a variety of non-traditional providers have entered the voice and data sectors:

- Apple’s SMS offering and FaceTime service;
- Facebook’s acquisition of WhatsApp;
- Google’s fiber deployment and Google Voice; and
- Microsoft’s Skype acquisition.

Examples of non-traditional entrants can also be found on the video content front:

- Amazon’s streaming video service and Fire TV;
- Apple’s Apple TV; and
- Google’s Chromecast.

Accordingly, policymakers should not perpetuate a false distinction between core broadband networks and edge applications, content, and devices. Any mandates must ultimately focus on the consumer experience first and foremost, not antiquated notions of silos or historical habits of regulators, and contain an automatic “sunset” provision to ensure that obsolete regulations do not impede future innovation.

Congress should affirmatively require that the FCC account for actual competition among emergent, substitutable offerings in a consistent way. The statute cannot work properly without acknowledging all relevant parts of the broadband ecosystem, including over-the-top services, and their implications for competition and consumers. Such a regulatory construct would ensure a sufficiently flexible competition policy to accommodate this rapidly changing industry and changing face of competition. In a constantly shifting marketplace featuring vibrant consumer choices and marked by breakneck technological advances, policymakers should avoid putting thumbs on the scales, in order not to stifle innovation or tilt the regulatory playfield unfairly.

Third, expanding deployment of broadband enhances competition across the broad Internet ecosystem, further obviating the need for regulation. Ninety-eight percent of Americans now have access to broadband, speeds continue to increase year-by-year, and consumers can choose from competitive options over cable, phone lines, fiber, fixed and mobile wireless, and satellite. Reacting to consumers’ increasing bandwidth demands that are doubling every 18 months, ISPs are building additional capacity and investing billions of dollars, over \$250 billion in the last three years alone. Dynamic competition leads market share to be quickly gained or lost through this investment, innovation, and product differentiation, and market forces work to keep rates competitive. Congress should work to continue to remove barriers to the investment that drives the explosive growth of facilities-based broadband network competition.

Fourth, policymakers should defer, to the greatest extent possible, to the highly successful model of multistakeholder Internet governance to resolve important issues. One of the great, under-appreciated successes of the Internet is its largely self-governing nature, in which any government plays a minimal role. It fosters innovation while at the same time achieving consistency. Congress should place greater reliance on self-regulatory and multistakeholder organizational alternatives to the FCC’s traditional command and control rulemaking processes.

Conclusion. As the Subcommittee addresses competition policy and the FCC’s role in its formulation and application, BFA urges lawmakers to cultivate a regulatory environment that drives more private risk capital into the domestic broadband economy – to create jobs, foster innovation, and maintain our global leadership. In the event regulation is necessary, any policy approach should stay focused on incentives that foster investment, increase broadband

competition, and avoid marketplace distortions and disparities among market participants. American consumers have benefited from an extraordinary era of global leadership in the Internet economy. BFA looks forward to working with Congress and this Committee to ensure American leadership in the decades to come.

Sincerely,

A handwritten signature in blue ink that reads "John Sununu". The signature is fluid and cursive, with the first name "John" being particularly prominent.

John Sununu
Honorary Co-Chairman

A handwritten signature in blue ink that reads "Harold Ford, Jr.". The signature is cursive and somewhat stylized, with a large initial "H" and "F".

Harold Ford, Jr.
Honorary Co-Chairman

#CommActUpdate: Modernizing the Communications Act
Competition Policy and the Role of the Federal Communications Commission
Comments of Competitive Carriers Association

Competitive Carriers Association (“CCA”) submits these comments in response to the Energy and Commerce Committee’s (“Committee”) White Paper on Competition Policy and the Role of the Federal Communications Commission (“FCC”) (“Third Paper”). CCA is the nation’s leading association for competitive wireless providers and stakeholders across the United States. CCA’s membership includes more than 100 competitive wireless providers ranging from small, rural carriers serving fewer than 5,000 customers to regional and national providers serving millions of customers. CCA also represents almost 200 Associate Members consisting of small businesses, vendors, and suppliers that service carriers of all sizes. Together, CCA’s members represent a broad range of entities with a shared goal of a competitive wireless market as a critical driver of the U.S. economy. Competition policy is at the core of CCA’s policy agenda.

Convergence of technologies to promote competition was one of the primary objectives of the last major update of communications policy in the Telecommunications Act of 1996 (“96 Act”). The “ongoing shift away from single-purpose technologies toward Internet Protocol packet-switching” discussed in the Committee’s Third Paper succeeded as a result of the Act’s regulatory framework—in particular, the Act’s interconnection obligations—not in spite of these requirements. As the FCC notes, “the goal of the [96 Act] is ... to let any communications business compete in any market against any other.” The Conference Report accompanying the 96 Act clearly states in the first paragraph its goal “to provide for a pro-competitive, de-regulatory national policy framework designed to accelerate rapidly private sector deployment of advanced telecommunications and information technologies and services to all Americans by opening all telecommunications markets to competition.”

The Committee accurately points out that the great evolution in technology has dramatically changed the competitive landscape overseen by the FCC. The Internet, now accessible via wireless broadband, places at the touch of consumers' fingertips countless innovations impacting economic, education, social, and public safety aspects of daily life. Sustainable competition no doubt impacts innovation and availability of choices for consumers, which requires proper safeguards to ensure access and connectivity for all. Rather than gambling that new competition will flourish without the framework that supported competition over the last two decades, policymakers should embrace the concept of competition and build upon the competitive landscape and resulting technological evolution unleashed following the 96 Act.

Further adjustments to telecommunications policy should be based on targeted approaches to build upon these successes, including sector-specific adjustments to promote further competition within and among differing modes of competition. For example, CCA previously provided specific recommendations to the FCC (*see Attachment A*) to promote a framework for sustainable wireless competition. This surgical policy approach promotes significant economic benefits, including approximately \$200 billion in present value terms of consumer value attributable to mobile broadband competition (*see Attachment B*). Consideration of competition policy and the role of the FCC should be focused on supporting a framework for sustainable competition throughout the telecommunications industry, and building upon the benefits of the 96 Act instead of a wholesale reset of telecommunications policy.

Policymakers Should Provide the FCC with Flexible Tools to Support Competition

Congress provided the FCC with rulemaking authority to support competition. Congress should continue to provide the FCC with the flexible tools needed to further enhance competition, instead of thwarting its ability to sustain the developments that spurred convergence and innovation. Rulemaking

bodies have widely adjusted the rules to enhance competition through targeted changes to address competitive shortfalls—without “pulling the referees” from the field and hoping the players operate in fair play.

The FCC, as an expert agency, can utilize rulemaking authority to complement the enforcement activities of both the U.S. Department of Justice (“DOJ”) and the Federal Trade Commission. The FCC’s role in ensuring fair and open competition is critical, even as the organizational structure of the FCC itself can be streamlined to improve its oversight mission. With flexible authority, the FCC can act to prevent harms that may be irreparable through law enforcement actions initiated after-the-fact by the DOJ. Preservation of the competitive framework can allow market forces to support competition without resorting to the re-regulation necessary if telecommunications returns to the pre-96 Act monopoly structure.

Additionally, Congressional oversight provides opportunities for lawmakers to express concerns or direct the FCC to act without potential market disruptions and regulatory uncertainty that may result from periodic reauthorization. Altering the FCC’s rulemaking authority, or subjecting the FCC to periodic reauthorizations or sunsets of authority, could create massive uncertainty in the telecommunications industry, as investments are made in infrastructure and services that are independent of Congressional timelines.

This Congress alone, the Subcommittee on Communications and Technology has held two hearings specifically on oversight of the FCC, and over ten hearings exercising oversight over specific aspects and issues of policy under the FCC’s mandate. The House of Representatives has passed legislation adjusting FCC processes. Recently, in response to a letter calling for Committee oversight of pending transactions in the telecommunications industry, Chairman Walden noted that “[y]ou’ve got these independent agencies that have the ability to do an independent look,” including the FCC and the

DOJ, to fully investigate competitive issues at stake within the industry. Continued oversight and increased collaboration between Congress and the FCC will help facilitate the implementation of procompetitive policies.

Consideration of Intermodal Competition Must Take Into Account Necessary Inputs Specifically for Wireless Competition

Through the 96 Act, Congress succeeded in fostering competition between traditional telephone companies and cable franchises. This competition should be reflected in any update to the Communications Act. Increasingly, and largely due to consumers' preference for mobility, wireless services have also been offered as an example of further intermodal competition. Wireless competition presents the opportunity for a "third pipe" to consumers beyond cable and telephone or fiber wire connections. While wireless services should be factored into an analysis of competition in the communications market, it must be done after taking into account its dependence on unique inputs, including a reliance on finite public resources, and interconnection and economically feasible access to the other "modes" of communications.

Unlike wireline based communications technologies, wireless carriers cannot purchase greater amounts of their most critical input – spectrum – from a manufacturing company. Spectrum is a taxpayer-owned and federally regulated, finite resource. The *only* way to secure additional spectral capacity is through approval from the government. Lack of access to spectrum cannot be ameliorated without the government making adequate resources available. Market dominant wireless carriers, particularly those that also control other inputs necessary to provide wireless services, can foreclose potential competitors in ways that providers of other communications technologies cannot. For example, as recognized by the DoJ, dominant providers have an incentive to stockpile spectrum frequencies needed to serve consumers, as a means of foreclosing competition.

In addition to spectrum (the lifeblood of the wireless industry), wireless carriers must gain sufficient and economically reasonable access to other needed inputs, including roaming relationships with other wireless carriers, devices to utilize wireless networks, and backhaul and interconnection with other networks. Interconnection is dependent upon fundamental backstop requirements contained in the 96 Act that ensure access can be negotiated. While all of the above inputs are needed to provide wireless competition, access to backhaul and wireline capacity should be particularly scrutinized in any competitive analysis of intermodal competition in the telecommunications market. The majority of wireline telecommunications connections are controlled by the two largest wireless carriers' affiliated companies, and access purchased on these networks by smaller competitors flows directly into the coffers of the dominant two carriers, allowing them to control their rivals' costs. As an alternative, cable networks can provide additional or replacement backhaul services; however this does not diminish cable companies' abilities to control their rivals' costs when considering intermodal competition with wireless services as a competitor for cable.

Overall competitive analysis of communications markets, particularly when considering intermodal competition, should focus on national market power. Without sufficient and economical access to competitors' networks, including facilities deployed over generations of ratepayer-subsidized monopoly service, operators that do not enjoy national market power cannot provide sufficient alternatives to consumers. Consumers no longer differentiate between local and long distance voice calls just as they do not consider whether Internet connection is delivered from around the corner or around the world. Policymakers must promote the benefits of competitive access provided through the 96 Act and maintain the protections that spurred convergence and innovation.

Over-the-top, Edge Providers, and MVNOs are Dependent on Sustainable Facilities-Based Competition

Competition from “edge providers,” including Mobile Virtual Network Operators (MVNO) in the wireless industry and Internet based providers in the video market, are dependent on sustainable access to competitive, facilities-based wholesale markets. Absent facilities-based competition, wholesale providers that compete with innovative new service offerings in the retail space can increase rivals’ costs to thwart a competitive threat. Competition at the retail level cannot exist without competition for wholesale inputs. The benefits and “network effects” of today’s communications networks rely on access to national markets. A focus on national wholesale markets will yield competitive benefits to consumers and the industry at all subsequent levels, whether services are facilities-based or otherwise. As technologies continue to evolve, it is critical that roaming, interconnection, and access obligations remain strong bulwarks against efforts to foreclose competition by denying network access.

Policymakers Should Consider Revisiting Trinko

To the extent that artificial barriers exist that allow communications firms to exploit antitrust exemptions in a regulated industry, policymakers should consider revisiting presumptions against antitrust applications in regulated industries, including the communications industry. The Supreme Court’s decision in *Verizon v. Trinko* is an outgrowth of the 96 Act, which created a “regulatory structure designed to deter and remedy anticompetitive harm.” If regulatory access provided through the 96 Act is diminished, policymakers should also consider impacts not only to the FCC’s regulatory mandate, but also to broader antitrust enforcement to ensure appropriate remedies exist to address undue exercise of market power.

Conclusion

In modernizing the Communications Act, policymakers should build upon the accomplishments of the 96 Act and enhance the framework to support competition. Building upon the FCC's existing rulemaking authority, Congress should continue to provide the FCC with flexible tools to promote and sustain competition in the digital age. Intermodal competition has fueled innovative services and consumer choices, but is reduced to a fragile house of cards absent safeguards for underlying wholesale access to the critical inputs needed to serve consumers. As Congress continues its path forward to a Communications Act update, CCA looks forward to continued work with Congress to support a framework for sustainable competition.

ATTACHMENT A

A Framework for Sustainable Competition in the Digital Age:

FOSTERING CONNECTIVITY, INNOVATION AND CONSUMER CHOICE



Competitive Carriers Association
Rural • Regional • Nationwide®

Executive Summary

Newly confirmed Federal Communications Commission (FCC or Commission) Chairman Tom Wheeler, nearly two years ago, observed that:

“The history of the world is dotted with only a handful of transformational moments. We happen to be living through one of them right now. We are building history’s fourth great network-driven transformation ... the result of the inexorable increase in computing power expressed in Moore’s Law and the unprecedented connectivity of wireless communications. Together, they create the most powerful and pervasive platform on the planet.

He also noted that “government initiatives ... [have] always led the path to new communications realities” and that “now is the time to continue that leadership legacy.”

In March 2013, the FCC released a sobering report on the state of mobile wireless competition in the United States. For the third straight year, the Commission was unable to certify that the mobile wireless industry is characterized by “effective competition,” confirming the highly (and increasingly) concentrated nature of the wireless industry in the hands of the two largest providers.

This competitive assessment should serve as a wake-up call to policymakers. History shows that preserving and enhancing wireless competition is a vital means of driving economic growth and job creation, maintaining our nation’s global competitiveness, promoting continued innovation, and enhancing consumer welfare. But allowing the wireless industry to continue its steady march back towards the duopoly of the early 1990s would not only rob consumers of these benefits, but also hold back the nation’s ongoing economic recovery.

For many years, from the mid-1990s to the late 2000s, the U.S. wireless industry was a shining example of robust competition, with numerous carriers at the national and regional level competing to deliver steadily improving services at declining prices. But wireless competition can thrive only where there are effective safeguards in place to prevent the exercise of market power—rules and policies that prohibit excessive consolidation and preserve access to key inputs like spectrum, devices, and networks. Unfortunately, the Commission has chosen to relax many of those safeguards over the years and has sometimes failed to adequately enforce its competition policies. The inevitable result has been increased consolidation of the wireless industry and a decline in the competitive benefits flowing to consumers. As the industry edges ever closer to a duopoly, with AT&T and Verizon dominating the marketplace and foreclosing opportunities for smaller rivals, the Commission must reexamine whether its rules and policies are promoting competition effectively. (*See charts, page ii*)

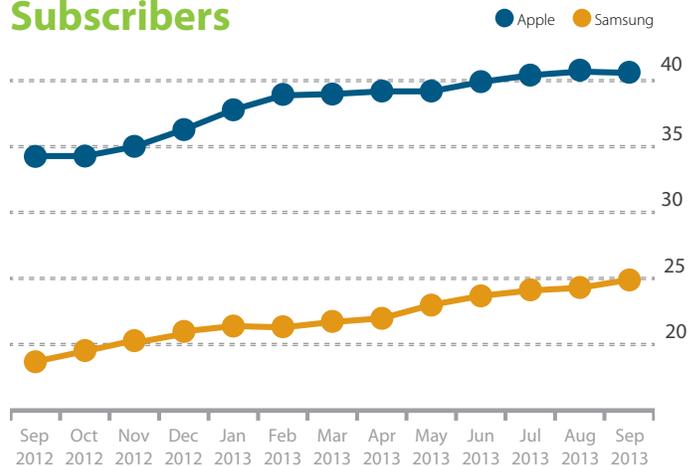
To that end, Competitive Carriers Association (CCA)—an organization representing the interests of more than 100 competitive wireless carriers, including rural, regional, and national providers—proposes the creation of a Wireless Competition Task Force at the FCC. Policymakers routinely affirm that ensuring effective competition in the wireless industry is of paramount importance. But translating words into action will require a comprehensive and concerted vision and an urgency of purpose involving personnel throughout the Commission—a project particularly well suited to an agency-wide Task Force.

The Task Force should be charged with analyzing, developing, and implementing proposals for promoting wireless competition in the 21st century and should focus on accelerating work on six initiatives: (1) overhauling the Commission’s “spectrum screen” to assess market concentration more accurately and to strengthen the Commission’s competitive review of wireless transactions, (2) conducting fair and procompetitive spectrum auctions,

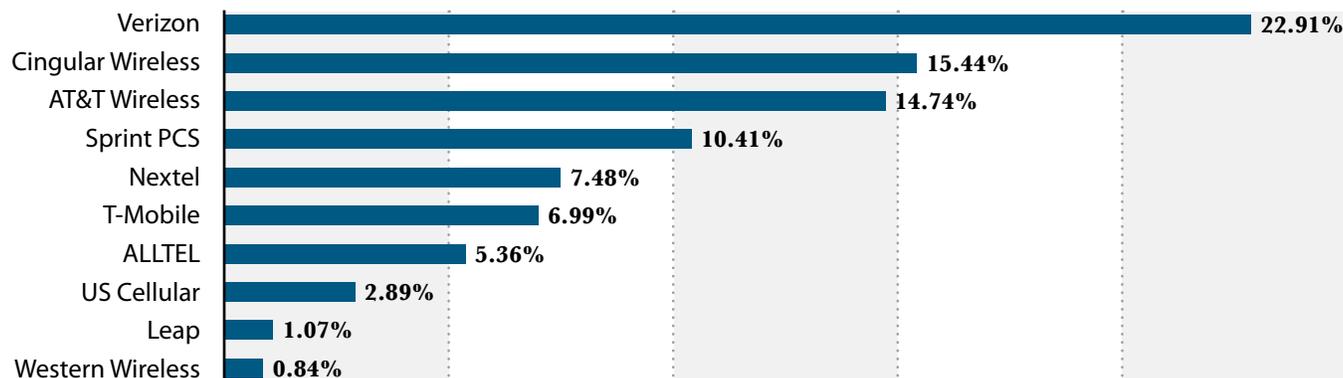
Executive Summary

(3) ensuring commercially reasonable access to data roaming arrangements, (4) maintaining essential access to wireline facilities and interconnection as the telecommunications industry transitions to Internet Protocol technology, (5) promoting unfettered access to wireless devices, and (6) reestablishing competitive neutrality in the Commission's high-cost universal service support mechanisms. We wholeheartedly agree with Chairman Wheeler that now is the time for the FCC to build on its historical leadership in fostering a competitive wireless sector. As this White Paper will explain, CCA's proposed measures will remove barriers to competition, boost the nation's economy, and deliver substantial benefits to consumers.

Share (%) of Smartphone Subscribers

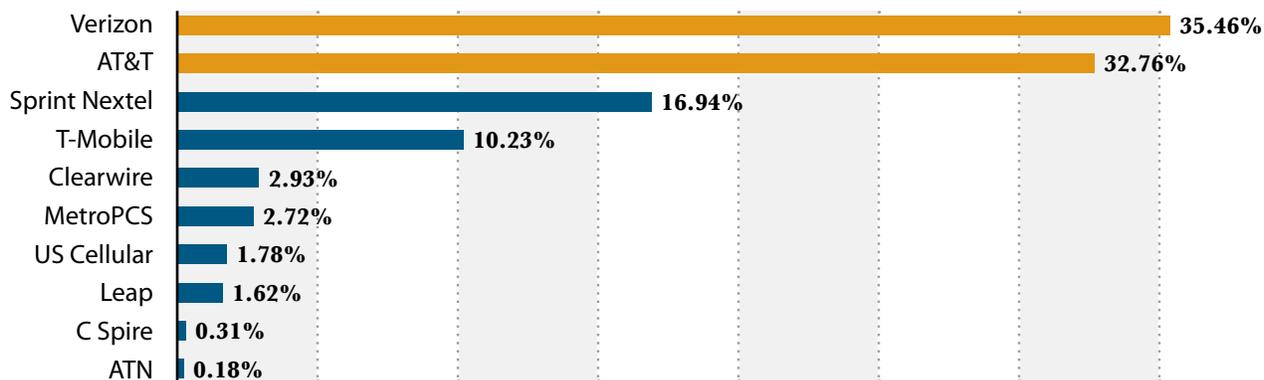


Percentage of Top Ten Carriers' Subscriber Share, Year End 2002



Source: Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Eighth Report, 18 FCC Rcd 14783 (2003).

Percentage of Top Ten Carriers' Subscriber Share, Year End 2012



Source: FierceWireless, Grading the Top 10 U.S. Carriers in the Fourth Quarter of 2012 (Mar. 15, 2013), available at <http://www.fiercewireless.com/special-reports/grading-top-10-us-carriers-fourth-quarter-2012>. Note that the fifth and sixth largest providers (Clearwire and MetroPCS, respectively) have since exited the marketplace, and the newly-minted sixth largest provider (Leap) is in negotiations to be acquired by AT&T. Additionally, Verizon posted 941,000 retail postpaid net additions in 2Q13; AT&T posted 551,000 additions for the same period. See Verizon Communications Investor Quarterly 2Q 2013 (July 18, 2013), available at http://www2.verizon.com/investor/DocServlet?doc=2013_2q_qb_vz.pdf; AT&T Inc. Investor Briefing 2Q 2013 (July 23, 2013), available at http://www.att.com/Investor/Earnings/2q13/lb_final_2q13.pdf.

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COMPETITION FOR THE DIGITAL AGE

We are living through the historical transformation of the “fourth network revolution”.¹ The first revolution was spurred by Gutenberg’s printing press in the 15th century, which helped to produce a technology-based network of commercial print shops. The second and third revolutions occurred in the 19th century. The railroad prompted a high-speed network revolution tearing down geographic limitations, and the telegraph helped to create the first electronic network prompting a revolution of communications. The Internet, coupled with the connectivity of wireless broadband, is the fourth network revolution, shifting control over communications from a central locus to the populous. With the right framework of competitive policies, this network revolution has the power to transform all aspects of human existence.

Commissioner Rosenworcel succinctly observed recently that “access to mobile broadband is becoming an essential part of everything we do.”² We are just beginning to see how wireless technology is transforming education, healthcare and banking, to name a few. Mobile broadband networks will continue to enable countless innovations impacting economic, education, social, and public safety aspects of daily life. For this transformation to encourage and inspire further innovation and expansion, competitive safeguards must exist. The fourth network revolution, like the three previous, is creating instability and chaos. The FCC has a unique opportunity to harness the power of this revolution by creating a competitive framework that will productively channel this chaos and allow access and connectivity for all.

For example, after nearly a century of stagnation under a monopoly regime, reintroducing competition to wireline networks sparked the broadband revolution. In the same

vein, the realization of real-time data and connectivity through mobile networks requires a competitive environment. The FCC must therefore ensure that its competition policy framework will effectively protect and promote the fourth network revolution and all the benefits that flow from it. Specifically, the Commission should convene a group of its best and brightest thinkers to conduct a holistic review of the major obstacles and opportunities to sustain a competitive wireless industry, and promptly act to implement recommendations curated through the Task Force process.

For the last three years, the Commission was unable to certify that the mobile wireless industry is characterized by “effective competition,” confirming the highly (and increasingly) concentrated nature of the wireless industry in the hands of the two largest providers.³ Though not surprising, this competitive assessment should serve as a wake-up call to policymakers, as enhanced wireless competition would help maintain our nation’s global competitiveness, promote continued innovation and enhance consumer welfare. As Chairman Tom Wheeler confirmed during his first days in office, “During my confirmation hearing I described myself as ‘an unabashed supporter of competition because competitive markets produce better outcomes than regulated or uncompetitive markets.’ Yet we all know that competition does not always flourish by itself; it must be supported and protected if its benefits are to be enjoyed.”⁴ The Commission should therefore not allow the wireless industry to continue its steady march back towards duopoly.

For many years, from the mid-1990s to the late 2000s, the wireless industry in the U.S. was a shining example of robust competition, with numerous carriers at the national and regional level competing to deliver steadily improving

1 Tom Wheeler, “Making Our History,” Mobile Musings, Dec. 1, 2011, available at <http://www.mobilemusings.net/2011/12/making-our-history.html>.

2 Statement from FCC Commissioner Jessica Rosenworcel Regarding Presentation on Measuring Broadband America FCC Speed Test App, Nov. 14, 2013, available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-324153A1.pdf.

3 *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Commercial Mobile Services*, Sixteenth Report, 28 FCC Rcd 3700, ¶¶ 14-15 (2013) (“16th Wireless Competition Report”).

4 Opening Day at the FCC: Perspectives, Challenges, and Opportunities, <http://www.fcc.gov/blog/opening-day-fcc-perspectives-challenges-and-opportunities> (Nov. 5, 2013) (hereafter “Chairman Wheeler First Day Perspectives”) (quoting *Hearing on the Nomination of Thomas Wheeler to be Chairman of the Federal Communications Commission Before the S. Comm. on Commerce, Science, & Transportation*, 113th Cong. (Jun. 18, 2013) (statement of Thomas E. Wheeler).

Competition for the Digital Age

services at declining prices. The success of wireless competition stood in stark contrast to the monopoly conditions that had historically prevailed in the wireline telephony arena, proving that where effective competition exists, heavy-handed, utility-style regulation is unnecessary. Wireless competition can be sustained and, even better, thrive where there are effective safeguards in place to prevent the exercise of market power—rules and policies that, among other things, prohibit excessive consolidation and preserve access to key inputs like spectrum, devices, and networks.

Unfortunately, the Commission has not implemented those safeguards over the years and, with the exception of its laudable support to block AT&T's failed attempt to take over T-Mobile, has sometimes failed to adequately enforce its competition policies. It is no wonder that today as the Commission's own competition reports show, the wireless industry has become increasingly consolidated. The inevitable result has been a decline in the competitive benefits flowing to consumers. As the industry edges ever closer to a duopoly, with AT&T and Verizon dominating the marketplace and foreclosing opportunities for smaller rivals—while simultaneously upending the promise of wireless substitution for wireline services and the concomitant benefits of such intermodal competition, the Commission must reexamine whether its rules and policies are promoting competition effectively.

To that end, Competitive Carriers Association (“CCA”)—an organization representing the interests of more than 100 competitive wireless carriers, including rural, regional, and national providers—proposes the creation of a Wireless Competition Task Force at the FCC. Policymakers routinely affirm that ensuring effective competition in the wireless industry is of paramount importance. But translating words into action will require a comprehensive and concerted vision and an urgency of purpose involving personnel throughout the Commission—a project particularly well suited to an agency-wide Task Force.

The Task Force should be charged with analyzing, developing, and implementing proposals for promoting wireless competition in the 21st century. In particular, the Task Force should focus on accelerating work on six initiatives that are central to restoring the conditions for a truly competitive wireless marketplace: (1) overhauling the Commission's “spectrum screen” to assess market concentration more accurately and to strengthen the Commission's

As the industry edges ever closer to a duopoly ... the Commission must reexamine whether its rules and policies are promoting competition effectively.

competitive review of wireless transactions, (2) conducting fair and procompetitive spectrum auctions, (3) ensuring commercially reasonable access to data roaming arrangements, (4) ensuring access to wireline networks and interconnection as the telecommunications industry transitions to Internet Protocol technology,⁵ (5) promoting competitive carriers' and consumers' access to wireless devices, by working with the Administration and Congress to restore the copyright exemption for handset unlocking, and (6) restoring competitive neutrality to the Commission's high-cost support mechanisms as part of the ongoing effort to reform the Universal Service Fund (“USF”). As this White Paper will explain, these measures will help prevent the industry from sliding back into duopoly, and will remove barriers to competition from carriers currently being marginalized by AT&T and Verizon.

⁵ This would include expeditiously addressing market power abuses in the special access market.

WIRELESS COMPETITION HAS BEEN AN IMPORTANT DRIVER OF CONSUMER WELFARE AND ECONOMIC GROWTH

Every FCC Chairman since 1994—the year the first wireless spectrum auctions were conducted—has recognized that wireless competition brings tremendous benefits to consumers and should be actively promoted by the Commission. The list begins with Chairman Reed Hundt, who oversaw the first PCS spectrum auctions. According to Chairman Hundt, the Commission’s “fundamental policy is competition” in the wireless context.⁶ He went on to articulate “three principles that should guide our pro-competitive policy: choice, fairness and opportunity.”⁷ These principles have continued to serve as cornerstones of the Commission’s articulated policies towards the wireless industry, even if they have not always translated into concrete action to protect competition in recent years.

Chairman Hundt’s successor, Chairman William Kennard, called competition “the driving force of our law and policy” and “certainly the driving force in the wireless industry.”⁸ But, importantly, he stressed that “[t]rue competition requires that everyone play by the rules” and that the Commission must “make sure that happens.”⁹ Chairman Michael Powell echoed these sentiments, explaining that as demand for mobile wireless services continued to grow, “it is imperative that the Commission and Congress continue to work together to ensure customers can benefit from in-

creased carrier competition and continue to enjoy new and innovative products and quality service.”¹⁰ Chairman Kevin Martin recognized that newly emerging wireless broadband services had “become increasingly critical drivers of both economic and social development,” and that the Commission should “take significant steps to advance the roll out of wireless broadband Internet access to consumers across the country.”¹¹

More recently, Chairman Julius Genachowski repeatedly affirmed the Commission’s commitment “to ensuring a competitive mobile marketplace that drives innovation and investment, creates jobs and benefits consumers.”¹² As recounted by Chairman Genachowski, “FCC auctions and competition in the wireless voice market over the past 15 years have spurred investment, extraordinary innovation, and in many cases new and improved services for flat or lower prices for American consumers.”¹³ Chairman Genachowski also recognized the high stakes involved in the Commission’s ongoing efforts to promote such competition, explaining that it is “vital that competition continue to serve these goals as consumers and industry migrate from voice to high-speed data and 4G mobile broadband and these services are extended to all Americans.”¹⁴

6 FCC, “Chairman Reed E. Hundt Addresses PCIA Convention, Reaffirms Commitment to Competition in PCS,” Sep. 23, 1994, available at <http://transition.fcc.gov/Speeches/Hundt/spreh428.txt>.

7 *Id.*

8 FCC, “Speech of Chairman William E. Kennard, CTIA Convention, New Orleans, LA,” Feb. 9, 1999, available at <http://transition.fcc.gov/Speeches/Kennard/spwek906.html>.

9 *Id.*

10 Statement of Chairman Michael K. Powell, at 1, *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services*, Ninth Report, 19 FCC Rcd 20597 (2004).

11 Statement of Chairman Kevin Martin, at 1, *Sprint Nextel Corporation and Clearwire Corporation; Applications for Consent to Transfer Control of Licenses, Leases, and Authorizations*, Memorandum Opinion and Order, 23 FCC Rcd 17570 (2008).

12 Statement from FCC Chairman Julius Genachowski Regarding AT&T Inc.’s Abandonment of Its Proposed Acquisition of T-Mobile USA Inc., Dec. 19, 2011, available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-311592A1.pdf; see also Statement of Chairman Julius Genachowski, at 1, *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Commercial Mobile Services*, Fourteenth Report, 25 FCC Rcd 11407 (2010) (“Genachowski Statement on 14th Report”).

13 *Id.*

14 *Id.*

Discussion

These are “exciting times for consumers.”¹⁵ The new Chairman has described wireless technology as “the greatest revolution in human communication since prehistoric man began to paint on cave walls.”¹⁶ But, as Chairman Wheeler has explained, “[i]t’s competition that drives the extension of networks, it’s competition that drives the quality of the throughput, [and] it’s competition that decides the pricing” of services for consumers.¹⁷

In addition to its consumer benefits, a vibrantly competitive wireless industry also can play a key role in spurring economic growth, as several of the Chairmen quoted above recognize and as multiple recent studies confirm. Where competition exists, carriers in the industry will be encouraged to “invest billions expanding [their] infrastructure,” thereby creating jobs in the industry and enhancing productivity for users of new mobile broadband services.¹⁸ Similarly, Chairman Genachowski explained that “[h]aving world-leading mobile networks and services will be essential to our nation’s global competitiveness, and to creating jobs and growing the economy here in the United States.”¹⁹ A 2011 study by Dr. Raul Katz of Columbia University confirmed the positive impact that a competitive wireless industry can have on jobs, estimating that making competitive wireless broadband available to rural America would generate nearly 117,000 jobs between 2011 and 2014 and increase the median income in rural areas by an average of over \$1,200.²⁰ Another study released in May 2012 similarly found that the wireless industry is “the essential engine of U.S. economic growth”—supporting 3.8 million jobs (directly or indirectly) and contributing \$146.2 billion to the nation’s GDP in 2011.²¹

For years, the mobile wireless sector was hailed as “one of the great success stories” of the Commission’s efforts to establish and maintain a regulatory framework in which competition, consumer welfare, and economic growth could thrive.²² The wireless industry began as a duopoly, with a total

“Having world-leading mobile networks and services will be essential to our nation’s global competitiveness

of 50 MHz of cellular spectrum in each local area divided between just two providers.²³ But the duopoly was broken in 1994, when the Commission first used its newly minted auction authority to make available 120 MHz of broadband PCS spectrum, enough to give rise to numerous competitive carriers across the country.²⁴ Subsequent auctions in the SMR, AWS, 700 MHz, and other bands enabled further competition. As a result, in the first 13 Wireless Competition Reports released between 1995 and 2009, the Commission was able to conclude that the wireless industry was characterized by either growing competition or “effective competition,” as up to six national providers with relative balanced market shares battled to attract and retain customers.²⁵

In the nearly 20 years since competitive carriers first arrived on the scene, the key ingredients for sustaining and growing competition in the wireless industry and further advancing the fourth network revolution have become readily apparent.

- **Strong anti-consolidation policy:** To begin with, a competitive wireless marketplace needs robust FCC review of potential consolidation in the industry, in order to prevent the two largest carriers from aggregating market power and foreclosing opportunities for competitive carriers.

15 Tom Wheeler, “Grab Your Partner,” Mobile Musings, Jun. 10, 2010, available at <http://www.mobilemusings.net/2010/06/grab-your-partner.html>.

16 *Id.*

17 Howard Buskirk, *Wheeler Says He’s Had Months to Think About Incentive Auction, IP Transition*, Comm. Daily, Nov. 8, 2013, at 2.

18 Tom Wheeler, “The Wireless Way Out,” Mobile Musings, Mar. 26, 2009, available at <http://www.mobilemusings.net/2009/03/wireless-way-out.html>.

19 Genachowski Statement on 14th Report at 1.

20 Dr. Raul L. Katz, et al., “Economic Impact of Wireless Broadband in Rural America,” at 8-9 (2011), available at http://www.teleadvs.com/wp-content/uploads/RCA_FINAL.pdf.

21 Roger Entner, “The Wireless Industry: The Essential Engine of U.S. Economic Growth,” at 4 (2012), available at <http://apps.fcc.gov/ecfs/document/viewjsessionid=KKDdQLCSVmlSq66DvmdylQLdn1BKfnc-s1K4HhQvy1RPzrfzFJQKs10070831011-224088840?id=7022009489>.

22 See CTIA, Interview with Kevin Martin, at 6, *Wireless Wave* (Fall 2005), available at <http://www.ctia.org/advocacy/index.cfm/AID/10522>.

23 *Implementation of Section 6002(B) of the Omnibus Budget Reconciliation Act of 1993 Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services*, First Report, 10 FCC Rcd 8844 ¶¶ 3, 4 (1995).

24 *Id.* ¶ 4 (noting that broadband PCS spectrum was believed to be sufficient to give rise to “at least three, and possibly as many as six, new competitors to the cellular carriers in each market”).

25 See, e.g., *id.* ¶ 2 (noting the “growing competition” in the wireless industry); *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services*, Thirteenth Report, 24 FCC Rcd 6185 ¶ 1 (2009) (“The metrics . . . indicate that there is effective competition in the CMRS market and demonstrate the increasingly significant role that wireless services play in the lives of American consumers.”).

Discussion

- **Access to critical inputs:** The Commission also must ensure that competitive carriers retain access to certain essential inputs for their service offerings. As former Chairman Hundt reiterated in a recent paper, the Commission cannot take a *laissez-faire* approach when it comes to preserving access to these vital inputs; rather, in each case, the Commission must “step in with new, pro-competitive rules to ensure consumers benefit to the extent possible.”²⁶
- **Spectrum:** “Spectrum is the lifeblood of the wireless industry,”²⁷ and “[a]ccess to spectrum is a precondition to the provision of mobile wireless services.”²⁸ Ensuring the availability of sufficient spectrum—both by preventing undue spectrum aggregation by the largest carriers, ensuring that competitive carriers have access to complementary spectrum needed to effectively compete, and by setting appropriate rules for auctioning new spectrum—is “critical for promoting the competition that drives innovation and investment.”²⁹ As former FCC Chief Economist Jonathan Baker warned in a recent study, “[i]f a small number of incumbent providers end up with control over large amounts of spectrum, those incumbents may have the incentive and ability to frustrate the development of new technologies and business models brought to the market by smaller rivals and potential competitors.”³⁰
- **Devices:** The Commission has recognized that “[h]andsets and devices are a central part of consumers’ mobile wireless experience, and a key way by which providers differentiate their offerings.”³¹ It is therefore increasingly important to ensure that the largest carriers cannot lock down devices, impede the interoperability of devices across platforms or spectrum bands, or otherwise prevent devices from being used on competitive carriers’ networks. The largest original equipment manufacturers should be encouraged to negotiate in good faith with competitive carriers for the purchase of iconic devices and the development of unique offerings.
- **Networks:** Finally, competitive carriers need access to the ubiquitous PSTN infrastructure that transmits voice and data services—an infrastructure that was funded by public ratepayers over decades and now is controlled predominately by AT&T and Verizon. Competitive carriers need access to infrastructure not only in the form of voice and data roaming on AT&T’s and Verizon’s wireless networks,³² but also in the form of access to facilities used for backhaul, transport and interconnection with those carriers’ affiliated wireline networks.³³ As the marketplace develops and technologies continue to change, it is critical that these roaming, interconnection and access obligations remain strong bulwarks against efforts to foreclose competition by denying network access.

26 Reed E. Hundt and Gregory L. Rosston, *Articulating a Modern Approach to FCC Competition Policy*, at 3 (Sep. 2013), available at http://www.techpolicyinstitute.org/files/hundt_rosston_articulating%20a%20modern%20approach%20to%20fcc%20competition%20policy.pdf (“Hundt/Rosston Paper”).

27 *Application of AT&T Inc. and Qualcomm Incorporated For Consent to Assign Licenses and Authorizations*, Order, 26 FCC Rcd 17589 ¶ 30 (2011) (“AT&T-Qualcomm Order”).

28 *Policies Regarding Mobile Spectrum Holdings*, Notice of Proposed Rulemaking, 27 FCC Rcd 11710 ¶ 4 (2012).

29 *Id.*

30 See Jonathan B. Baker, “Spectrum Auction Rules That Foster Mobile Wireless Competition,” at 5, WT Docket Nos. 12-268 and 12-269 (Mar. 12, 2013).

31 *16th Wireless Competition Report* ¶ 2.

32 See *Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers and Other Providers of Mobile Data Services*, Second Report and Order, 26 FCC Rcd 5411 ¶ 15 (2011) (“Data Roaming Order”) (“[T]he availability of roaming capabilities is and will continue to be a critical component to enable consumers to have a competitive choice of facilities-based providers offering nationwide access to commercial mobile data services.”).

33 See CONNECTING AMERICA: THE NATIONAL BROADBAND PLAN, at 49 (2010), available at <http://download.broadband.gov/plan/national-broadband-plan.pdf> (“NATIONAL BROADBAND PLAN”) (“For consumers to have a choice of service providers, competitive carriers need to be able to interconnect their networks with incumbent providers.”).

COMPETITION IN THE WIRELESS MARKETPLACE IS NOW AT A CROSSROADS

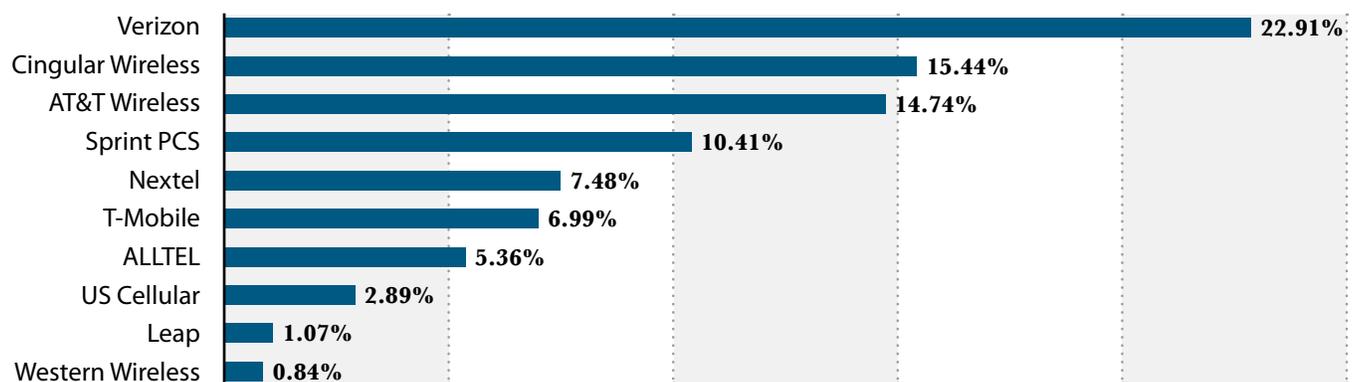
Despite the past success of competition in the wireless industry, today’s marketplace is once again teetering on the brink of duopoly, dominated by the “Twin Bells,” AT&T and Verizon. A spate of acquisitions by the Twin Bells in recent years has robbed the wireless marketplace of much of its former vibrancy.³⁴

The latest mobile competition report found that the wireless industry is highly concentrated and that such concentration has increased markedly in recent years.³⁵ The Report pointed to a steady increase in the Herfindhal-Hirschman Index (HHI), a common indicator of industry consolidation. The Report found that the wireless industry’s HHI value had grown to 2,873 by the end of 2011—373 points higher than the level

considered “highly concentrated,” and 722 points higher than the level measured in 2003 (the first year the Commission calculated HHIs).³⁶

The report also provided powerful confirmation of the growing dominance of the Twin Bells with respect to subscriber counts, while other remaining competitive carriers experience persistent subscriber losses.³⁷ The following two graphics demonstrate the increasingly excessive market power of these carriers with respect to subscriber counts, with the first graphic reflecting the relatively strong competition that existed in 2002, and the second displaying the dominance of the Twin Bells a decade later, at the end of 2012:

Percentage of Top Ten Carriers’ Subscriber Share, Year End 2002



Source: Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Eighth Report, 18 FCC Rcd 14783 (2003).

³⁴ See 16th Wireless Competition Report ¶¶ 14-15; Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Mobile Conditions with Respect to Commercial Mobile Services, Fifteenth Report, 26 FCC Rcd 9664 ¶ 14 (2011) (“15th Wireless Competition Report”); Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Commercial Mobile Services, Fourteenth Report, 25 FCC Rcd 11407 ¶ 16 (2010) (“14th Wireless Competition Report”).

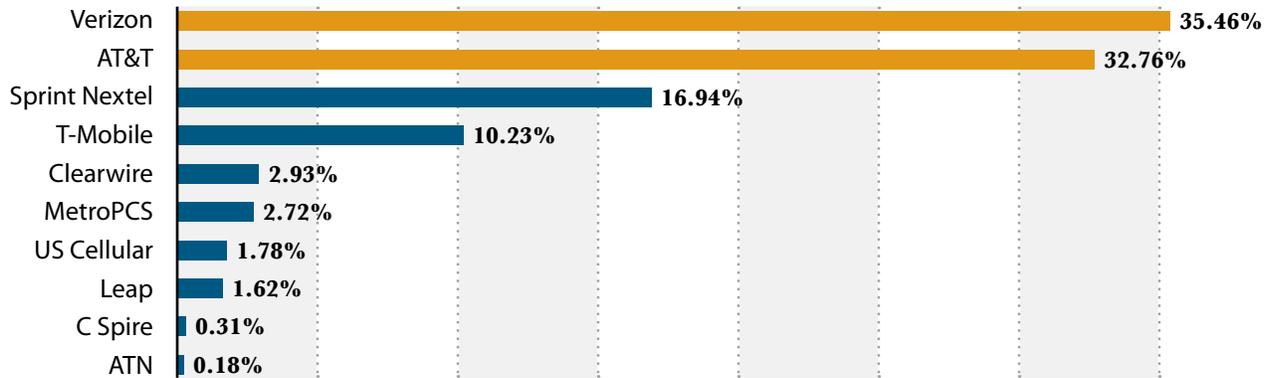
³⁵ 16th Wireless Competition Report ¶ 2.

³⁶ *Id.*

³⁷ See FierceWireless, Grading the Top 10 U.S. Carriers in the Fourth Quarter of 2012, Mar. 15, 2013, available at <http://www.fiercewireless.com/special-reports/grading-top-10-us-carriers-fourth-quarter-2012>

Discussion

Percentage of Top Ten Carriers' Subscriber Share, Year End 2012



Source: *FierceWireless*, Grading the Top 10 U.S. Carriers in the Fourth Quarter of 2012 (Mar. 15, 2013), available at <http://www.fiercewireless.com/special-reports/grading-top-10-us-carriers-fourth-quarter-2012>. Note that the fifth and sixth largest providers (Clearwire and MetroPCS, respectively) have since exited the marketplace, and the newly-minted sixth largest provider (Leap) is in negotiations to be acquired by AT&T. Additionally, Verizon posted 941,000 retail postpaid net additions in 2Q13; AT&T posted 551,000 additions for the same period. See Verizon Communications Investor Quarterly 2Q 2013 (July 18, 2013), available at http://www2.verizon.com/investor/DocServlet?doc=2013_2q_qb_vz.pdf; AT&T Inc. Investor Briefing 2Q 2013 (July 23, 2013), available at http://www.att.com/Investor/Earnings/2q13/lb_final_2q13.pdf.

The Report also found that AT&T and Verizon together account for an astounding 67 percent of industry revenue.³⁸ Consistent with that finding, a recent FCC staff analysis issued in connection with AT&T's proposal to acquire T-Mobile observed that the Twin Bells account for 80 percent of industry EBITDA (without even accounting for several subsequent transactions).³⁹ By either metric, the Twin Bells' combined market share is far higher than the combined shares for the top two firms in other "consolidated" industries. By comparison, the top two firms in the auto industry hold a 35 percent share; the top two firms in the oil industry hold 24 percent share; and the top two firms in the banking industry hold a 20 percent share.⁴⁰ In all of these industries, greater consolidation has led to higher prices for consumers.⁴¹

Equally distressing were the Report's findings on the Twin Bells' steadily growing spectrum holdings. In particular, the Report indicated that AT&T and Verizon had entrenched their dominant position in spectrum holdings below 1 GHz—spectrum that is vital to competitive carriers'

ability to expand their network coverage in both rural and urban markets, as discussed further below. The Report found that the Twin Bells "together hold approximately 90 percent of Cellular spectrum based on megahertz-POPs (MHz-POPs), which was the first band to be licensed for commercial mobile services and has the most extensive network buildout."⁴² The Report also found that "Verizon Wireless holds 45 percent of the MHz-POPs of Cellular and 700 MHz spectrum combined, while AT&T holds approximately 39 percent."⁴³ The following chart summarizes the average spectrum holdings AT&T, Verizon, and other wireless providers, and clearly shows the dominant spectrum position of the Twin Bells, particularly in the low-frequency Cellular and 700 MHz bands. (See table, page 9)

This re-emerging wireless duopoly did not spring up overnight; the seeds have been taking root for more than a decade. As the GAO observed in a 2010 report, "[o]ver the past 10 years, consolidation in the wireless industry has generally been accomplished through a series of mergers and

³⁸ 16th Wireless Competition Report ¶ 52.

³⁹ *Applications of AT&T Inc. and Deutsche Telekom AG for Consent to Assign or Transfer Control of Licenses and Authorizations*, Staff Analysis and Findings, 26 FCC Rcd 16184 ¶ 37 (WTB 2011) ("AT&T-T-Mobile Staff Analysis").

⁴⁰ See Free Press, *Why the AT&T-T-Mobile Deal Is Bad for America*, Mar. 22, 2011, at 1, available at <http://www.freepress.net/sites/default/files/fp-legacy/ATT-T-Mobile.pdf>.

⁴¹ See STAN LUGER, CORPORATE POWER, AMERICAN DEMOCRACY, AND THE AUTOMOBILE INDUSTRY 44 (2005) (noting the Big Three automakers' continued practice of annually raising prices" in the late 1990s); Gov't Accountability Office, *Effects of Mergers and Market Concentration in the U.S. Petroleum Industry*, at 1 (May 2004) (finding that "mergers and increased market concentration generally led to higher wholesale gasoline prices in the United States from the mid-1990s through 2000"); Mark J. Garmaise and Tobias J. Moskowitz, *Bank Mergers and Crime: The Real and Social Effects of Credit Market Capitalization*, *Journal of Finance*, Vol. LXI, No. 2, at 495 (Apr. 2006) (finding that "neighborhoods that experience greater reductions in bank competition due to bank mergers are subject to future higher interest rates, diminished local construction, . . . an influx of poorer households," and even "an associated increase in property crime").

⁴² 16th Wireless Competition Report ¶ 2.

⁴³ *Id.*

Discussion

Avg. Spectrum Holding (MHz)

	Cellular	PCS	AWS	700 MHz	MMDS/ AWS-4	WCS	2.5 GHz	TOTAL (weighted avg.)
AT&T	22	34	4	23				90
Verizon	25	17	26	29				99
T-Mobile	0	26	33	–				58
Sprint*	14	36	–	–				50
MetroPCS	–	7	11	1				19
Leap	–	6	13	1				19
US Cellular*	7	7	7	5				25
NTELOS	–	23	3	–				26
Clearwire	–	–	–	–	–		135	135
Spectrum in bands in use today	54	130	90	52	–	–	150	476
LightSquared	–	–	–	–	20		–	20
DISH Network*	–	–	–	6	40		–	44
Broadcast**	–	–	–	84	–		–	84
Federal***	–	10	–	–	–		–	10
Spectrum with visibility to use	54	140	90	136	60	20	150	650

* Does not include sale of USM Midwest markets to Sprint

** Dish has 6 MHz of 700 MHz spectrum across 217m pops

*** Congress estimates 84 MHz could be auctioned nationwide

**** 10 MHz H-block

Source: J.P. Morgan estimates, FCC data.

acquisitions,” including Cingular’s acquisition of AT&T in 2004, AT&T’s acquisition of Dobson in 2007, Verizon’s acquisition of ALLTEL in 2008, and AT&T’s acquisition of Centennial in 2009.⁴⁴ In addition to these mega-mergers, numerous other competitive carriers have exited the market via acquisition by AT&T and Verizon, including Rural Cellular Corporation, Aloha Wireless, and Edge Wireless.⁴⁵ The GAO accordingly concluded that the “primary change in the wireless industry” over the last decade is “industry consolidation,” and noted that from 2006 to 2009, AT&T and Verizon increased

their subscriber market share by nearly 20 percent.⁴⁶

Since then, the pace of consolidation has only increased, as AT&T and Verizon not only have acquired smaller rivals but have engaged in significant spectrum-only transactions that have strengthened their position vis-à-vis competitive carriers. These transactions include Verizon’s 2012 acquisition of AWS-1 licenses from SpectrumCo and Cox,⁴⁷ AT&T’s 2012 acquisition of NextWave Wireless and its substantial WCS and AWS spectrum holdings,⁴⁸ AT&T’s 2011 acquisition of Qualcomm’s nationwide Lower 700

44 U.S. Gov’t Accountability Office, GAO-10-779, *Telecommunications: Enhanced Data Collection Could Help FCC Better Monitor Competition in the Wireless Industry*, at 11 (2010), available at <http://www.gao.gov/new.items/d10779.pdf>.

45 See *Applications of Cellco Partnership d/b/a Verizon Wireless and Rural Cellular Corporation for Consent To Transfer Control of Licenses, Authorizations, and Spectrum Manager Leases*, Memorandum Opinion and Order, [FCC 08-181] (2008); *Application of Aloha Spectrum Holdings Co. LLC and AT&T Mobility II LLC Seeking FCC Consent for Assignment of Licenses and Authorizations*, Memorandum Opinion and Order, [FCC 08-26] (2008); Press Release, AT&T Completes Acquisition of Edge Wireless to Enhance Wireless Coverage, Apr. 18, 2008, available at <http://www.att.com/gen/pressroom?pid=4800&cdv=news&newsarticleid=25521>.

46 *Id.* at 10, 13.

47 See generally *Applications of Cellco Partnership d/b/a Verizon Wireless and SpectrumCo LLC and Cox TMI, LLC for Consent to Assign AWS-1 Licenses*, Memorandum Opinion and Order and Declaratory Ruling, 27 FCC Rcd 10698 (2012) (“*Verizon-SpectrumCo Order*”).

48 See generally *Applications of AT&T Mobility Spectrum LLC, New Cingular Wireless PCS, LLC, Comcast Corporation, Horizon Wi-Com, LLC, NextWave Wireless, Inc., and San Diego Gas & Electric Company for Consent To Assign And Transfer Licenses*, Memorandum Opinion and Order, 27 FCC Rcd 16459 (2012).

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MHz downlink spectrum,⁴⁹ and AT&T's proposed acquisition of Leap Wireless and its AWS and PCS spectrum. CCA's own internal analysis reveals that, in 2012, the Twin Bells accounted for nearly 55 percent of all secondary market spectrum acquisitions and 70 percent of all such acquisitions involving spectrum below 1 GHz. The chart below depicts the various mergers and acquisitions by AT&T and Verizon that have brought the industry to the brink of duopoly. (See chart, page 11)

This dramatic increase in consolidation and attendant decline in competition threatens to drive up retail prices,⁵⁰ reduce innovation,⁵¹ and slow job growth in an economy still recovering from the Great Recession.⁵² While consumer demand for wireless services continues to grow, the market power of AT&T and Verizon is leading to investment levels below what would occur in a more competitive environment. And competitive carriers face ongoing exclusionary actions by AT&T and Verizon, such as denial of data roaming on commercially reasonable terms and conditions and the historical lack of interoperability in the Lower 700 MHz band, that are stranding expenditures and impeding network deployment and investment.

Compounding these competitive problems, the FCC has adopted rules that affirmatively disadvantage smaller wireless carriers in the telecommunications marketplace. Most notably, the FCC's *USF/ICC Transformation Order* put in place a new method of allocating high-cost universal service support that abandons the longstanding principle of competitive neutrality,⁵³ and entrenches incumbent wireline providers, including the wireline businesses of AT&T and Verizon, at the expense of competitive wireless providers.⁵⁴

Ignoring consumers' growing preference for mobile wireless services over legacy landline networks, the *Order* slashed funding for rural wireless carriers by approximately 60 percent, creating a Mobility Fund limited to a one-time outlay of \$300 million in Phase I support and \$500 million annually for Phase II. At the same time, the *Order* significantly increased the funding available to incumbent local exchange carriers ("ILECs"); the FCC gave price-cap ILECs a right of first refusal to receive \$1.8 billion in Phase II CAF support annually, and set aside more than \$2 billion in annual funding for rate-of-return ILECs without any mechanism to make such funding available to more efficient competitive providers. Bestowing lavish subsidies on the wireline businesses of AT&T and Verizon, while dramatically cutting support for rural wireless carriers, only widens the competitive gulf between CCA's members and the Twin Bells.

49 See generally *AT&T-Qualcomm Order*.

50 See *AT&T/T-Mobile Staff Analysis* ¶ 48 (finding that AT&T's proposal to eliminate competitor from wireless marketplace would give AT&T unilateral incentive to raise price).

51 *Id.* ¶ 121 (finding that AT&T's efforts to eliminate competition through mergers threatened to "diminish[] innovation" in the wireless industry).

52 See *id.* ¶ 261 (finding that AT&T's takeover of T-Mobile would have resulted in a loss of jobs both at AT&T and across the wireless industry).

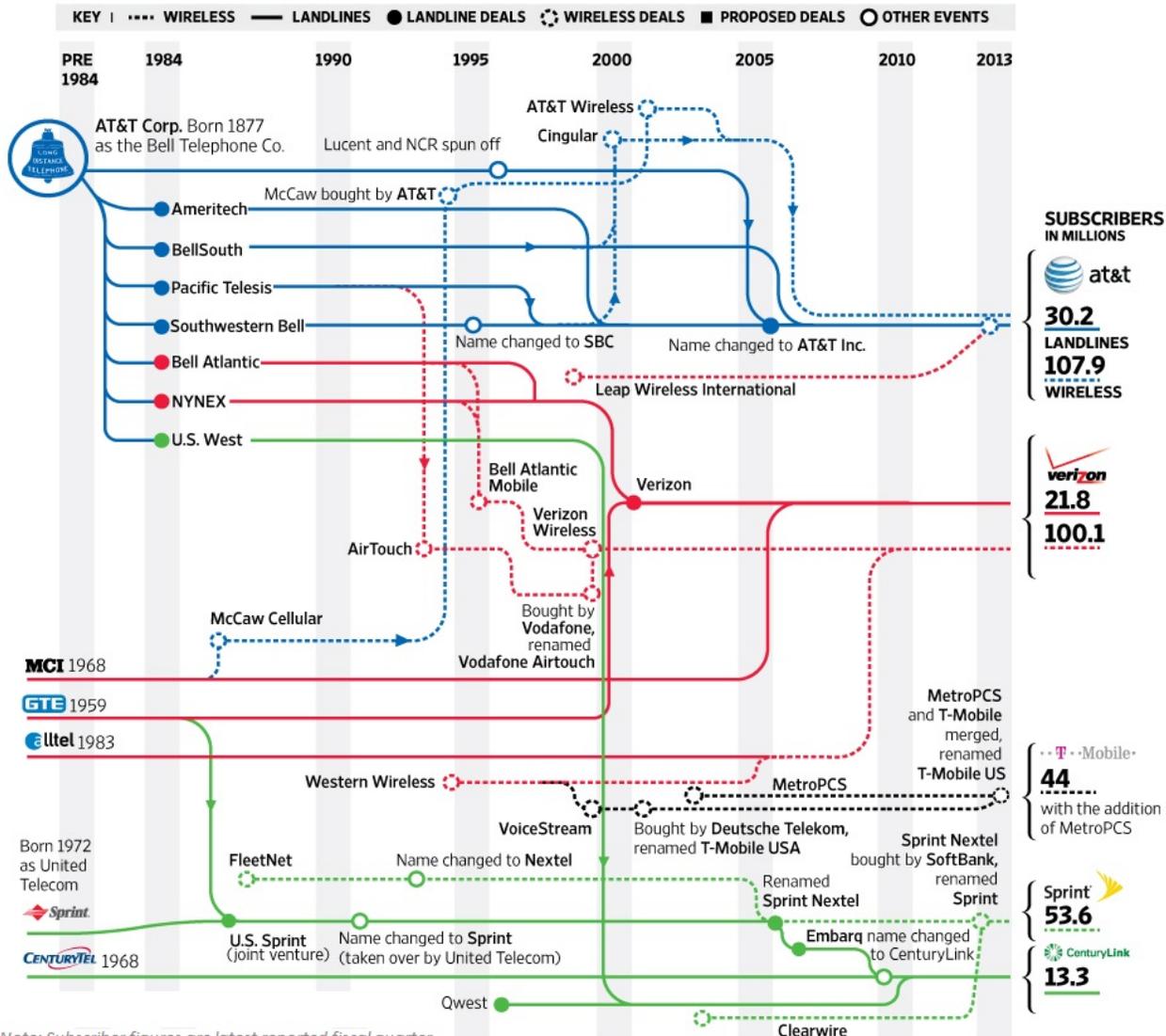
53 See, e.g., *Federal-State Joint Board on Universal Service*, Report and Order, 12 FCC Rcd 8776 ¶¶ 24-27, 43-52 (1997).

54 *Connect America Fund et al.*, Report and Order and Further Notice of Proposed Rulemaking, 26 FCC Rcd 17663 (2011) ("*USF/ICC Transformation Order*" or "*USF/ICC Transformation FNPRM*").

Discussion

A Changing Telecom Landscape

In 1982 AT&T agreed to break up and end its monopoly over the country's telecommunications business to settle an antitrust lawsuit with the U.S. government, with the division taking effect in 1984. In the decades since, the industry has undergone incredible change—and consolidation—with the advent of wireless communications.



Source: Wall St. J., Map: A Changing Telecom Landscape (May 6, 2013), available at <http://online.wsj.com/news/articles/SB10001424127887323372504578466962530503142>.

THE COMMISSION SHOULD TAKE DECISIVE ACTION TO RESTORE WIRELESS COMPETITION

There currently are a number of disparate proceedings, involving multiple Bureaus that affect competition in the wireless industry. Such proceedings include the spectrum screen, incentive auction, and roaming and interoperability proceedings handled by the Wireless Telecommunications Bureau along with the Media Bureau and Office of Engineering and Technology, and the IP transition and universal service reform proceedings handled principally by the Wireline Competition Bureau. In addition, there are a variety of transactions, large and small, that are reviewed by multiple offices within the Commission. But while inevitably there is informal coordination within the agency, the reality is that, in dealing with such disparate, individual proceedings, the overall focus on wireless competition has not been deemed a sufficient priority. The Commission has been addressing wireless competition issues on an *ad hoc* basis for years, and the result has been a slide back towards duopoly conditions.

The Commission can help facilitate the growing connectivity of our networks and reverse the march towards duopoly by creating a Wireless Competition Task Force. A cross-bureau, agency-wide Task Force that is identified as a core component of the Commission's agenda and mission and that taps into the resources that can be brought to bear by all relevant stakeholders would be able to shine a spotlight on competition issues and create a comprehensive vision that is necessary to prioritize the improvement of competitive conditions in the wireless industry. Commissioners, FCC staff, members of Congress and other stakeholders have all raised proposals in the recent past regarding the way

the FCC conducts business.⁵⁵ By bringing together staff from across the agency and establishing more formal leadership and accountability for relevant cross-Bureau initiatives, the Task Force would be able to undertake coordinated action on the various issues that affect wireless competition under a broad, comprehensive framework for increasing wireless competition.

The Commission has recognized the benefits of an agency-wide Task Force in bringing together different parts of the agency and creating a wide-ranging, visionary plan, as when it created the Technology Transitions Policy Task Force, which AT&T proposed and Commissioners from both sides of the aisle support. AT&T explained that such a Task Force would provide “a coordinated framework for addressing ... related issues” that until then had “been considered only in myriad widely disparate proceedings.”⁵⁶ Chairman Genachowski moved quickly to create that Task Force in response to AT&T's proposal,⁵⁷ and Commissioner Pai later touted the Task Force as a vehicle to “develop a holistic set of recommendations for moving forward with” a set of related reforms.⁵⁸

Because improving competition in the wireless industry should be a principal mission of the Commission at this critical juncture, it deserves to be the subject of a similarly comprehensive team effort under the auspices of a Task Force. The Task Force should be charged with analyzing, developing, and implementing proposals for promoting effective wireless competition across bureaus and across proceedings. Above all, the goal of the Task Force should be

55 See Chairman Wheeler First Day Perspectives.

56 Letter of Robert W. Quinn, SVP, Federal Regulatory, AT&T Services, Inc., to Marlene H. Dortch, Secretary, FCC, WC Docket No. 05-25, at 1, 7 (filed Jan. 14, 2013).

57 See “FCC Chairman Julius Genachowski Announces Formation of Technology Transitions Policy Task Force,” (Dec. 10, 2012), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-317837A1.pdf.

58 FCC, “Opening Remarks of Commissioner Ajit Pai at First Technology Transitions Policy Task Force Workshop,” at 1, Mar. 18, 2013, available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2013/db0318/DOC-319565A1.pdf.

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to restore the prerequisites for a well-functioning wireless marketplace, including more robust restraints on consolidation that harms competition and assurances of access to key inputs such as spectrum, devices, and networks. A Task Force would be uniquely positioned to address the wide-ranging issues that are affecting competition in the wireless industry, including the following priority areas.

IMPROVING THE “SPECTRUM SCREEN”:

The Commission’s spectrum screen lies at the heart of the agency’s efforts to evaluate the effects of proposed transactions, auction design choices and technological and economic growth. Indeed, Chairman Wheeler has said that “technological innovation, growth and national economic leadership have always been determined by our networks; competition drives the benefits of those networks; and [the FCC] ha[s] the responsibility to see to the expansion of those networks, *including the appropriate allocation of adequate amounts of spectrum.*”⁵⁹ The screen identifies spectrum acquisitions (either in the secondary market or at auction) that may give an entity control over too much spectrum in a given area. CCA has proposed adopting (1) a separate screen for local spectrum holdings below 1 GHz (to supplement the existing screen applicable to overall local holdings); (2) a new nationwide screen; (3) a clear and predictable mechanism for adding (or removing) spectrum from the analysis; and (4) a heightened level of scrutiny for transactions exceeding any applicable screen threshold.⁶⁰ Notably, the Department of Justice recently submitted a paper to the Commission explaining that “rules that ensure the smaller nationwide networks, which currently lack substantial low-frequency spectrum, have an opportunity to acquire such spectrum could improve the competitive dynamic among nationwide carriers and benefit consumers.”⁶¹ Guidance also can be drawn from the experience of other developed countries, virtually all of which have differentiated between spectrum above and below 1 GHz to prevent aggregation of low-frequency spectrum.⁶² Industry Canada, for example, recently issued an updated “Framework Relating to Transfers, Divisions and Subordinate Licensing

of Spectrum Licences for Commercial Mobile Spectrum,” which considers, among other things, “the ability of the Applicants and other existing and future competitors to provide services, given the post-transfer concentration of commercial mobile spectrum in the affected License area(s)” and “the relative utility (e.g. above and below 1GHz) and substitutability of the licensed spectrum.”⁶³

An improved spectrum screen will be instrumental to improving the Commission’s oversight of secondary market transactions. The Commission’s record on this score has been mixed in recent years; while it appropriately supported the Department of Justice’s findings related to AT&T’s failed attempt to acquire T-Mobile, it nevertheless has approved many other significant acquisitions by AT&T and Verizon. In reviewing any further acquisitions by the Twin Bells, the Commission should make sure to hold them to their burden of demonstrating that the acquisition would benefit competition and consumers. The Task Force should be charged with completing its reforms to the spectrum screen as soon as possible. Moreover, going forward, the Task Force would be well situated to evaluate transactions in the broader context of the competitive conditions of the industry and in light of other, parallel proceedings that may be affected by transactions.

CONDUCTING FAIR AND PROCOMPETITIVE SPECTRUM AUCTIONS: The Commission has an excellent opportunity to stoke wireless competition through the upcoming incentive auction of spectrum currently allocated for broadcast television. CCA has urged the Commission to design its auction rules in a manner that gives carriers of all sizes a meaningful opportunity to acquire spectrum where needed, rather than simply allowing AT&T and Verizon to use their vast resources to dominate the auction. In particular, the Commission should adopt eligibility rules that will prevent excessive spectrum aggregation; bidding credits and related mechanisms that will promote participation by rural, mid-size and regional carriers; and transparent auction rules that give competitive carriers a meaningful opportunity to participate. The Task Force should make recommendations on auction design and

59 Chairman Wheeler First Day Perspectives (emphasis added).

60 See Comments of the Competitive Carriers Association, WT Docket No. 12-269 (filed Nov. 28, 2012).

61 Ex Parte Submission of the U.S. Dep’t of Justice, WT Docket No. 12-269, at 1 (filed Apr. 11, 2013).

62 See Letter of Rebecca Murphy Thompson, General Counsel, CCA, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 12-269 (filed Sept. 4, 2013) (describing international consensus on the qualitative differences between high- and low-frequency spectrum for mobile broadband deployment and the competitive importance of aggregation limits in the upcoming incentive auction); Sprint Nextel Comments, WT Docket No. 13-135, at 22-24 (filed June 17, 2013) (recounting statements by (1) Ofcom, the United Kingdom’s regulatory and competition authority for telecommunications; (2) the Radio Spectrum Policy Group of the European Union; (3) the policymaking body for telecommunications in Germany; (4) the Netherlands Ministry of Economic Affairs; and (5) Comreg, the Irish regulator, all recognizing the differences in spectrum above versus below 1 GHz) (CCA *International Ex Parte*).

63 Industry Canada, Framework Relating to Transfers, Divisions and Subordinate Licensing of Spectrum Licenses for Commercial Mobile Spectrum, DGSO-003-13, at 8, ¶¶ 39-40 (June 2013), available at <http://tinyurl.com/lfbnv6x>.

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eligibility criteria with an eye towards understanding how auction design can promote the broader vision of improving competitive conditions in the wireless industry.⁶⁴ In designing the auction, the Commission should heed the lessons learned in recent spectrum auctions held in the Netherlands, Canada, and other countries.⁶⁵ Most recently, in its auction of 700 MHz spectrum, New Zealand regulators adopted rules limiting bidders to three 2x5 MHz blocks of spectrum, or one-third of the 90 MHz of spectrum being made available.⁶⁶ The ministry in charge of the auction also crafted contingency rules (including potentially relaxing the initial aggregation limits) should parcels of spectrum remain unsold after the initial auction round closes.⁶⁷ Similarly, in the recent Dutch auction of 800 and 900 MHz spectrum, the Ministry of Economic Affairs (the regulating authority for Dutch spectrum) established set-asides for low-band spectrum in an effort to create a more competitive auction. More specifically, the Ministry of Economic Affairs crafted rules for the set-aside of (a) two 5 MHz paired spectrum blocks in the 800 MHz spectrum being auctioned and (b) one 5 MHz paired spectrum block in the 900 MHz spectrum being auctioned for “newcomers,” or applicants who were not license holders as of July 16, 2012 of one or more licenses for frequencies within 880-915 MHz and 925-960 MHz, or part of a group of which one or more members was a license holder for those frequencies.⁶⁸ Rather than depressing auction revenue, the auction raised far more funds than initially projected.⁶⁹ Particularly of note, this practice was in stark contrast to the Dutch spectrum auctions in 2000, in which the Dutch government rejected mechanisms to prevent the entrenched incumbents from aggregating all available licenses.⁷⁰ As a result, the Dutch

auction in 2000 failed to attract widespread participation. Labeled a “disaster” by one prominent auction economist, the auction raised a mere \$2.5 billion instead of the \$8.5 billion that Dutch government had forecast.⁷¹

These examples show that properly crafted eligibility rules can promote participation while simultaneously driving up auction revenues. Two recent economic studies analyzing these and other international examples underscore this point. The first study, by Professors Martin Cave and William Webb, exhaustively demonstrated through empirical evidence that restrictions adopted by various European regulators on the amount of sub-1 GHz spectrum that operators can acquire at auction have not resulted in *any* reduction in auction revenue in those countries.⁷² The second study, by Dr. Peter Cramton, analyzes several other international examples of spectrum aggregation limits at auctions, and finds that such limits not only stimulate competition but also *increase* auction proceeds, resulting in high—and in some cases record-breaking—revenues for the government.⁷³ These studies dovetail with a recent paper by former Chairman Reed Hundt and Dr. Gregory Rosston, which supports the imposition of *ex ante* caps in U.S. spectrum auctions in order to reduce uncertainty and encourage participation by competitive carriers.⁷⁴

In addition, the Commission should ensure, in the upcoming 600 MHz auction and in all future spectrum auctions, that the service rules for auctioned spectrum bands include an interoperability requirement. Indeed, device interoperability is a prerequisite to a well-functioning wireless marketplace; it encourages innovation, gives consumers more choices, and reduces costs to end users.⁷⁵ Interoperability also

64 For example, as one commenter recently noted, “if AT&T and Verizon are willing to pay a premium for spectrum, it may simply be because they have the most to lose from a more competitive market. In other words, their primary goal might *not* be to expand their own networks so much as to prevent anyone else from expanding theirs. And if that’s true, then the higher revenues from an unrestrictive auction would effectively be a tax on future wireless customers, just as royal monopolies were a tax on 16th century consumers.” Posting of Timothy B. Lee to The Washington Post’s The Switch, <http://www.washingtonpost.com/blogs/the-switch/wp/2013/11/13/wireless-competition-is-good-for-consumers-even-if-it-costs-taxpayers-extra/> (Nov. 13, 2013, 12:23 ET) (emphases added) (*Wireless Competition is Good for Consumers-Even if it Costs Taxpayers Extra*).

65 See CCA International Ex Parte (highlighting broad international consensus on special competitive significance of spectrum below 1 GHz, and development of auction rules to prevent undue aggregation of such spectrum).

66 Ex Parte Letter of Trey Hanbury, Hogan Lovells US LLP, Counsel to T-Mobile USA, Inc., to Marlene Dortch, FCC, GN Docket No. 12-268 & WT Docket No. 12-269 at 2 (Oct. 28, 2013).

67 Id.

68 Dutch Ministry of Economic Affairs, *Regulation Regarding the Application and Auction Procedure for 800, 900 and 1800 MHz Licenses* 1, 2-6, 83 (Complimentary English translation, July 10, 2012), available at www.agentschaptelecom.nl/onderwerpen/mobiele-communicatie/Multibandveiling (click on “courtesy-translation-auction-rules” under the “Downloads” menu on the right side of the page).

69 Maarten van Tartwijk, *Netherlands Raises €3.8 Billion from 4G Spectrum Auction*, Total Telecom (Dec. 17, 2012), available at <http://www.totaltele.com/view.aspx?ID=478411>.

70 *The price is right*, The Economist (July 27, 2000), available at <http://www.economist.com/node/340821> (“One simple rule for the auctions is that there should be more licenses than existing operators. The British heeded this, and reserved the biggest slice of spectrum for a new entrant. Sadly, the Dutch did not. Their five licenses were snapped up cheaply by the five incumbents.”)

71 Ken Binmore and Paul Klemperer, *The Biggest Auction Ever: The Sale of the British 3G Telecom Licenses*, at C93 (March 2012), <http://www.nuff.ox.ac.uk/users/klemperer/biggestpaper.pdf>.

72 See Martin Cave and William Webb, *Spectrum Limits and Auction Revenue: The European Experience*, attached to Ex Parte Letter of Rafi Martina, Sprint, to Marlene Dortch, FCC, WT Docket Nos. 12-268, 12-269 (Jul. 29, 2013).

73 See Peter Cramton, *The Rationale for Spectrum Limits and Their Impact on Auction Outcomes* (Sep. 9, 2013) attached to Ex Parte Letter of T-Mobile USA, Inc., to Marlene Dortch, FCC, GN Docket No. 12-268 & WT Docket No. 12-269 (Sep. 9, 2013).

74 *Hundt/Rosston Paper* at 16-17.

75 Chairman Wheeler also has noted the benefits of interoperable systems. Tom Wheeler, “Making Our History,” Mobile Musings, Dec. 1, 2011, available at <http://www.mobilemusings.net/2011/12/making-our-history.html>

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makes roaming technologically possible; non-interoperable devices simply cannot roam on other carriers' networks. The service rules for most bands designated for wireless telecommunications services included interoperability mandates at the time those frequencies were allocated, including the Cellular, Personal Communications Services ("PCS"), and Advanced Wireless Services ("AWS") bands. The Commission initially failed to do so for the 700 MHz band, but eventually implemented and codified an industry-forged interoperability agreement four years after the auction, once it became apparent that AT&T had succeeded in frustrating interoperability in the band. In the meantime, competitive carriers with spectrum in the Lower 700 MHz A Block, without access to interoperable devices, were forced to sit on the sidelines while AT&T and Verizon got a head start on deploying 4G LTE throughout the country. The Task Force should work to make sure that the Commission does not repeat this mistake in any future spectrum auction.

ENSURING COMMERCIALLY REASONABLE ACCESS TO DATA ROAMING ARRANGEMENTS:

CCA applauds the Commission's adoption of rules requiring facilities-based mobile wireless providers to offer data roaming on fair and reasonable terms,⁷⁶ and is pleased that the D.C. Circuit upheld those rules against a challenge by Verizon.⁷⁷ But as the latest Wireless Competition Report acknowledges, "the ability to negotiate data roaming agreements on non-discriminatory terms and at reasonable rates remains a concern," particularly where a competitive carrier cannot discern whether the terms and conditions offered by AT&T and Verizon are in line with those offered to other carriers.⁷⁸ The Task Force thus should investigate whether AT&T or Verizon are using their market power to artificially inflate roaming rates or delay roaming negotiations with competitive carriers so that arbitrators in data roaming disputes are equipped to determine whether the rates offered in a particular case are commercially unreasonable.

MAINTAINING BASELINE INTERCONNECTION AND ACCESS OBLIGATIONS IN THE IP ERA:

In addition to ensuring access to the Twin Bells' wireless networks, the Commission should safeguard competitive carriers' ability to interconnect with and gain reasonably priced access to the facilities of (e.g., backhaul) the wireline networks of AT&T, Verizon, and other incumbent LECs. In particular, the Commission should reject calls from large incumbent carriers to forbear from applying statutory interconnection obligations in areas where such carriers upgrade their networks from time division multiplexing ("TDM") technology to Internet Protocol ("IP") technology.⁷⁹ "Basic interconnection regulations . . . have been a central tenet of telecommunications regulatory policy for over a century,"⁸⁰ and the Commission should reaffirm that such requirements do not vary according to the underlying network technology. Chairman Wheeler has championed these principles in the past,⁸¹ and recently broadly outlined how to "encourage technological change while preserving the attributes of network services that customers have come to expect" – a set of values Chairman Wheeler calls the Network Compact.⁸² As part of this transition, the Commission should evaluate the competitive landscape for wireline-based services on both a retail and wholesale level. While some studies tout the emergence of *retail* wireline competition in arguing against regulation,⁸³ these studies do *not* demonstrate that the *wholesale* market for interconnection services is competitive or warrants deregulation. To the contrary, the Commission has recognized that the importance of ubiquitous network connectivity justify the continued application of interconnection mandates even in areas where robust facilities-based competition between ILECs and cable telephony providers has emerged at the retail level.⁸⁴ The Task Force will be well-positioned to evaluate IP transition issues that affect the wireless industry through the lens of the broader competitive constraints that impact the interactions between competitive carriers and incumbent LECs, including AT&T and Verizon.

⁷⁶ See generally *Data Roaming Order*.

⁷⁷ *Cellco P'Ship v. FCC*, 700 F.3d 534 (D.C. Cir. 2012).

⁷⁸ *16th Wireless Competition Report* ¶ 210.

⁷⁹ See AT&T Petition to Launch a Proceeding Concerning the TDM-to-IP Transition, at 22 (filed Nov. 7, 2012).

⁸⁰ NATIONAL BROADBAND PLAN at 49.

⁸¹ See Chairman Wheeler First Day Perspectives ("[A] change in technology may occasion a review of the rules, but it does not change the rights of users or the responsibilities of networks."); see also Tom Wheeler, "Networks are More Powerful than Nations," *Mobile Musings*, Jan. 28, 2011, available at <http://www.mobilemusings.net/2011/01/networks-are-more-important-than.html> ("Networks empower the connected. The greater the network connectivity, the greater that empowerment").

⁸² The IP Transition: Starting Now, <http://www.fcc.gov/blog/ip-transition-starting-now> (Nov. 19, 2013).

⁸³ See, e.g., Anna-Maria Kovacs, *Telecommunications Competition: The Infrastructure-Investment Race* (Oct. 8, 2013), available at http://internetinnovation.org/images/misc_content/study-telecommunications-competition-09072013.pdf.

⁸⁴ See, e.g., *Petition of Qwest Corporation for Forbearance Pursuant to 47 U.S.C. § 160 in the Omaha Metropolitan Statistical Area*, Memorandum Opinion and Order, 20 FCC Rcd 19415 ¶ 86 (2005) (recognizing that, even though the emergence of facilities-based competition in Omaha justified forbearance from unbundling requirements, granting forbearance from interconnection requirements would be inappropriate because the ILEC, as the only carrier with a ubiquitous network, would retain the "the ability to exercise market power over interconnection").

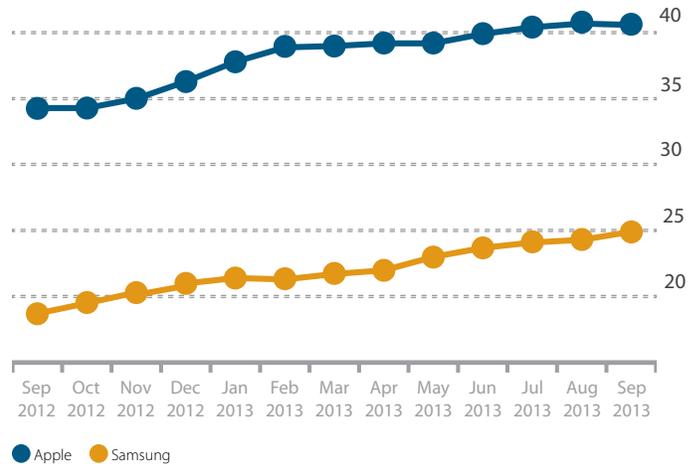
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PROMOTING CONSUMER ACCESS TO AND PRESERVING CONSUMER CHOICE OVER HANDSETS AND OTHER DEVICES: As noted above, handsets are another key input for competitive carriers. Currently, two equipment manufacturers, Apple and Samsung, dominate the handset marketplace (See graph, right).⁸⁵

In the middle of 2013, Apple and Samsung together held a combined 65.5 percent of the U.S. smartphone subscriber market share, while third place HTC only accounted for 7.1 percent of subscribers. This is particularly troubling when at least one of these manufacturers has a reputation of “famously demanding contracts” and an overall “high handed approach.”⁸⁶ Samsung, on the other hand, pulled in \$5.1 billion of a total \$5.3 billion—or 95 percent—of global profits from Android smartphone sales reported during the first quarter of 2013.⁸⁷ In parallel with this increased market share, the two largest wireless providers have used various methods to restrict competitive carriers’ access to such devices. Meanwhile, rural and regional America continues to face challenges accessing smartphones, particularly as rural carriers need additional spectrum resources to deploy 4G data networks.⁸⁸

For example, as CCA has documented, AT&T and Verizon have a lengthy history of entering into exclusive device arrangements that enable them to control access to the latest, most desirable devices.⁸⁹ AT&T currently has an exclusive arrangement to sell the iconic Samsung Galaxy S4 Active, as well as the new Nokia Lumia 1520 “phablet.” And even where competitive carriers are not immediately foreclosed from access to devices through exclusive distribution agreements, these carriers routinely run into closed doors by equipment manufacturers, unwilling to negotiate for procurement of their devices.

Share (%) of Smartphone Subscribers



Beyond efforts to frustrate *competitors’* access to devices, AT&T and Verizon typically sell “locked” handsets to *consumers*, which cannot be used once a subscriber has changed providers. While such handsets can be “unlocked” if the OEM allows, the Copyright Office recently eliminated an exemption to the Digital Millennium Copyright Act allowing subscribers to do so without violating copyright law.⁹⁰ The White House has expressed its strong disagreement with that decision, explaining that “consumers should be able to unlock their cell phones without risking criminal or other penalties,” and that unlocking is “important for ensuring we continue to have the vibrant, competitive wireless market that delivers innovative products and solid service to meet consumers’ needs.”⁹¹ CCA agrees with the White House—and with Chairman Genachowski, who said that a ban on unlocking “raises serious competition and innovation concerns.”⁹² CCA

85 Press Release, comScore Reports September 2013 U.S. Smartphone Subscriber Market Share, Nov. 5, 2013; see also Press Release, comScore Reports August 2013 U.S. Smartphone Subscriber Market Share, Oct. 4, 2013; Press Release, comScore Reports July 2013 U.S. Smartphone Subscriber Market Share, Sept. 6, 2013; Press Release, comScore Reports June 2013 U.S. Smartphone Subscriber Market Share, Aug. 7, 2013; Press Release, comScore Reports May 2013 U.S. Smartphone Subscriber Market Share, June 28, 2013; Press Release, comScore Reports April 2013 U.S. Smartphone Subscriber Market Share, June 4, 2013; Press Release, comScore Reports March 2013 U.S. Smartphone Subscriber Market Share, May 3, 2013; Press Release, comScore Reports February 2013 U.S. Smartphone Subscriber Market Share, Apr. 4, 2013; Press Release, comScore Reports May 2013 U.S. Smartphone Subscriber Market Share, June 28, 2013; Press Release, comScore Reports January 2013 U.S. Smartphone Subscriber Market Share, Mar. 6, 2013; Press Release, comScore Reports December 2012 U.S. Smartphone Subscriber Market Share, Feb. 6, 2013 (each available at http://www.comscore.com/insights/Press_Releases).

86 Caroline Gabriel, All Three Russian Leaders Dump iPhone, Rethink Wireless (July 16, 2013), available at <http://www.rethink-wireless.com/2013/07/16/all-russian-leadersdump-iphone.htm>.

87 Ben Munson, Report: Samsung Accounts for Nearly Half of All Android Web Traffic in U.S., Wireless Week (July 17, 2013), available at <http://www.wirelessweek.com/news/2013/07/> (articles sorted by date).

88 See U.S. Census Bureau, Pub. No. P20-569, Computer and Internet Use in the United States: Population Characteristics 12 (May 2013), available at <http://www.census.gov/prod/2013pubs/p20-569.pdf> (“At least one driver of smartphone use is the ability to access mobile telecommunications technology, such as ‘3G’ or ‘4G’ data networks . . . [T]he percentage of smartphone users in metropolitan areas (50.0 percent) was significantly higher than for nonmetropolitan areas (38.9 percent), a difference at least somewhat attributable to these high-speed data networks being more readily available in urban areas.”).

89 See, e.g., Rural Cellular Association, Petition for Rulemaking Regarding Exclusivity Arrangements Between Commercial Wireless Carriers and Handset Manufacturers, RM-11497 (filed May 20, 2008).

90 See *Exemption on Prohibition of Copyright Protection Systems for Access Control Technologies*, 77 Fed. Reg. 65,260, 65,265-66 (Oct. 26, 2012).

91 White House, “It’s Time to Legalize Cell Phone Unlocking,” Mar. 4, 2013, available at <https://petitions.whitehouse.gov/petition/make-unlocking-cell-phones-legal/1g9KhZG7>.

92 FCC, “Statement from FCC Chairman Julius Genachowski on the Copyright Office of the Library of Congress Position on DMCA and Unlocking New Cell Phones,” Mar. 4, 2013, available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2013/db0304/DOC-319250A1.pdf.

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also agrees with Acting Chairwoman Clyburn that “consumers who satisfy the reasonable terms of their contracts should not be subject to civil and criminal penalties if they want to take their device to a new carrier.”⁹³

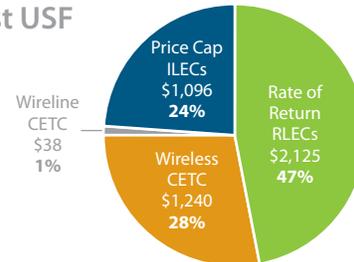
CCA will work with the Commission more broadly to ensure that competitive carriers have access to popular devices and can offer those devices to consumers at prices comparable to AT&T and Verizon. However, OEM involvement is critical. While Verizon and AT&T may have recently adopted new unlocking policies, many OEMs manufacture and sell “locked” devices to the carriers without the carriers’ direction and sometimes knowledge. To that end, the Task Force should hold one or more informational workshops on OEM device procurement, similar to workshops held on device interoperability issues⁹⁴ and the upcoming incentive auction.⁹⁵ As Chairman Wheeler recently noted on the issue of device unlocking, “enough time has passed, and it is now time for the industry to act voluntarily or for the FCC to regulate.”⁹⁶ In addition, these workshops should collect data on the competitive effects of device exclusivity arrangements, the financial advantages (both in terms of device sales as well as subscriber churn) of exclusivity contracts, obstacles faced by competitive carriers in obtaining access to devices, and other relevant data points. Meanwhile, CCA will also continue to encourage the Commission to coordinate with the Copyright Office and Congress in restoring the exemption.

REVIEWING USF POLICIES TO RESTORE COMPETITIVE NEUTRALITY: Finally, as part of the ongoing and iterative process to reform USF, the Commission should take action to restore competitive neutrality to its high-cost support mechanisms. The chart to the side shows unjustified increase of high-cost support for ILECs and the dramatic and detrimental reduction in funding for rural wireless carriers.

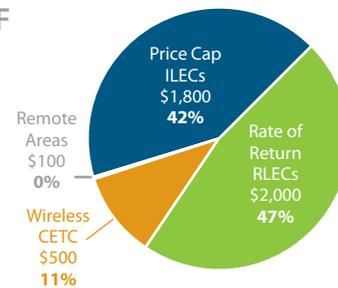
The *USF/ICC Transformation Order* only deepened the competitive divide in the industry by significantly increasing the funding available to ILECs, including those

Universal Service Reform Impact Existing Recipients

2011 High Cost USF Support, \$M



2013 - 2017 CAF Support, \$M



affiliated with AT&T and Verizon, while drastically reducing support for rural wireless carriers. But the *USF/ICC Transformation FNPRM* did leave the door open to modifications that could diminish the wireline preferences embedded in the *USF/ICC Transformation Order*. For example, the *FNPRM* contemplates various rule changes that would diminish support potentially available to ILECs in the future—which in turn would free up additional funding that could be redirected to competitive wireless carriers, consistent with consumer preferences. CCA has joined a broad coalition of stakeholders urging the Commission to take every opportunity in its USF reform proceeding to put its support mechanisms on a more competitively and technologically neutral path.⁹⁷ As this reform effort continues, the Task Force will be well suited to ensure that such reforms advance, rather than undermine, competition in the wireless marketplace.

93 Acting FCC Chairwoman Mignon Clyburn Issues Statement on the Importance of Cellphone Unlocking to Consumers (Aug. 22, 2013), available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2013/db0822/DOC-322959A1.pdf.

94 See, e.g., Federal Communications Commission, Workshop on the Interoperability of Customer Mobile Equipment Across Commercial Spectrum Blocks in the 700 MHz Band (Apr. 26, 2011), available at <http://www.fcc.gov/document/federal-communications-commission-announces-agenda-workshop-interoperability-customer-mobil>.

95 See, e.g., Federal Communications Commission, Broadcaster LEARN Program Workshop (Oct. 26, 2012), available at <http://wireless.fcc.gov/learn/LEARN-Deck-12-5-12.pdf>; Federal Communications Commission, Incentive Auctions - LEARN - A Groundbreaking Event for the Broadcast Television, Mobile Wireless, and Technology Sectors of the U.S. Economy, available at <http://wireless.fcc.gov/incentiveauctions/learnprogram/index.html>; Federal Communications Commission, LEARN Workshop: 600 MHz Band Plan (May 3, 2013), available at <http://www.fcc.gov/events/learn-workshop-600-mhz-band-plan>.

96 Letter from The Hon. Tom Wheeler, Chairman, FCC to Steve Largent, President and CEO, CTIA – The Wireless Association (Nov. 14, 2013).

97 See Ex Parte Letter of Rebecca Thompson (CCA), Ross Lieberman (ACA), Steven Morris (NCTA), Matt Larsen (WISPA), Dean Marson (EchoStar), Jeffrey Blum (DISH Network), and Michael Repelyea (ViaSat), WC Docket No. 10-90 et al. (filed Aug. 3, 2012).

RESTORING COMPETITION FOR THE BENEFIT OF CONSUMERS

On a final note, protection of the competitive process should be valued over protecting individual competitors,⁹⁸ and CCA agrees that government policies neither should artificially prop-up any particular business plan or technology, nor cement in place any incumbent. A focus on competition is the best form of consumer protection, and robust competition protects consumers in more dynamic and effective ways than regulation.

In that vein, consumers, policymakers and industry stakeholders should be mindful that a decline in competition could spur the need for heavy-handed regulation, in an attempt to artificially recreate the benefits of competition for consumers. But this sort of *ex post* regulation is not likely to have the same dynamic and innovative results “that could have been” had competition not been foreclosed in the first instance. At the same time, the Commission must be aware of the unique mandates from Congress under the Communications Act.

CCA is confident that this Commission is capable of finding the right balance between regulation and innovation that will allow for the new, fourth network revolution to take hold both now and in the future. What is clear is that, based on all the available evidence, the wireless industry is at a tipping point. And what hangs in the balance is much more than just the fate of wireless carriers; indeed, what must be protected is *consumers’* access to the network, so that all of the opportunities, freedoms and empowerment that come with that access are also protected. Given the existing (and worsening) marketplace dynamics, the FCC should take a more prominent role in promoting a competitive communications marketplace.⁹⁹

A decline in competition could spur the need for heavy-handed regulation, in an attempt to artificially recreate the benefits of competition for consumers.

⁹⁸ See, e.g., *NYNEX Corp. v. Discon, Inc.*, 525 U.S. 128, 135 (1998).

⁹⁹ See, e.g., Howard A. Shelanski, *Justice Breyer, Professor Kahn, and Antitrust Enforcement in Regulated Industries*, 100 Cal. L. Rev. 487 (2012), available at <http://scholarship.law.berkeley.edu/californialawreview/vol100/iss2/7/>.

Conclusion

As we continue the work of guiding history's fourth network revolution, we should be mindful that "the challenge for those of us living history at this moment is to step forward, embrace the challenge and implement the solutions that the miracle of wireless connectivity enables."¹⁰⁰ The wireless industry is at a critical juncture, having undergone tremendous consolidation over the last decade that has reduced competition and conferred significant market power on AT&T and Verizon. The Commission should act decisively to restore competition and all the benefits it entails, including the efficient allocation of scarce resources, greater innovation, lower consumer prices, and increased quality of goods and services. A Wireless Competition Task Force will serve as an important catalyst for restoring the conditions necessary to allow competition to flourish.

* * * * *

The foregoing discussion demonstrates the wide range of issues that affect competition in the wireless industry. The creation of a Task Force that cuts across silos and compartmentalized thinking will promote the Commission's competition policy across these disparate areas. To be sure, the Commission currently has a handful of pending proceedings touching on many of the priorities discussed above, including spectrum aggregation, spectrum auctions, and the TDM-to-IP transition. And the Commission, with the strong leadership of Acting Chairwoman Clyburn, recently played an important role in fostering an industry solution to the interoperability problems that have long frustrated competition and broadband deployment in the Lower 700 MHz Band. There is far more work to be done to jumpstart competition. Indeed, given the disturbing decline in wireless

“The challenge for those of us living history at this moment is to step forward, embrace the challenge and implement the solutions that the miracle of wireless connectivity enables.”

competition in recent years, the Commission should undertake a more concerted, comprehensive, agency-wide approach to this multifaceted problem. A Task Force will be the most effective mechanism to ensure urgent attention to the wide-reaching reforms that the wireless industry so desperately needs, and CCA looks forward to working with the Commission to make the Task Force a reality.

¹⁰⁰ Tom Wheeler, "Making Our History," Mobile Musings, Dec. 1, 2011, available at <http://www.mobilemusings.net/2011/12/making-our-history.html>.

About CCA

CCA is the nation's leading association for competitive wireless providers and stakeholders across the United States. The licensed service area of CCA's more than 100 carrier members covers 95 percent of the nation. Visit www.competitivecarriers.org.



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ATTACHMENT B

Benefits of Competition in Mobile Broadband Services

William Lehr¹
MIT

1. Executive Summary

The U.S. economy is as dependent on its networked Information and Communications Technology (ICT) as it is on its networks of roads, electricity, and water. Advanced telecommunications services—which increasingly include wireless services such as mobile broadband—are essential infrastructure for a 21st Century economy. Keeping pace with the growth in wireless demand is confronting policymakers and our wireless industry ecosystem with a mix of complex challenges and opportunities. The challenges include sustaining continued rapid investment and innovation to expand mobile broadband capacity and capabilities while managing scarce spectrum resources more efficiently. These goals must be accomplished in the face of an increasingly complex and dynamic global economy. Success will expand markets and contribute to keeping us on track to reposition our economy for economic growth in the future.

Our success will depend on preserving the benefits of facilities-based competition in the mobile broadband market. The economic viability of such competition is being challenged from a number of directions, including changing technology, market, and regulatory conditions. The purpose of this paper is to explain how mobile broadband competition contributes to value creation and to provide a lower-bound estimate of its sizable dollar impact.

Mobile competition promotes allocative, productive, and dynamic efficiency.² Consumers benefit from expanded choice, improved quality, and lower prices. Competition forces firms to adopt industry best practices in order to survive. That means adopting business process and technical innovations that lower costs. Competition also contributes to making the economy more robust in the face of uncertainty and exogenous shocks by ensuring that all of our mobile broadband eggs are not in a single basket. Finally, robust competition in mobile broadband reduces the need to resort to the significantly less attractive alternative of government regulation, enabling society to rely instead on market forces to ensure provisioning of essential telecommunications services. All of these salubrious effects have price effects, too: put simply, *efficient competition contributes to lower prices*.

Unfortunately, estimating the price effect of competition and its contribution to value is not straightforward. A number of different approaches might be attempted, each with different data requirements and underlying restrictive assumptions that may be subject to challenge. An alternative approach is to review past wireless telecommunications competition and the historical impact of that competition on pricing. If the competitive dynamic observed in the past is continued, it is reasonable to conclude that the pricing

effects observed during that time are indicative of pricing effects that might be expected in the future. Based on a historical review of the effects of competition in the U.S. wireless communications market, a conservative estimate is that prices would be at least ten percent (10%) higher were it not for facilities-based competition in the mobile broadband market.

The resulting contribution to consumer surplus of sustaining robust facilities-based competition in the U.S.'s mobile broadband market is adding significantly more than \$20 billion in total surplus each year, worth over \$200 billion in total. The magnitude of this lower-bound contribution should be kept in mind to focus our priorities in framing communications policies, including our design of the spectrum auctions. Indeed, whereas the auction proceeds are a one-time event, the benefits of competition accrue yearly and are significantly larger.

2. Mobile Broadband is Essential Infrastructure for a Smart Economy

We are in the midst of the third great wave in the evolution of our ICT infrastructure. During the last decades of the 20th century, the emergence of the Internet and personal computing brought the power of ICT to the mass market, but access was limited in terms of speed and coverage.³ At the same time, the expansion of cellular services enabled personalized and ubiquitous telephony for everyone. The current transition to mobile broadband has opened the door to always/everywhere available computing and data communications, greatly expanding the ways in which ICT capabilities may be embedded in our everyday social and economic lives.

This vision of an ICT-powered future may be articulated in multiple ways. It is sometimes referred to as the "Internet of Things" (IoT),⁴ as "Big Data",⁵ or as "Cloud Computing."⁶ Each refers to the post-PC world in which our distributed and networked ICT resources allow us to collect better information and automate decision-making to allow more dynamic optimization of all sorts of tasks. These range from smart HVAC for buildings to smart supply chains; from smart healthcare to smart power grids. A recent Cisco Systems, Inc. (Cisco) report identifies this as a \$19 trillion global opportunity;⁷ a McKinsey Global Institute study sees the potential for \$300 billion per year in savings in Healthcare alone;⁸ and Massachusetts Institute of Technology (MIT) economists have found enterprises that take advantage of the new IT capabilities perform significantly better.⁹

The shift anticipated by this vision is occurring across all sectors—from healthcare to education, from green energy to transportation infrastructure, and from commerce to government.¹⁰ Realizing this vision is a centerpiece of White House technology policy:

Ensuring America has 21st century digital infrastructure—such as high-speed broadband Internet access, fourth-generation (4G) wireless networks, new health care information technology and a modernized electrical grid—is critical to our long-term prosperity and competitiveness.¹¹

Wireless services, including mobile broadband, are critical for sustaining U.S. global competitiveness as we shift our economy toward "smart" (*i.e.*, information-technology augmented) production. To understand how important mobile broadband is to the U.S. economy, consider the following:

- Wireless broadband is expected to increase Gross Domestic Product (GDP) by 1.6% to 2.2%, or \$259 to \$355 billion in 2017;¹²
- The wireless broadband industry value chain, of which cellular is a key component, supported almost 4 million jobs, representing over 2.6% of total employment in the U.S. and accounting for \$146.2 billion of GDP in 2011, almost the same as oil and gas extraction and more than publishing, agriculture, or the motion picture industries.¹³
- Cellular service providers directly employed over 210,000 people and generated more than \$185 billion in revenues in 2012,¹⁴ and they have invested over \$300 billion (excluding auction revenues) since 2000.¹⁵

The economic benefits of the Internet of Things/Big Data/Cloud Computing future identified above depend on ensuring wireless access. In the last several years, significant progress has been made in expanding the reach and capabilities of mobile broadband services. Today, mobile subscription penetration exceeds 100%, as a growing share of subscribers using multiple devices—almost two-thirds of which are smartphones or tablets.¹⁶ As of October 2012, mobile broadband was available to 99.5 percent of the U.S. population.¹⁷

Better broadband services and user devices create demand for richer multimedia content and more interactive applications, driving a virtuous cycle of investment across the entire Internet and wireless value chain.¹⁸ As a consequence, mobile broadband traffic has been growing exponentially, and is expected to grow globally at a compound rate of 61% from 2013 through 2018.¹⁹ Keeping pace with this growth is critical if the U.S. is to sustain its position at the forefront of global competition. Ensuring a healthy wireless ecosystem is essential for that to occur.

The health of the wireless ecosystem faces challenges from several directions, including: (i) sustaining continued infrastructure investment to expand capacity and to upgrade to newer more efficient and capable 4G and beyond technologies in order to meet the exponential growth in wireless traffic; (ii) alleviating the scarcity of radio frequency spectrum, an essential input for all wireless services; and (iii) transitioning to a market-based ecosystem that can more efficiently manage this increasingly complex and dynamic industry. Robust competition in mobile broadband services will help address each of these challenges.

In recent years, the policy debate has increasingly focused on the need to expand commercial access to spectrum resources for mobile broadband.²⁰ Addressing this challenge is closely related to the other two challenges of spectrum scarcity and expanding the market-based mobile broadband ecosystem. For example, too little spectrum for wireless disrupts efficient infrastructure investment.²¹ Today, spectrum is

artificially scarce because of legacy regulation and updated policy that is insufficiently flexible and dynamic to ensure that spectrum is allocated to its most efficient uses over time.²² To address this last problem, the Federal Communications Commission (FCC) is engaged in a range of policy efforts to reform spectrum management to both expand commercial access to spectrum resources and to transition to a management regime that is more flexible, dynamic and responsive to market forces.²³ The proposed broadcast spectrum incentive auction planned for 600 MHz spectrum is a key example of this effort.

In the debates over how best to design this auction, attention has focused on ensuring that the auction generates significant revenue. At times, concern over auction revenue has suggested a perverse inversion of policy goals: the principal goal of communications policy and the spectrum auctions is to promote a healthy wireless sector, and that means promoting competition.²⁴ Promoting competition may or may not maximize auction revenues, but is more likely to maximize the total welfare benefits realized from use of our national spectrum resources.²⁵ Auction revenues are limited to the potential for the spectrum to generate producer surplus, whereas total surplus is the sum of consumer and producer surplus. Consumer surplus is typically estimated to be an order of magnitude larger than producer surplus.²⁶ Furthermore, while realizing significant proceeds from spectrum auctions is a key goal,²⁷ we should remember that competition is necessary for the auction to proceed.²⁸ Thus, the primary goal of auction design and communication policies should be to promote effective competition.²⁹

3. Benefits of Competition in Telecommunications Services

Competition delivers a number of important economic benefits. First, competition induces efficient behavior from firms and consumers and drives markets toward efficient outcomes. The process of market competition directs resources to their highest value uses for both production and consumption (allocative efficiency) and firms to operate at minimum cost (productive efficiency). Over time, the struggle for market share by firms and the quest by consumers to best satisfy their desires for quality at lower prices induces markets to remain efficient over time (dynamic efficiency). Firms are driven to innovate and invest in new technologies and expanded capacity to lower costs and better match their service offerings to consumer tastes and competitors' offers. A well-functioning competitive market ensures that the maximum amount of demand is satisfied at the lowest possible cost, or in effect, that prices are as low as is consistent with economic viability.³⁰

Because real markets are imperfect, this efficiency goal remains more an aspiration than a reality; however, economists are generally agreed that promoting market competition offers the best hope for realizing economic efficiency.

Most products and services are outputs of an industry value chain, consisting of multiple upstream and downstream firms that supply raw materials and intermediate goods used in the production of the final consumption goods and services. In telecommunications, this includes (among others) chipmakers, network and end-user equipment manufacturers, application software and content providers, value-added resellers, and the facilities-based

telecommunication network operators.³¹ Competition at each stage along the value chain contributes to ensuring the efficiency of the entire value chain, and a lack of competition at any stage, poses a risk to competition across the entire value chain.

3.1. The Importance of Facilities-Based Competition

The focus here is on facilities-based competition among mobile broadband providers. In the U.S., we have a combination of national network operators and smaller, regional facilities-based providers. Additionally, we have a large number of partial facilities-based or reseller providers who compete in retail broadband service markets, while relying on the facilities-based providers' wholesale provisioning of network services.

Thus far, the U.S. has benefited from this mix of facilities-based competition. Competition in mobile services has contributed to a history of continuously falling prices, improving service quality, and continuous innovation across the wireless value chain. For example, the average monthly bill for mobile services fell from \$63.53 (Dec94) to \$48.73 (Dec12), or 1.5% per year for the last two decades,³² while usage has soared. For example, in 1994, mobile services were limited to mobile telephony whereas today, mobile services include mobile telephony, text messaging, and a rich array of mobile data services. In 1994, average consumption was 119 minutes of mobile telephony per month whereas by 2011, average consumption included 615 minutes for telephony, 584 text messages, and 500 MB of mobile data services per month. The average price per mobile telephony minute fell from \$0.472 to \$0.047, or at a compound growth rate of -13% per year from 1994 to 2011.³³ Since 2005, the average price per text message fell from \$0.037 to \$0.011 by 2009 (an annual growth rate of -45%), while the average price for mobile data fell from about \$0.11 per MB in 2009 to \$0.03 per MB in 2011 (an annual growth rate of -48%).³⁴

At the same time, the quality of mobile services increased substantially as mobile service providers have upgraded their networks to successive generations of technology. The first generation (1G) of cellular systems was based on analog technology. The conversion to second generation (2G) all-digital systems began after 1995. These offered significant improvements in capacity and service quality, and also were more spectrally efficient. However, the 2G services were still basically voice-only.³⁵ Beginning in 2001, operators started to upgrade their networks to 3G technologies, although these services only began to be widely available after 2006 and usage did not take off until late 2007, following the successful introduction of the iPhone and subsequent Android smartphones.³⁶

We are currently in the midst of the switch to the latest (fourth) generation of mobile technology known as 4G LTE.³⁷ This latest innovation represents the true convergence of mobile telephone and Internet services, offering a unified platform for providing mobile services over an all-IP (Internet Protocol) network. The 4G LTE technologies provide a number of benefits, including greater flexibility in managing radio spectrum resources, promising higher speeds, better service quality, and greater spectral efficiency. Operators began the deployment of LTE in 2009 and the first national offering occurred in late 2010. It is expected that by the end of 2014, we will have four national LTE networks substantially built out with the new technology.³⁸

3.2. Sustaining the Virtuous Investment Cycle

There is a virtuous cycle of investment all along the value chain. New network capabilities, new devices, and new content and services stimulate demand growth. The demand growth stimulates additional investment in expanding capacity and enhancing network quality, and the cycle continues. Faster fixed and mobile broadband services were needed to handle the traffic-generating potential of more interactive and rich multimedia traffic from higher resolution displays and faster, more capable end-user devices (*e.g.*, PCs, smartphones, e-Readers, and tablets). With the growth in the addressable market of users and devices able to consume high-data-rate content (*e.g.*, higher resolution video) and interactive applications (*e.g.*, growing share of user-generated content), application developers, content providers, and providers of other complementary value-added services (from mobile commerce to wellness services, from mobile conferencing to streaming video) find it attractive and, with the right policies, feasible to upgrade the quality of their services and, in so doing, create further demand for expanding capacity and network functionality. Throughout all of this, consumers are becoming increasingly accustomed to and desirous of expanding their mobile usage.

In addition, upgrades by one carrier may induce other operators to either upgrade also or lower prices to keep their less capable services competitive. Innovation continuously raises the bar for consumer expectations, fueling demand for further investment.

3.3. Competition Drives Learning and Innovation and Enhances Reliability

The dynamics of market competition enable consumers to learn about and choose among an array of service offerings. Most of today's smartphone users started out as dial-up Internet users with telephony-only mobile phones. Yesterday's adolescent gamers are today's young professionals at the forefront of the Internet economy. Figuring out what mix of devices, network services, and product offerings will be successful in this rich market environment is difficult. It is only by allowing a marketplace that supports diverse competition at all levels that we can generate the market experimentation that leads to the "next big thing."

Today, some may question whether the Internet of Things/Big Data/Cloud Computing vision articulated earlier isn't over-hyped. Certainly, in the Internet economy, we have seen excess confidence dashed when it became clear that realizing the benefits of the Internet confronts significant challenges. For example, following the passage of the Telecommunications Act of 1996, we saw an explosion of investment by Competitive Local Exchange Carriers (CLECs) and by Web-based ventures seeking to capitalize on the promise of Business-to-Business (B2B) and Business-to-Consumer (B2C) market opportunities.³⁹ Unfortunately for many investors, the Dot.Com bust occurred in mid-2000 when it became clear to investors that there were significant challenges that needed to be overcome to realize the Internet economy's future promise.⁴⁰ Key elements of those challenges included the need for last-mile broadband access, the need to reform business processes to facilitate adoption of new Internet business models,⁴¹ and the rationalization of the regulatory framework.⁴² Although many of the Dot.com and CLEC ventures that failed were the result of the market's weeding out process of poorly run businesses, the

fundamental vision of Internet-enabled markets was sound. With the build out of broadband infrastructure, the further maturation of B2B and B2C processes and the organizational change needed by adopting enterprises to be effective, and with the recovery of the global economy, many of the promised Internet markets have developed, albeit later than originally hoped.⁴³ Moreover, even while a number of telecom and Internet companies were failing, telecommunications traffic continued to grow as businesses across the economy were driven inexorably to embrace the Internet and increased ICT use across their business operations.

Transitioning our economy to a "smart future" requires adjustments at every level, from the technologies used to support always on/everywhere available connectivity to the business processes that make use of those. There is not any perfect roadmap. Nor is there a single best solution that fits all market contexts and business situations. In this vibrant marketplace, the experimentation and reconfiguration of resources afforded by competitive markets is especially important. For example, the initial success of the iPhone was predicated on its ability to use WiFi, which some saw as a competitive threat to cellular mobile data services.⁴⁴ In actuality, however, WiFi helped encourage the ecosystem of wireless applications (*i.e.*, iPhone and Android app stores, handsets, multimedia content) that has helped fuel mass-market demand for mobile data services from both WiFi and cellularized carrier networks. More recently, the ability to use WiFi to off-load traffic from cellular networks has helped reduce the costs of meeting mobile broadband demand growth. Moreover, over time, both WiFi and cellular technologies have evolved to add functionality that previously had been better supported by the other. For example, the WiFi family of technologies under development by Project 802 of the IEEE have added support for real-time services (*e.g.*, voice telephony) and the coordinated management of multiple base stations (*e.g.*, to support wider-area coverage).⁴⁵ Analogously, cellular technologies such as 4G LTE have expanded the ability of cellular networks to better support asymmetric data traffic, and to co-exist in spectrum shared with other radio technologies.⁴⁶

This pattern of market competition and continuous innovation has proceeded at multiple layers across the value chain and is key to its healthy growth. At the level of mobile handsets, operating system ecosystems, cloud services, applications, and content, we see the potential for dynamic competition propelling innovation and investment to expand existing markets and develop new ones. All of this Internet-fueled activity, however, is ultimately dependent on last-mile mobile-access services, which in turn are dependent on access to scarce radio frequency spectrum, as key business inputs.

Finally, in addition to the experimentation and learning benefits of competition for mobile broadband demand and supply chains, there are also benefits in terms of reliability and robustness. Having multiple facilities-based networks provides a level of redundancy that can greatly enhance the overall reliability of the network economy. Having both fixed and mobile telephones, for example, means that consumers can still call emergency services if either the fixed or the mobile networks continue to operate. At longer time-scales, having diversity in business models and technology platforms affords

advantages in strategic robustness. In complex systems, having multiple choices (hardware/software, network paths, etc.) enhances resiliency and contribute to reliability.

3.4. Challenges to Sustainable Competition in Telecommunications

Sustaining significant facilities-based competition in the mobile broadband market may prove more difficult in the future. The increased difficulty is due, in part, to the increased need for spectrum resources and the growing capital intensity associated with meeting the performance requirements of ever-faster and more capable mobile broadband services.⁴⁷

Even putting aside considerations regarding spectrum scarcity, sustaining competition in telecommunications services, especially last-mile services such as fixed and mobile broadband access, poses significant economic challenges. Building and maintaining the networks requires large investments in capacity that is largely fixed, sunk, and/or shared, and subject to rapid economic depreciation because of the rapid pace of innovation in technology and markets. Investments are subject to significant technical, market, and regulatory uncertainty. Additionally, telecommunication networks benefit from positive demand-side network externalities that make the value of subscribing to a network increase with the size of the network. Taken together, these factors give rise to significant scale and scope economies and pose barriers to entry, limiting the number of facilities-based telecommunication networks that are economically viable.

Indeed, for much of its history, the provisioning of telephone network services was viewed as a natural monopoly, and was regulated as such as a public utility that was owned by the government in many nations. However, beginning in the 1960s and accelerating thereafter, a growing number of governments recognized that expanding opportunities for competition and market liberalization offered a better path. The U.S. leadership in opening telecommunications markets to competition and the more extensive and earlier adoption of ICT enhancements by U.S. businesses contributed significantly to U.S. economic growth. For example, Jorgenson (2001) estimated that ICT added 1.18% to GDP growth and accounted for two-thirds of total factor productivity growth from 1995 through 2000, thereby helping to explain the resurgence in economic growth in the United States in the last half of the 1990s.⁴⁸ Jorgenson, Ho, and Stiroh (2007) estimated that ICT contributed 59% of the growth in labor productivity from 1995 through 2000 and 33% from 2000 to 2005.⁴⁹ Fuss and Waverman (2006) attributed 60% of the slower productivity growth experienced by Canada (relative to the US) in 2003 to Canada's less intensive use of ICT.⁵⁰

Over time, the growth in demand for telecommunication services and advances in technology made it feasible to introduce facilities-based competition in a growing range of telecommunication markets, from terminal equipment in the 1960s, to long distance services in the 1980s, to local last-mile services in the 1990s. Enabling this competition to emerge has required continuous change in regulatory policies and frameworks. Potentially the most significant of which was the divestiture of the Bell Telephone system in 1984 which created separate local and long distance telephone networks based on regulatory-defined geographic markets in an effort to enable competition to thrive in long distance, while continuing to protect the natural monopoly in last-mile services. As a

consequence of this, prices for long distance services fell substantially, dropping more than 85% from 1984 to 2006, after accounting for inflation.⁵¹

Of special importance for last-mile wired competition was the emergence of intermodal facilities-based competition between traditional telephone-based providers (AT&T and Verizon, the descendants of the Bell Telephone monopolies) and cable television providers. Indeed, the investments by cable providers to upgrade their networks to support interactive, two-way communications was motivated, in part, by the earlier efforts of the telephone providers to upgrade their networks to enable them to offer television services, thereby competing in the core market for cable television operators. Cable providers were justifiably alarmed that if the telephone companies were successful in meeting the capacity challenge of delivering high-data rate video programming downstream, the telephone companies' relative advantage in managing two-way traffic would provide them with a compelling competitive advantage in offering interactive and enhanced television services. As it turned out, telephone operators abandoned those earlier efforts, allowing cable operators a head start in the market for fixed broadband services that emerged as a consequence of the success of dial-up Internet access during the latter half of the 1990s.⁵² Since then, most U.S. markets have benefited from facilities-based broadband platform competition between wired telephone and cable television companies, although there is some concern that prospects for this competition as we move to ever higher data rate services are at risk.⁵³

In contrast to the more difficult history of wired last-mile competition, some degree of facilities-based competition between mobile telephony providers was guaranteed from the start. Two spectrum licenses for cellular services were granted in each local market beginning in the 1980s, and the potential for facilities-based competition was significantly expanded with the auctioning of PCS spectrum licenses in the mid-1990s. In the early days, national coverage had not yet been achieved, and operators were striving to assemble national networks. National coverage was accomplished through a mixture of industry consolidation and aggressive build out plans.

Increasingly, mobile and fixed network services are both competitors and complements.⁵⁴ In retail markets, mobile telephony is a significant competitor for fixed line telephony; however, the reverse is not true.⁵⁵ As a result, today a significant and growing number of households (38.2%) are now wireless-only telephone households.⁵⁶ At the same time, fixed network infrastructure is important for cellular services both to backhaul traffic from cellular base stations and because fixed broadband-connected WiFi networks allow the off-loading of significant cellular traffic, thereby reducing the costs of providing mobile broadband services. A recent estimate is that as much as 46% of mobile traffic will be off-loaded by 2017.⁵⁷

A review of the history of competition in telecommunication services and earlier economic analyses of the price effects demonstrates the important role that competition has played in keeping prices low, but does not provide strict guidance for determining the relationship between pricing and market structure, pricing and costs, or pricing and the intensity of competition (all of which are interrelated).⁵⁸ However, analysts almost

universally agree that there are significant competitive benefits in having more than two facilities-based competitors.⁵⁹

For example, were facilities competition to be reduced to the largest two providers—Verizon Wireless and AT&T—this consolidation would have adverse implications across the entire value chain. Verizon Wireless and AT&T are the two largest providers of fixed broadband services and also significant providers of backhaul services used by other facilities-based providers, including the only other two national cellular providers, Sprint and T-Mobile. In contrast to AT&T and Verizon, Sprint and T-Mobile do not have fixed broadband service businesses that they need worry about cannibalizing when they aggressively market their mobile broadband services.

The special risks associated with further consolidation of the largest two carriers attracted special attention during the review of the proposed merger of AT&T and T-Mobile in 2011. AT&T abandoned its plans in the face of significant opposition from policymakers, concerned that the merger posed an unacceptable risk to competition.⁶⁰ While advocating for the merger, AT&T argued that AT&T and T-Mobile would not invest as extensively in expanding their national networks unless they were permitted to realize the alleged scale/scope and complementary economies they argued the merger would offer. For example, AT&T claimed that without the merger, AT&T's LTE roll-out would only reach 80% of the U.S. population by 2018.⁶¹ In reality, AT&T deployed well in excess of its earlier claimed maximum without the acquisition of T-Mobile to confront the build out plans of competitors.⁶²

In addition to the threat to retail mobile service competition, the further consolidation of Verizon and AT&T would result in increased consolidation of potential markets for network equipment and handsets, spectrum resources, and application and content service delivery markets. Handsets have historically been tied to specific cellular networks, but advances in technology (*e.g.*, the convergence on LTE) and regulatory reforms (*e.g.*, local number portability and restrictions on phone locking) make it feasible to unbundle handsets and edge devices from particular radio networks. However, for such "mix-and-match" opportunities to expand customer choice, there need to be choices. Having only two facilities-based providers would pose a risk of monopsony power in upstream equipment, software, and application markets, which would, in turn, threaten the extent of competition and innovation in devices and other markets that are dependent on mobile broadband services.

Additionally, the further concentration of Verizon and AT&T's spectrum resources would be inconsistent with the direction of wireless evolution and the move toward more dynamic and flexible spectrum-management models. A significant threat to the wireless future is the continued and largely artificial scarcity of spectrum resources. This scarcity is artificial because it is principally due to a legacy spectrum management regime that has precluded the reallocation of spectrum resources to higher value uses as markets and technology evolve. Indeed, a principal goal of the 600 MHz incentive auctions is to effect the reallocation of spectrum resources from over-the-air television to use by mobile broadband services. To ensure that this process is not just a one-time correction, but part

of a move to a more flexible spectrum management regime into the future, we need to make sure we also develop more robust and dynamic secondary spectrum markets. Further concentration of Verizon and AT&T's spectrum resources would harm the competitiveness and liquidity of markets for the most important scarce resource for wireless services, namely, radio frequency spectrum rights.

The viability of reseller competition would also likely be threatened were we to have only two national facilities-based providers. The effectiveness of reseller competition is limited by the extent of underlying facilities-based competition. When wholesale network competition is effective, reseller competition can add importantly to expanding consumer choice, providing price discipline, and generally contributing to the vibrancy of market-based competition. In long distance telephone services, long distance reseller competition could be very effective because wholesale services were readily available from each of the three national facilities-based long distance providers (AT&T, MCI, and Sprint), even before the entry of the local telephone companies into long distance.

In mobile services, prepaid providers like MetroPCS (once the 5th largest carrier)⁶³ and Leap Wireless (once the 6th largest operator),⁶⁴ as well as mobile virtual network operators (MVNOs), such as TracFone, were important innovators in expanding the market for lower-priced pre-paid service models. Following their acquisitions, both MetroPCS and Cricket Wireless, the service brand for Leap, continue to be offered as prepaid subsidiary brands, similar to other MVNOs. The low-price competition offered by such brands puts downward pressure on the entire portfolio of mobile service offerings. However, the viability and effectiveness of reseller and subsidiary competition depends on the vigor of competition for the wholesale network services that resellers rely on. National resellers need access to the networks of national facilities-based providers and having more than two facilities-based providers is important for ensuring competitive wholesale markets.

Finally, in the absence of adequate facilities-based competition, the only likely recourse would be to reinstate more direct regulatory oversight of bottleneck facilities and some form of open access regulation.⁶⁵ While economists may disagree on the efficacy of open access regulation, they are generally agreed that direct regulation is, at best, a second-best choice compared to effective competition. Earlier efforts to impose such a framework on last-mile telephone incumbents under the Telecommunication Act of 1996 were unsuccessful. With respect to broadband services, it is possible to view the FCC's efforts to impose "network neutrality" regulation as an attempt to impose a form of open-access regulation on Internet access providers, but even the FCC recognized that imposing such rules on mobile providers posed additional difficulties. Furthermore, the FCC's authority to impose such rules was recently dealt a further blow by the decision of the Court of Appeals for the District of Columbia Circuit in January 2014.⁶⁶ How this regulatory quandary will be resolved is uncertain, but ensuring that there are more than two facilities-based competitors helps avoid the need to impose regulatory distortions.

In summary, the basic economics of competition and of mobile telecommunication services identify numerous important benefits from having facilities-based competition

among more than two national providers. Most of these benefits will ultimately be reflected in lower quality-adjusted prices. The price effect may be due to competition-induced, cost-reductions resulting from the diffusion of productivity enhancing innovations. Alternatively, cost reductions may result from the compression in margins that might otherwise occur if firms were able to exploit market power. Or, cost reductions may be observed in expanded value (quality) without an attendant price increase. This last manifestation of a cost reduction amounts to a decrease in appropriate quality-adjusted prices, but making such adjustments empirically is notoriously difficult. Observing these price effects directly is difficult in any case because it is necessary to control for quality improvements, product differentiation effects, and changes how products are sold (*e.g.*, whether bundled, subject to term contracts, or with special discounts). Additionally, the realization of the benefits of competition, whether due to enhanced innovation, elimination of excess profits, improvements in quality and consumer choice, or reliability are likely to occur over time and at different rates. The impact on observed consumer prices might be expected to vary asymmetrically across time and market segments. Taken together, these factors suggest that observed direct price effects of competition will likely significantly understate the benefits of competition.

4. Competition Lowers Telecommunication Service Prices

The history of telecommunication services and the academic literature provide ample evidence of the direct impact of competition on lowering prices. However, much of the benefit of competition is associated with competition that impacts prices only indirectly. Before considering the empirical evidence of price effects, it is worth reviewing examples of non-price competition.

4.1. Service innovation and product differentiation

Relative to many other consumer products and services, it can be challenging for mobile service providers to differentiate their core services. Nevertheless, competition induces them to strive to differentiate their services in their relentless quest to attract and retain customers and adapt to changing market conditions. Once one provider identifies a service enhancement that is attractive to consumers, others are induced to copy or improve on those innovations. Price cuts are one obvious way to gain market share, but those are more easily imitated and often more costly in terms of the lost margins for inframarginal consumers. Non-price product differentiation helps soften price competition, and where feasible, is often preferred by firms.

Mobile operators have sought to differentiate their services by offering improved quality (*e.g.*, more expansive coverage, newer technology networks)⁶⁷ and expanded choice (*e.g.*, selection of handsets, retail points-of-sale). They have also differentiated their services with modified service plans and terms with special discounts, contract terms (including handset subsidies), and tiered usage bundles. The complex portfolios of service packages offered by mobile providers make it more difficult for consumers to directly compare prices. Additionally, mobile providers sought to enhance customer retention by locking customers into long-term contracts and offering them forward discounts (*e.g.*, friends-

and-family calling programs and roll-over minutes, the benefits of which are lost if a subscriber changes providers). A mix of carrot-and-stick strategies are employed by mobile operators to create or take advantage of customer switching costs in order to reduce churn. Nevertheless, customer churn is high in telecommunication services generally, and in mobile services, in particular. The FCC concluded that average customer churn has averaged 2 to 2.5% per month since 2005.⁶⁸ While product differentiation may bestow competitive advantage, the ease with which it may be imitated by other mobile service providers has meant that any such advantage may be short-lived.

For example, when the iPhone was released in June 2007, it was only available on AT&T's network. Relying on its own exclusive arrangements, Verizon turned to Research in Motion to create its own iPhone competitor, which yielded the 2008 Verizon-exclusive Blackberry Storm. Also soon after the release of the iPhone, in November 2007, Google, along with 34 partners, including competitive carriers such as T-Mobile and Sprint Nextel, announced the Open Handset Alliance. This alliance created the Android operating system that is widely used by smartphones and other devices that competitors could access to compete with AT&T's iPhones and Verizon's Blackberries.

Indeed, while AT&T led the industry in the case of the iPhone, competitive carriers are also especially likely to introduce innovative services and differentiated products. For example, MetroPCS launched the first LTE network in the U.S. in September of 2010⁶⁹ and released the first U.S. LTE smartphone a few months later.⁷⁰ About a year and a half after that, in August of 2012, MetroPCS unveiled the world's first commercially available voice over LTE (VoLTE) network and smartphone.⁷¹ Similarly, Cricket was the first carrier to offer the iPhone on a prepaid, off-contract basis, which it first offered in June of 2012.⁷² Sprint offered several of its own firsts, including the first US camera phone in 2002,⁷³ and the first 3G network, also in 2002. Likewise, T-Mobile was the first U.S. carrier to offer voice calling over WiFi (2007),⁷⁴ an Android handset (2008),⁷⁵ 3G (HSPA+) services (2009),⁷⁶ and unlimited nationwide 4G data (2012).⁷⁷ These and other examples illustrate the genius of competition—competitors across the spectrum are continuously seeking to find an advantage and that distributed experimentation helps accelerate the innovation cycle.

In addition to innovating and differentiating based on product features and capabilities, there is also a long history of innovations in pricing and service models. A review of some of this history is discussed further below.

4.2. Evidence from Cable Television Pricing Research

Cable television was originally provided as a monopoly franchise in most markets. Indeed, for a long time, the deployment of cable television systems was opposed by over-the-air broadcasters, with support from regulators, fearful that competition might damage consumers' access to television. Fortunately, this resistance was overcome and we now benefit from near ubiquitously available cable infrastructure as a wired broadband platform that offers a wired alternative to the telephone networks and enables us to contemplate the reallocation of broadcast television spectrum to higher value mobile broadband uses.⁷⁸

While the deployment of cable television systems offered compelling benefits, the fact that most markets were served by monopoly franchises denied consumers the benefits of competition. A number of researchers have looked at the price impact of facilities-based competition in the cable television market and have found significant price effects. The studies cover a wide range of data and methods, estimating price impacts of from 5% to over 20%.⁷⁹ For example, Kelly & Ying (2013) estimate that prices were 5.6 to 8.8% lower from 1993-2001 in cable markets with facilities-based competition.⁸⁰ Savage & Wirth (2005) estimated that competition was likely to lower prices by 14.2%.⁸¹ Beard & Ford (1999) estimated that prices would be 13-17% lower.⁸² Emmons and Prager (1997) found prices lower by 20.5% in 1983 and 20.1% in 1989.⁸³ Finally, the FCC reports that the price per channel of programming is 6.1% higher in communities without "effective competition" in 2012.⁸⁴

The above estimates likely understate the benefits of full facilities-based competition, which is the more relevant comparison with respect to evaluating the impact of national facilities-based competition in the mobile broadband market. For example, the FCC found that communities with over-builders had prices that were approximately 16-27% lower than those in non-competitive markets in 2004.⁸⁵ An analysis of California markets found prices in overbuilder markets were 22% lower than single-provider markets, while a study for overbuilder markets in Texas in 2005 found prices that were 30% lower for overbuilder markets than single-provider markets.⁸⁶ Related research has shown that increased competition from over-the-air channels increases the price reduction effect, but that additional channels beyond five do not add additional benefits.⁸⁷

4.3. Evidence on Wired Telephone Service Competition

Earlier, I noted the significant reductions in long distance prices with the increase in competition since the early 1980s. A further example of the impact of facilities-based competition in long distance services was provided by the entry of local telephone companies between 1999 and 2002.⁸⁸ Hausman et al. (2002) estimated that long distance telephone rates fell 9% in New York and 23% in Texas as a consequence of the additional facilities-based competition afforded by ILEC entry into those states.⁸⁹ These reductions are by no means insubstantial. After ILEC entry, it becomes more difficult to track the effect of facilities-based competition on wired telephone rates because most local services were provided at a flat monthly rate and separate billing for long distance disappeared as the regulatory distinction between long distance and local calling was erased.

Elsewhere researchers have looked at the impact of imposing local number portability (LNP) on mobile services, which allows customers to keep their mobile number when they move to another provider. Enabling LNP reduces customer switching costs and thereby increases the intensity of competition. Cho et al. (2013) examined the impact of LNP in Europe, where it was introduced in 2002, and concluded that it reduced prices by 7.9% on average.⁹⁰

4.4. Intermodal Competition between wired cable and telephone

Further evidence of the price effect benefits of competition is available from research analyzing the impact of increased broadband platform competition, most typically focusing on competition between cable and telephone providers offering "triple play" service bundles that include telephone, television, and data services.

A key motivation for service providers of switching to triple-play bundles was to reduce customer churn since bundled customers are less likely to switch service providers.⁹¹ The transition from per-service, per-use pricing to bundled pricing represented, in itself, a significant price reduction for many customers. Most consumers prefer the simplicity of purchasing services as a bundle, and there has been a trend across services to offer tiered service bundles, including unlimited usage bundles. With unlimited SMS, voice calling and/or mobile data usage, the marginal price to the consumer is zero.

Research also shows that wired platform competition benefits consumers. For example, Höffler (2007) showed that markets with cable modem and telephone DSL broadband competition achieved 2% higher penetration rates, allowing those countries to realize the economic benefits of broadband sooner.⁹² Pelcovits and Haar (2007) found that in markets where cable telephony competed with telephone company services that cable telephony prices were 23% less.

Finally, a GAO study of broadband platform competition (with bundled offerings that include television, telephone and Internet service) found that basic cable television rates ranged from 15-41% lower in broadband service provider markets.⁹³

4.5. Price competition in Mobile Services

The examples cited above provide empirical evidence of the long history of facilities-based competition's impact on pricing across a range of telecommunication service markets. Not surprisingly, similar effects are evident in the case of mobile telecommunication services. For example, the auctioning of PCS spectrum in 1995 enabled the entry of significant new facilities-based competition in markets across the United States which previously had been limited to two licensed providers. Crandall & Hausman (2000) found that cellular prices fell 3 to 4% per year from 1984-1995, but following entry of the PCS licensees, prices fell 17% per year, and the PCS providers offered prices that were "more than 50 percent lower than existing cellular rates."

Faulhaber et al. (2011) point to multiple indicia of wireless competition, including prices which fell faster than the Consumer Price Index (CPI).⁹⁴ Indeed, since 1997 the CPI for wireless telephone service has fallen 42%, while the CPI has risen 44%, representing an inflation-adjusted decline of 60%.⁹⁵

As noted earlier in the discussion of non-price competition and operator attempts to differentiate their services, there is also a significant history of price-related innovations, most commonly in the form of price reductions that competitors are induced to match to

remain competitive. For example, in 1998, AT&T lead the industry with its move to bundled offers with its "Digital One Rate Plan" offering a simplified single rate for national calls, disrupting what previously had been a mobile calling market with distance-sensitive calling rates.⁹⁶ The rest of the industry responded with competing offers in relatively short order. More recently, Verizon introduced unlimited plans in 2008 and then price cuts in 2009. Verizon's lead in upgrading its network gave it a relative advantage in competing for mobile data services at the time, but other carriers followed suit with their own price reductions that amounted up to 33% in some cases.⁹⁷

4.6. Summarizing the Price Effects

The evidence cited above spans decades of telecommunication experience and markets. Taken together, this provides strong evidence that competition contributes to lowering prices, allowing consumers to get more for less: more usage, better quality service, and paying less for individual and bundled components. There is a wide range of estimates across many markets, and so no obvious way to aggregate these into a reasonable single estimate of the price effect. In any case, any such attempt likely would require decomposing the effects of competition to its constituent parts (long/short term, cost/innovation related versus elimination of excess margins, *etc.*). The variability in evidence cited is due to differences in context as well as the motivation behind the empirical estimate. In the evidence cited, there are numerous examples and studies indicative of competition impacting prices by significantly more than 10% or even 20%.

Antitrust authorities, when examining market power often rely on a test of whether it is possible for a firm to sustain a "Small but Significant and Non-transitory Increase in Prices" (SSNIP) in the relevant market. This is commonly made operational by assuming a SSNIP of 5% for a year or more.⁹⁸

After due consideration of the qualitative and empirical evidence of competition's benefits cited above, it seems conservative to conclude that prices in the wireless broadband market would have been and will likely be in the future *at least 10% lower* if we are successful in promoting facilities-based competition.

Analytically, this approach to estimating the benefits of competition is a form of meta-analysis, akin to reduced-form econometric estimation. It obviates the need to make detailed and contentious assumptions about a wide range of issues. Those include assumptions about industry structure (how many facilities-based providers will the market sustain? How will the value-chain restructure itself?); the evolution of supply (technical innovation and investment) and demand (timing of Smart X market evolution); and regulatory policies. The approach adopted here seeks to incorporate such more detailed studies, aggregating their effects into a single effect ("10% lower prices") that can be easily grasped and estimated to provide a useful order-of-magnitude estimate of the value of mobile broadband competition.

5. Mobile Competition Generates Consumer Benefits of \$20B per year

Hicks (1940) first discussed the appropriate way to measure the surplus effects of a price decrease.⁹⁹ Hausman (1997, 1999) further developed these ideas for use in practical empirical estimation of the consumer surplus effects associated with the introduction of new goods and price drops.¹⁰⁰ Since Hausman originally applied these methods to first estimate the welfare benefits of cellular services, this approach has been used by economists in diverse contexts to estimate consumer welfare effects, including for Internet and mobile telecommunication services as in the cases of Brynjolfsson et al. (2003)¹⁰¹ and Grzybowski & Pereira (2008).¹⁰² Both of these make the common assumptions that demand may be approximated as log-linear and income effects may be disregarded to derive the following simple equation:

$$CS = p_0 q_0 \frac{1 - (1 + g)(1 + g\alpha)}{1 + \alpha}$$

where,

- CS is the change in consumer surplus expressed in dollars;
- p_0, q_0 are the original prices and quantities, so $p_0 q_0$ is industry revenue before the price change;
- g is the change in prices (which I will assume is -10%)
- α is the price elasticity of demand

To estimate this, only three values are required: (1) an estimate of industry revenues; (2) an estimate of the price change (which, based on a review of the relevant literature, I have conservatively assumed is -10%); and (3) the price-elasticity of demand.

The price elasticity of demand provides a measure of how sensitive demand is to prices.¹⁰³ We typically expect the elasticity of demand for goods that are necessities to be relatively unresponsive to prices and so to have lower demand elasticities. A number of studies of mobile service demand over the years have produced a wide range of estimates of demand elasticities. For example, Dewenter & Haucap (2007) estimated elasticities in the range -0.47 to -1.1;¹⁰⁴ Grzybowski & Pereira (2008) estimated -0.38;¹⁰⁵ Hausman (1997) estimated between -0.41 and -0.51;¹⁰⁶ and Parker and Röller (1997) estimated -2.5.¹⁰⁷

For the purposes of estimating the long-run benefits of mobile competition, it is reasonable to believe that demand will be more elastic than in the short-run, but as broadband services become more critical to end users, users will become less price sensitive overall. The more elastic demand, the greater the stimulus effect of lower prices and the greater the total value created by the market. From the earlier literature, it seems reasonable to conclude that a conservative estimate of the price elasticity of demand is -0.5.

With this assumption for the demand elasticity and $g = -10\%$, the CS equation reduces to 0.11 poq_0 .

At the end of 2012, CTIA's survey reported that there were 326 million mobile subscriptions, with an average revenue per unit (ARPU) of \$48.73. Historically, ARPUs evolve as the prices and mix of services consumed shift, but as noted earlier these have trended downwards since the 1980s but have been consistently above \$45 since 1993.¹⁰⁸

At the same time the number of subscriptions continues to grow. While the share of the population without any mobile device subscription has approached saturation, a rising share of users have multiple devices and are using mobile services in multiple ways. Estimating future subscription growth is uncertain, but has averaged between 3-4% in recent years. Two investment bank studies have estimated that the number of subscriptions by 3Q2013 were 331 million¹⁰⁹ and 341 million,¹¹⁰ respectively.

Given the above, it seems a conservative estimate for industry revenues is to assume an ARPU of \$45 and 340 million subscriptions as a reasonable lower bound average for the next decade. With this assumption, total industry revenues would be \$184 billion per year (only slightly less than what CTIA reported for the industry in 2012) and the consumer surplus associated with 10% lower prices would be approximately \$20 billion.¹¹¹ Assuming a 10% discount rate, that formula translates into a conservative estimate of the long-run benefit of facilities-based competition in the mobile broadband market of no less than \$200 billion.

6. Conclusions

Mobile broadband has the potential to unlock economic growth opportunities worth trillions of dollars as we transition to a (an ICT) "smart" economy. This potential expresses itself in the Internet of Things, Big Data, and Cloud Computing. It is what we need to do to realize the goals of the National Broadband plan and keep the U.S. economy on track for growth and leadership in the future.

Realizing the promise of this goal will necessitate overcoming many challenges both in the near and more distant future. Among those is the need to expand reform of national communication policies from universal service to spectrum management. The goal is to make regulations more responsive to and consistent with market-based competition. Indeed, the primary goal of communications policy is to promote competition as the best way to ensure a healthy industry ecosystem. In debates over the appropriate design of spectrum auctions and other communication policies, we have sometimes lost the forest for the trees, focusing on the ancillary goal of ensuring sufficient auction revenue, potentially at the expense of competition. Both goals are important, but promoting competition is and should remain the principal priority.

This paper conservatively estimates that the value of mobile competition to consumers is at least \$20 billion per year, or \$200 billion in present value terms. This is also the value

that may reasonably be expected to be lost if we fail to sustain an adequate level of facilities-based competition.

¹ The author has prepared this report in support of CCA and its members. All views expressed herein are the author's own.

² Allocative efficiency means that scarce resources (*e.g.*, spectrum) are directed to their highest value uses. Productive efficiency means that goods and services are produced at the lowest possible costs (*i.e.*, firms adopt industry best practices). Dynamic efficiency means that firms continue to be efficient over time, implying that investment is optimal and that innovation continues.

³ Most consumers accessed the Internet over (slow) dial-up (fixed line) telephone connections. Fixed broadband access services via DSL or cable did not become widely available until after 2000. *See, e.g.*, NATIONAL TELECOMMUNICATIONS & INFORMATION ADMINISTRATION (NTIA), HOW AND WHERE AMERICA GOES ONLINE, <http://1.usa.gov/Ms8H31> (last visited Feb. 25, 2014) (noting that, in August 2000, only five percent of the U.S. population had access to "something faster than a dial-up service in their homes"). The transition to broadband uncorked the last-mile bottleneck and greatly expanded the usability of the Internet and networked computing applications and content, providing a significant spur to the growth of the Internet. *See, e.g.*, INTERNATIONAL TELECOMMUNICATIONS UNION (ITU), IMPACT OF BROADBAND ON THE ECONOMY 1 (2012), *available at* <http://bit.ly/1dQdKX8> (explaining that broadband "is inextricably linked to the emergence of the Internet"); JOHN HARRIGAN & AARON SMITH, PEW RESEARCH, HOME BROADBAND ADOPTION 2007 9 (2007), *available at* <http://bit.ly/1hoz4Ct> (finding that those with broadband use the Internet more regularly and engage more frequently in a variety of online activities).

⁴ "The "Internet of Things" refers to a future of embedded sensors, in which everything from your toaster to your car is potentially connected to the Internet and able to take advantage of distributed computing and communications capabilities. Embedding computers/sensors in "things" will allow much greater scope for data collection and real-time automation to facilitate better decision-making. *See, e.g.*, INTERNET OF THINGS, <http://www.internet-of-things.eu/> (last visited Feb. 24, 2014); COMM'N OF EUR. CMTYS., INTERNET OF THINGS – AN ACTION PLAN FOR EUROPE (2009), *available at* <http://bit.ly/1dwo0PD>; ITU, THE INTERNET OF THINGS (2005), *available at* <http://bit.ly/1cNhua5>; JOSEPH BRADLEY ET AL., CISCO, INTERNET OF EVERYTHING (IOE) VALUE INDEX (2013), <http://bit.ly/N090Dc> (Cisco White Paper).

⁵ "Big Data" refers to the opportunity to take advantage of all of the real-time data that may be collected by today's networked ICT systems to make better business decisions. *See, e.g.*, Steve Lohr, *The Age of Big Data*, N.Y. TIMES (Feb. 11, 2012), *available at* <http://nyti.ms/1foD41k>; MICHAEL SCHROECK ET AL., IBM INST. BUS. VALUE, ANALYTICS: THE REAL-WORLD USE OF BIG DATA (Oct. 2012), *available at* <http://ibm.co/19fNVZL>; *see also* MIT, *Big Data Initiative at CSAIL*, <http://bigdata.csail.mit.edu/> (last visited Feb. 24, 2014) (providing an overview of MIT's activities in this area).

⁶ "Cloud Computing" refers to the vision of evolving the Internet from a data communications platform to a general computing utility, providing on-demand access to computing, storage, and telecommunications resources. The rise of the Internet of Things and Big Data will require us to improve the capabilities to store, manage, and access more ICT resources in the network. *See, e.g.*, ORACLE, ACHIEVING THE CLOUD COMPUTING VISION (2010), *available at* <http://bit.ly/1kckezn>; ITU, DISTRIBUTED COMPUTING: UTILITIES, GRIDS, AND CLOUDS (2009), *available at* <http://bit.ly/1mxCcha>; *see also* MIT, *MIT News—Cloud computing*, <http://bit.ly/1fRTuAd> (last visited Feb. 24, 2014) (providing an overview of MIT's activities in this area).

⁷ Cisco estimates that there are \$14 trillion in private sector and \$4.6 trillion in public sector worth of opportunities to be realized associated with transitioning to the IoT vision. See JOSEPH BRADLEY ET AL., CISCO, EMBRACING THE INTERNET OF EVERYTHING TO CAPTURE YOUR SHARE OF \$14.4 TRILLION (2013), <http://bit.ly/19VH4F1>; JOSEPH BRADLEY ET AL., CISCO, INTERNET OF EVERYTHING: A \$4.6 TRILLION PUBLIC-SECTOR OPPORTUNITY (2013), <http://bit.ly/1euphGi>. Cisco also estimates that the IoT contributed \$613 billion in global corporate profits in 2013. See Cisco White Paper at 1. Analysts' opinions vary widely as to the magnitude of potential benefits and when they will be realized. For example, the Gartner Group sees \$1.9 trillion in global economic value-add by 2020, while the International Data Corporation (IDC) expects IoT technology and services to generate global revenues of \$8.9 trillion by 2020. See Press Release, Gartner Group, Gartner says the Internet of Things Installed Base will Grow to 26 billion units by 2020 (Dec. 12, 2013), available at <http://gtnr.it/1h780GZ>; Press Release, IDC, The Internet of Things is Poised to Change Everything, Says IDC (Oct. 3, 2013), available at <http://bit.ly/1dSdjf6>. Although many of these estimates may be overly optimistic, the economic potential is huge.

⁸ See JAMES MANYIKA ET AL., MCKINSEY GLOBAL INST., BIG DATA: THE NEXT FRONTIER FOR INNOVATION, COMPETITION, AND PRODUCTIVITY (2011), available at <http://bit.ly/1gYqIAC>.

⁹ For instance, one study finds that firms that take advantage of "Big Data"-powered data and business analytics have 5-6% higher productivity. See ERIK BRYNJOLFSSON ET AL., STRENGTH IN NUMBERS: HOW DOES DATA-DRIVEN DECISIONMAKING AFFECT FIRM PERFORMANCE? (2011), available at <http://bit.ly/1kcppPV>.

¹⁰ This vision is articulated in the National Broadband Plan. See FEDERAL COMMUNICATIONS COMMISSION, CONNECTING AMERICA: THE NATIONAL BROADBAND PLAN (2010) (National Broadband Plan), available at <http://www.broadband.gov>.

¹¹ The White House, *Technology*, <http://1.usa.gov/1mxH6L3> (last visited Feb. 25, 2014).

¹² See ALAN J. PEARCE ET AL., PCIA—THE WIRELESS INFRASTRUCTURE ASSOCIATION, WIRELESS BROADBAND INFRASTRUCTURE: A CATALYST FOR GDP AND JOB GROWTH 2013-2017 (2013), available at <http://bit.ly/1gAzkfC>.

¹³ ROGER ENTNER, RECON ANALYTICS, THE WIRELESS INDUSTRY: THE ESSENTIAL ENGINE OF US ECONOMIC GROWTH (2012), available at <http://bit.ly/Msb2Le>.

¹⁴ See CTIA—THE WIRELESS ASSOCIATION (CTIA), BACKGROUND ON CTIA'S SEMI-ANNUAL WIRELESS INDUSTRY SURVEY (2013) (CTIA Survey), available at <http://bit.ly/1fV3qc8>.

¹⁵ See Andrew Berg, *U.S. Operators Drop \$30.1B in CapEx in 2012*, WIRELESS WEEK (May 3, 2013), available at <http://bit.ly/1hAsOX5>.

¹⁶ As of December 2012, there were 326 million mobile subscriptions in the U.S.—more than the county's population, as many subscribers have multiple devices. See CTIA, *Wireless Quick Facts*, <http://www.ctia.org/your-wireless-life/how-wireless-works/wireless-quick-facts> (last visited Feb. 25, 2014). Forecasters expect smartphone and tablet penetration to reach 80% and 64% in 2014, respectively. See, e.g., eMarketer, *Smartphone, Tablet Uptake Still Climbing in the US* (Oct. 14, 2014), <http://bit.ly/11k9Nx2>.

¹⁷ See *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993 and Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services*, Sixteenth Report, 28 FCC Rcd 3700, 3749 ¶ 48 (2013) (*Sixteenth Mobile Competition Report*).

¹⁸ The growth in devices and shift toward higher-capacity devices is fueling exponential growth in mobile broadband traffic. A single smartphone can generate as much traffic as 49 non-smartphones, and a tablet as much as 127 non-smartphones. CISCO, VISUAL NETWORKING INDEX: GLOBAL MOBILE DATA TRAFFIC FORECAST UPDATE, 2013-2018 15 (2014), *available at* <http://bit.ly/1b13ryX>. The monthly traffic per smartphone is expected to increase from 529MB/month to 2,672MB/month from 2013 to 2018. *See id.*

¹⁹ *Id.*

²⁰ *See* National Broadband Plan at 75-79 ; PRESIDENT'S COUNCIL OF ADVISORS ON SCIENCE AND TECHNOLOGY (PCAST), REPORT TO THE PRESIDENT: REALIZING THE FULL POTENTIAL OF GOVERNMENT-HELD SPECTRUM TO SPUR ECONOMIC GROWTH (2012) (PCAST Report), *available at* <http://1.usa.gov/1eqkp6T>; ITU, ESTIMATED SPECTRUM BANDWIDTH REQUIREMENTS FOR THE FUTURE DEVELOPMENT OF IMT-2000 AND IMT-ADVANCED (2006), *available at* <http://bit.ly/1mGaS3V>; 4G AMERICAS, SUSTAINING THE MOBILE MIRACLE: A 4G AMERICAS BLUEPRINT FOR SECURING MOBILE BROADBAND SPECTRUM IN THIS DECADE (2011) *available at* <http://bit.ly/1c64NcD>.

²¹ While the move toward smaller cells is not motivated solely by the need to reuse scarce spectrum, investment costs are increased by excessive spectrum scarcity. *See* JOHN CHAPIN AND WILLIAM LEHR, MIT, MOBILE BROADBAND GROWTH, SPECTRUM SCARCITY, AND SUSTAINABLE COMPETITION (2011), *available at* <http://bit.ly/1hcW1ZO>.

²² In economic terms, regulatory barriers distort the opportunity costs of using spectrum resources efficiently. For example, incumbent users of TV broadcast and government spectrum are confronted with too low an opportunity cost, whereas mobile broadband providers and new entrants confront an opportunity cost for incremental spectrum that is artificially elevated.

²³ The PCAST report summarizes these efforts, including expanding options for shared spectrum, secondary spectrum trading, and reallocating spectrum for flexible, exclusive use licenses such as anticipated by the broadcast spectrum incentive auction. *See* PCAST Report.

²⁴ According to the FCC:

Promoting competition is a fundamental goal of the Commission's policymaking. Competition has played and must continue to play an essential role in the mobile wireless industry – leading to lower prices and higher quality for American consumers, and producing innovation and investment in wireless networks, devices, and services.

Sixteenth Mobile Competition Report, 28 FCC Rcd at 3958 ¶ 410.

²⁵ Economic theory is ambiguous on how best to maximize auction proceeds. For example, an auction that included monopoly rents might maximize producer willingness-to-pay for spectrum rights, but ensuring a competitive auction may better ensure that the auction captures the producer surplus. For further discussion, see Lehr, William and Musey, J. Armand, "Right-Sizing Spectrum Auction Licenses: The Case for Smaller Geographic License Areas in the TV Broadcast Incentive Auction," November 20, 2013, *available at* SSRN: <http://ssrn.com/abstract=2357792> or <http://dx.doi.org/10.2139/ssrn.2357792>.

²⁶ *See* Thomas W. Hazlett & Roberto E. Muñoz, *A Welfare Analysis of Spectrum Allocation Policies*, 40 RAND J. ECON. 424 (2009); Jerry A. Hausman, *Valuing the Effect of Regulation on New Services in Telecommunications*, 28 Brookings Papers on Econ. Activity 1 (1997); Gregory L. Rosston, *The Long and Winding Road: The FCC Paves the Path with Good Intentions*, 27 TELECOMM. POL'Y 501 (2003).

²⁷ Congress provided the FCC with the authority to undertake the Broadcast Incentive Auction through the Spectrum Act. *See* Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, §§ 6402-03, 125 Stat. 156 (2012).

²⁸ An auction with a single buyer would serve no purpose.

²⁹ A recent paper by Mayo and Sappington (2014) also focuses on competition concerns and auction design, but with a very different goal in mind from the purpose of this paper. *See* John Mayo & David Sappington, *Employing Auctions to Allocate Scarce Inputs*, Working Paper, Georgetown Center for Bus. & Public Pol. (Feb. 2014), <http://tinyurl.com/lotvn7l>. Mayo and Sappington present an abstract model of duopoly competition that extends the economics literature on vertical foreclosure to the question of auction design. Their principal result suggests that an auction design that does not seek to limit increased spectrum acquisition by the largest competitors (*i.e.*, an "unfettered auction") may offer the best way to maximize total (consumer) welfare. The authors do not offer empirical estimates, nor do they attempt to map their results to current industry conditions, an effort that would require significant additional effort. Moreover, their model does not directly address the viability of competition. That is, the model assumes that Cournot competition will continue but with potentially slightly different market shares depending on how the auction is designed. Nevertheless, by highlighting the complex series of assumptions that are necessary to yield a tractable theoretical result, their paper provides an indirect endorsement of the methods employed in this study.

³⁰ Economic viability makes it necessary for efficient firms (*i.e.*, cost-minimizing firms) to have a reasonable expectation that they will recover their costs, which includes covering their operating costs and earning a fair risk-adjusted return on their invested capital. This equates with an economic profit of zero, but with a reasonable level of net income as an accountant would report it.

³¹ For analysts' views on the mobile broadband or Internet value chain, *see, e.g.*, ATKEARNEY, INTERNET VALUE CHAIN ECONOMICS (2010), <http://bit.ly/N128p3>; OPEN INTERNET ADVISORY COMMITTEE, OPENNESS IN THE MOBILE BROADBAND ECOSYSTEM (2013), *available at* <http://bit.ly/1mHfrea>; Chetan Sharma, *Mobile Operator's Dilemma (and Opportunity): The Fourth Curve*, GIGAOM (Jul. 17, 2012, 12:27 PM), <http://bit.ly/1kgayUD>.

³² The average monthly bill fell faster in real terms, as the overall Consumer Price Index (CPI) increased over the same time period. *Compare* News Release, Bureau of Labor Statistics (BLS), CPI—Dec. 1994, *available at* <http://1.usa.gov/1hwhI5m>, *with* News Release, BLS, CPI—Dec. 2012, *available at* <http://1.usa.gov/1mxWFTb>.

³³ *See Sixteenth Mobile Competition Report*, 28 FCC Rcd at 3877, Tbl. 38.

³⁴ *See id.* at 3832, 3879-80, Tbls. 30, 40. Obtaining reliable estimates of market pricing for mobile services is complicated because many services are sold in bundles and the average price per unit needs to be imputed on the basis of aggregate revenue data.

³⁵ Text messaging and other limited data services were possible with 2G systems, but the usability and hence usage of data services was quite limited—although industry participants and analysts understood that data traffic would account for the majority of traffic in the future. *See, e.g.*, *The Shape of Phones to Come*, ECONOMIST, May 22, 2001, *available at* <http://econ.st/1ewbcbw> (describing voice's displacement by data).

³⁶ The first Apple iPhone was introduced in June 2007 with AT&T and was not even a 3G phone. *See* CrunchBase, *iPhone*, <http://bit.ly/Kk58uA> (last visited Feb. 25, 2014). However, Apple's iconic design and the inclusion of WiFi helped ignite rapid growth in mass market consumer use

of mobile data services, including Internet access. Apple followed its initial success with its first 3G handset the following summer. *See id.* The first 3G Android handsets (based on the OS developed by Google) became available in October 2008, and were first offered by T-Mobile. *See* Charlie Sorrel, *Official: First Android Phone to Debut on September 23*, WIRED (Sept. 17, 2008), available at <http://wrd.cm/1fq4xWk>. Prior to the release of the iPhone and the mass transition to smartphone devices it inspired, the majority of cellular mobile data service traffic was due to dongle-connected PCs and smartphones like BlackBerry, Treos, and others used by "road warrior" business professionals. *See, e.g.*, Walter S. Mossberg & Katherine Moehret, *Testing Out the iPhone*, WALL. ST. J., June 27, 2007, available at <http://on.wsj.com/OCMjGb> (comparing the newly release iPhone to then-popular Blackberry and Treo models).

³⁷ LTE stands for Long Term Evolution and is under development by the international standardization effort, 3GPP. *See* 3GPP, <http://www.3gpp.org/> (last visited Feb. 25, 2014). 3GPP has been engaged in standardization efforts for mobile cellular networks since 1999 when it was working on 3G standards. *See* 3GPP, *Cover Story*, <http://bit.ly/1bKDd48> (last visited Feb. 25, 2014). The first true LTE standard issued by 3GPP was Release 10 (2010), but operators sometimes branded interim versions like Release 9 (2009) as 4G LTE. *See, e.g.*, ERIK DAHLMAN ET AL., 4G: LTE/LTE-ADVANCED FOR MOBILE BROADBAND 1 (1st ed. 2011). 3GPP is currently finalizing LTE Release 12, with work on future generations proceeding concurrently. *See* Dino Flore, *3Gpp RAN: Rel-12 and beyond* (Feb. 2014), available at <http://bit.ly/1hnof3A>.

³⁸ Operators have been converting to LTE on a market-by-market basis, rolling out services once the necessary infrastructure upgrades are completed. *See, e.g.*, Kevin Fitchard, *AT&T Passes the 500-Market Milestone in its LTE Rollout*, GIGAOM (Jan. 6, 2014, 5:08 PM), <http://bit.ly/MvGmce>. Morgan Stanley forecasts that, by the end of 2014, Verizon and AT&T will each have LTE networks covering 300 million POPS (94% of the U.S. population), with Sprint covering 275 million POPS (86%) and T-Mobile covering 225 million POPS (70%). *See* MORGAN STANLEY EQUITY RESEARCH, *TELECOM SERVICES: 2014 OUTLOOK* (2013), available at <http://bit.ly/1k84KQ3>.

³⁹ *See, e.g.*, Elise A. Couper et al, *Boom and Bust in Telecommunications*, 89 FED. RES. RICHMOND ECON. Q. 1, 14-17 (2003), available at <http://bit.ly/1mI4fOy>.

⁴⁰ *See, e.g.*, HASUNG HWANG & CONCETTA STEWART, *LESSONS FROM DOT-COM BOOM AND BUST* (2006), available at <http://bit.ly/1mDwKu>.

⁴¹ For example, the viability of B2C depended on first developing the capabilities of B2B, which were themselves a natural extension of earlier enterprise business process automation efforts.

⁴² Much of the CLEC investment was premised on a regulatory model that required incumbent local telephone companies to unbundle their networks. *See* Couper et al, *supra* n. 3939 at 13.

⁴³ It is worth remembering that high-flying companies like Netflix (streaming video), Facebook (social networking), and Amazon (mCommerce and cloud computing) were hardly the first or only businesses seeking to address markets that have resulted in their subsequent success (and the failure of earlier or less well-executed businesses).

⁴⁴ For an early discussion of why 3G and WiFi were more likely to evolve as complements, *see* William Lehr & Lee McKnight, *Wireless Internet Access: 3G vs. Wifi?*, TELECOMM. POL'Y 27, 351-70 (2003), available at <http://bit.ly/1hnpGii>.

⁴⁵ *See* IEEE 802, <http://www.ieee802.org/>. The IEEE working group principally responsible for "WiFi" WLAN standards is P802.11. *Id.* The original WiFi standards were 802.11a (operating at 2.4GHz) and 802.11b (operating at 5GHz). *See* Cisco, *802.11 Security Summary*,

<http://bit.ly/1dz1Snw> (last visited Feb. 26, 2014). Subsequent enhancements have added significant functionality for extending WiFi into a much wider range of usage environments. For pointers to on-going work, *see* <http://www.ieee802.org/11/PARs/index.html>.

⁴⁶ For example, the industry is in the early stages of considering how LTE might operate in unlicensed spectrum, which is where WiFi technologies currently operate. *See, e.g.*, Qualcomm, *LTE Advanced in unlicensed spectrum*, <http://bit.ly/1eugLHv> (last visited Feb. 26, 2014).

⁴⁷ *See* JOHN CHAPIN & WILLIAM LEHR, *MOBILE BROADBAND GROWTH, SPECTRUM SCARCITY, AND SUSTAINABLE COMPETITION* (2011), *available at* <http://bit.ly/1cmGr97>.

⁴⁸ *See* Dale Jorgenson, *Information Technology and the U.S. Economy*, 91 AM. ECON. REV. 1 (2001).

⁴⁹ *See* Dale Jorgenson et al., *A Retrospective Look at the U.S. Productivity Growth Resurgence*, 22 J. ECON. PERSPECTIVES 3 (2008), *available at* <http://bit.ly/1ew4B0A>.

⁵⁰ *See* MELVYN FUSS AND LEONARD WAVERMAN, *BELL CANADA, CANADA'S PRODUCTIVITY DILEMMA: THE ROLE OF COMPUTERS AND TELECOM* (2006), *available at* <http://bit.ly/1poZEzN>.

⁵¹ From 1984 to 2006, the average revenue per minute for long distance (a blend of domestic and international) fell from \$0.32 to \$0.07 per minute. *See* FCC, *Trends in Telephone Service* 13-1 (2008), *available at* <http://fcc.us/1foXBJ3>. A significant share of this reduction has been attributed to rate rebalancing, with a shift from wage-based access charges to fixed subscriber line charges for recovering the non-traffic sensitive costs of local access.

⁵² Cable modem-based broadband services established an early lead over telephone-based DSL broadband services after 1996. *See* SHARON GILLETT AND WILLIAM LEHR, *AVAILABILITY OF BROADBAND INTERNET ACCESS: EMPIRICAL EVIDENCE* (1999), *available at* <http://bit.ly/MYEEkz>.

⁵³ The FCC's National Broadband Plan notes the potential for only limited facilities-based competition for high-speed broadband services as cable upgrades to DOCSIS 3.0, while telephone providers limit their expansion of FTTx services. National Broadband Plan at 42.

⁵⁴ For a discussion of the implications of mobile competition for broadband competition, *see* WILLIAM LEHR, *MOBILE BROADBAND AND IMPLICATIONS FOR BROADBAND COMPETITION AND ADOPTION* (2010), *available at* <http://bit.ly/1fCiyyN> (prepared on behalf of Broadband for America).

⁵⁵ Historically, fixed line telephony offered higher call quality relative to mobile telephony from locations with fixed telephone lines. However, mobile telephony allows calls to be made from any location, and over time with improvements in the quality of mobile telephony, the quality advantages of fixed line telephone calls has disappeared.

⁵⁶ As of December 2012, 38.2% of U.S. households only had cellular telephone service, up from less than 10% as recently as June 2006. *See* STEPHEN J. BLUMBERG AND JULIAN V. LUKE, *CENTER FOR DISEASE CONTROL (CDC), WIRELESS SUBSTITUTION: EARLY RELEASE OF ESTIMATES FROM THE NATIONAL HEALTH INTERVIEW SURVEY, JULY-DECEMBER 2012* (2013), *available at* <http://1.usa.gov/1huqwZu>.

⁵⁷ *See* J. SCOTT MARCUS AND JOHN BURNS, *EUR. COMM'N, STUDY ON IMPACT OF TRAFFIC OFF-LOADING AND RELATED TECHNOLOGICAL TRENDS ON THE DEMAND FOR WIRELESS BROADBAND SPECTRUM* (2013), *available at* <http://bit.ly/1mp3VnR>.

⁵⁸ Economic theory supports the proposition that additional competition will result in lower prices, but is ambiguous as to the contribution of additional competitors. For example, in the classic model of Bertrand (price) competition, the competitive outcome is achieved with just two firms; while in Cournot (quantity) competition, the competitive outcome is only reached as the number of firms becomes infinite. Most real-world markets are somewhere in between, with firms seeking to differentiate their products and thereby attenuate the extent of price competition. See Avner Shaked and John Sutton, *Relaxing Price Competition through Product Differentiation*, 49 REV. ECON. STUD. 1, 3-13 (1982); Maarten Janssen and Eric Rasmusen, *Bertrand Competition Under Uncertainty*, 50 J. INDUS. ECON. 1, 11-21 (2002). Product differentiation occurs even in markets such as telecommunication services where the services might be perceived as relatively homogeneous. See Shane Greenstein and Michael Mazzeo, *The Role of Differentiation Strategy in Local Telecommunication Entry and Market Evolution: 1999-2002*, 54 J. INDUS. ECON. 293, 323-50 (2006).

⁵⁹ Parker and Röller found evidence of cellular prices significantly exceeding competitive levels and even what would be predicted in a competitive duopoly model in the U.S. during the period from 1984-1988 when regulations restricted competition to two firms. See Philip Parker and Lars-Hendrik Röller, *Collusive Conduct in Duopolies: Multimarket Contact and Cross-Ownership in the Mobile Telephone Industry*, 28 RAND J. ECON. 207, 304-22 (1997).

⁶⁰ There was a large docket of comments. See, e.g., *Applications of AT&T Inc. and Deutsche Telekom AG for Consent to Assign or Transfer Control of Licenses and Authorizations*, FCC Staff Analysis and Findings and Order, 26 FCC Rcd 16184 (2011). Additional comments and documents can be found through the FCC's electronic comment filing system by searching Docket No. 11-65. See FCC, *Electronic Comment Filing System* (last accessed Feb. 25, 2014), available at <http://bit.ly/1huHAP3>.

⁶¹ See Free Press, Reply to Opposition, WT Docket No. 11-65 (June 20, 2011).

⁶² By the end of 2014, all four of the national mobile operators are expected to have their LTE networks substantially built: Verizon and AT&T's covering 300 million POPS, or 94% of the population; Sprint covering 200 million POPS (67% as of end of 2013) and T-Mobile covering 230 million pops (72% by end of 2014). See Eric Zeman, *Sprint LTE Network Slowly expands*, INFORMATIONWEEK (Sept. 16, 2013), available at: <http://ubm.io/1hbIeCS>; Chris Neiger, *Sneak Peak at T-Mobile in 2014*, THE MOTLEY FOOL (Dec. 18, 2013), available at <http://bit.ly/NvhZMv>.

⁶³ See, e.g., *Applications of Deutsche Telekom AG, T-Mobile USA, Inc. and MetroPCS Communications, Inc. for Consent to Transfer of Control of Licenses and Authorizations*, Memorandum Opinion and Order and Declaratory Ruling, 28 FCC Rcd 2322, 2324 ¶ 5 (2013).

⁶⁴ See, e.g., *AT&T Inc., Leap Wireless International, Inc., Cricket License Company, LLC and Leap Licenseco, Inc. Seek Consent to the Transfer of Control of AWS-1 Licenses, and International 214 Authorizations, and the Assignment of One 700 MHz License*, Pleading Cycle Established, 28 FCC Rcd 12776 (WTB 2013).

⁶⁵ As noted earlier, broadband (including mobile broadband) is essential infrastructure which means it is a necessary input for significant segments of our economy. See Section 2, *supra*. To protect competition in downstream sectors, regulators will need to ensure adequate access to the bottleneck facilities. This may require direct or indirect regulation – for example, a credible threat of regulation may be sufficient.

⁶⁶ See *Verizon v. FCC*, United States Court of Appeals for District of Columbia Circuit, No. 11-1355 (Jan. 14, 2014), available at <http://1.usa.gov/1eBNagO>.

⁶⁷ See Tommaso M. Valletti, *A model of competition in mobile communications*, 11 INFO. ECON. & POL. 1, 61-72 (1999), available at <http://bit.ly/1hcozTi>.

⁶⁸ See *Sixteenth Mobile Competition Report*, 28 FCC Rcd at 3864 ¶ 257.

⁶⁹ See Sascha Segan, *MetroPCS Launches First LTE Network in U.S.*, PC Magazine (Sept. 21, 2010), <http://bit.ly/OIeAdP>.

⁷⁰ See Brad Reed, *MetroPCS Snags First LTE Android Phone*, NetworkWorld (Feb. 9, 2011), <http://bit.ly/1ji2cLq>.

⁷¹ See Droid Life, *MetroPCS Launches World's First VoLTE Network and Smartphone* (Aug. 7, 2012), <http://bit.ly/1imCvtJ>.

⁷² See Alex Heath, *Cricket Brings Prepaid iPhone to the US*, Cult of Mac (May 31, 2012), <http://bit.ly/1mlg38r>.

⁷³ PhoneArena, *Sprint, Sanyo Offer First US Camera Phone* (Nov. 4, 2002), <http://bit.ly/1hPliYf>.

⁷⁴ News Release, T-Mobile, *T-Mobile Celebrates 10 Years of Innovation with Launch of Unlimited Nationwide 4G Data Plans* (Sept. 5, 2012) (T-Mobile News Release), available at <http://t-mo.co/1jMqle6>.

⁷⁵ *Id.*

⁷⁶ *Id.*

⁷⁷ *Id.*

⁷⁸ See, e.g., FCC, *Evolution of Cable Television*, <http://fcc.us/1puLKvK> (providing a history of cable television regulation).

⁷⁹ In addition to the studies cited separately in the discussion below, the following empirical research notes the price lowering effect of competition on cable television rates: Thomas W. Hazlett, *Competition vs. Franchise Monopoly in Cable Television*, 4 CONTEMP. ECON POL'Y 2, 80 (1986); S. Levin & J. Meisel, *Cable Television and Competition: Theory, Evidence, and Policy*, 15 TELECOMM. POL'Y 519 (1991); Robert Rubinovitz, *Market Power and Price Increases for Basic Cable Service Since Deregulation*, 24 RAND J. ECON. 1 (1993); Richard O. Beil et al., *Competition and the Price of Municipal Cable Television Services: An Empirical Study*, 5 J. REG. ECON. 401 (1993); Austan Goolsbee & Amil Petrin *The Consumer Gains from Direct Broadcast Satellites and the Competition with Cable TV*, 72 ECONOMETRICA 351 (2004).

⁸⁰ See Mary T. Kelly & John S. Ying, *Testing the Effectiveness of Regulation and Competition on Cable Television Rates*, E. ECON. J. (2013), available at <http://bit.ly/1cNoHXV>.

⁸¹ See Scott J. Savage & Michael Wirth, *Price, Programming and Potential Competition in US Cable Television Markets*, 27 J. REG. ECON. 25 (2005).

⁸² See T. BEARD & G. FORD, PHOENIX CTR. FOR ADVANCED LEGAL & ECON. PUB. POL'Y STUD, *COMPETITION BETWEEN WIRELINE NETWORKS AS FRAGMENTED DUOPOLY WITH AN EMPIRICAL APPLICATION TO THE CABLE TELEVISION INDUSTRY* (1999).

⁸³ See William M. Emmons & Robin A. Prager, *The Effects of Market Structure and Ownership on Prices and Service Offerings in the U. S. Cable Television Industry*, 28 RAND J. ECON. 732 (1997). Indeed, they conclude that "it seems reasonable to infer that approximately 20% of the price of basic service provided by private monopoly cable operators, in both 1983 and 1989, can be attributed to monopoly rents." *Id.*

⁸⁴ See *Implementation of Section 3 of the Cable Television Consumer Protection and Competition Act of 1992; Statistical Report on Average Rates for Basic Service, Cable Programming Service, and Equipment*, Report on Cable Industry Practices, 28 FCC Rcd 9857, 9859 ¶ 3 (MB 2013). This estimate likely understates the impact of facilities-based competition because it is based on a statutory definition and regulatory finding of what constitutes "effective competition." See *id.* Similar results have been observed in previous surveys. See, e.g., *Implementation of Section 3 of the Cable Television Consumer Protection and Competition Act of 1992; Statistical Report on Average Rates for Basic Service, Cable Programming Service, and Equipment*, Report on Cable Industry Practices, 27 FCC Rcd 9326 (MB 2012).

⁸⁵ *Implementation of Section 3 of the Cable Television Consumer Protection and Competition Act of 1992; Statistical Report on Average Rates for Basic Service, Cable Programming Service, and Equipment*, Report on Cable Industry Practices, 20 FCC Rcd 2718, 2721 (2005).

⁸⁶ See YALE BRAUNSTEIN, EXPECTED CONSUMER BENEFIT FROM WIRED VIDEO COMPETITION IN CALIFORNIA (2006), available at <http://bit.ly/1lkdlIQ>; AM. CONSUMER INST., DOES CABLE COMPETITION REALLY WORK? A SURVEY OF CABLE TV SUBSCRIBERS IN TEXAS (2006) (ACI Study), available at <http://bit.ly/1clemij>. The ACI Study notes that "cable incumbents generally matched or beat the prices of their rivals in competitive markets, while charging prices between 40% and 75% higher in other markets." ACI Study at 6 (citing DAVID W. BARDEN ET AL., BANK OF AMERICA, BATTLE FOR THE BUNDLE 10 (2006)).

⁸⁷ See JAMES N. DERTOUZOS & STEVEN S. WILDMAN, NAT'L CABLE TELE ASSOC., COMPETITIVE EFFECTS OF BROADCAST SIGNALS ON CABLE (1990); ROBERT W. CRANDALL, TELECOMMUNICATIONS, INC., REGULATION, COMPETITION AND CABLE PERFORMANCE (1990).

⁸⁸ Since the divestiture of AT&T in 1984, the Incumbent Local Exchange Companies (ILECs, descendants of the Baby Bells that are currently owned by AT&T and Verizon) were precluded from offering long distance (interLATA) services. The Telecommunications Act of 1996 established a path for allowing ILECs into long distance competition under Section 271 of the Act. See 47 U.S.C. § 271. The ILECs began to file and were approved for access under this provision beginning in 1999 on a state-by-state basis. See Gregory L. Rosston et al., *Effect of Network Unbundling on Retail Prices: Evidence from the Telecommunications Act of 1996*, 56 J.L. ECON. 487 (2013).

⁸⁹ See JERRY HAUSMAN ET AL., THE CONSUMER-WELFARE BENEFITS FROM BELL COMPANY ENTRY INTO LONG-DISTANCE TELECOMMUNICATIONS: EMPIRICAL EVIDENCE FROM NEW YORK AND TEXAS (2002).

⁹⁰ See DAEGON CHO ET AL., THE IMPACT OF MOBILE NUMBER PORTABILITY ON PRICE, COMPETITION AND CONSUMER WELFARE (2013), available at <http://ssrn.com/abstract=2265104>; see also Lukasz Grzybowski, *Regulation of mobile Telephony across the European Union: An Empirical Analysis*, 28 J. REG. ECON. 47 (2005), available at <http://bit.ly/1emzadQ>.

⁹¹ See JEFFREY PRINCE & SHANE GREENSTEIN, DOES SERVICE BUNDLING REDUCE CHURN (2013), available at <http://bit.ly/1k7TbSc>.

⁹² Höffler studied a panel of European countries from 2000-2004. See Felix Höffler, *Cost and Benefits from Infrastructure Competition: Estimating Welfare Effects from Broadband Access Competition*, 31 TELECOMM. POL'Y, 401 (2007), available at <http://bit.ly/1puZgZE>.

⁹³ See GAO, WIRE-BASED COMPETITION BENEFITED CONSUMERS IN SELECTED MARKETS (2004), available at <http://1.usa.gov/1c9fVpj>.

⁹⁴ See Gerald R. Faulhaber et al., *Assessing Competition in US Wireless Markets: Review of the FCC's Competition Reports*, 64 FED. COMM. L.J. 319 (2011).

⁹⁵ The equivalent change since 2010 is -5% for the wireless CPI and +6% for the overall CPI, representing a net real decline in wireless prices of -11%. See BLS, CPI DETAILED REPORT Tbl. 25 (2013) (providing data for 2005-2013), available at <http://www.bls.gov/cpi/cpid1312.pdf>; BLS, CPI DETAILED REPORT (2005) (providing data for 1997-2005), available at <http://www.bls.gov/cpi/cpid0512.pdf>.

⁹⁶ See Andrew Odlyzko, *Internet Pricing and the History of Communications*, 36 COMPUTER NETWORKS 493 (2001).

⁹⁷ Verizon was the first to offer an unlimited wireless plan in 2008. See, e.g., Saul Hansell, *Verizon Stabs Sprint with Unlimited Wireless Plan*, N.Y. TIMES, Feb. 19, 2008, available at <http://nyti.ms/1cROkXn>. By 2009, Verizon and AT&T had cut prices, and then Sprint responded by reducing the price of its unlimited calling plan from \$150 to \$100—a reduction of 33%. See Niraj Sheth, *Sprint Squeezed by Rival Price Cuts; Carrier's Lower-Price Lure May Be Undercut by Reductions at AT&T, Verizon*, WALL ST. J., Jan. 21, 2010.

⁹⁸ If it is feasible for the firm to sustain such a SSNIP without attracting entry or competitive responses that would make this unprofitable, then the firm is presumed to have market power. See, e.g., DOJ AND FTC, HORIZONTAL MERGER GUIDELINES (2010), available at <http://1.usa.gov/1fSaLt3>.

⁹⁹ See J.R. Hicks, *The Valuation of the Social Income*, 7 ECONOMICA 105 (1940).

¹⁰⁰ Hausman (1997, 1999) recognized that a new good may be regarded as a good with a price for which demand would be zero in the time preceding its introduction, and then with assumptions about the functional form of aggregate demand, it is possible to estimate the demand curve and compute consumer surplus with only very limited data about the actual market. See Jerry A. Hausman, *Valuing the Effect of Regulation on New Services in Telecommunications*, 28 MICROECONOMICS 1 (1997); Jerry A. Hausman, *Cellular Telephone, New Products, and the CPI*, 17 J. BUS. & ECON. STAT. 188 (1999).

¹⁰¹ Erik Brynjolfsson et al., *Consumer Surplus in the Digital Economy: Estimating the Value of Increased Product Variety at Online Booksellers*, 49 MGMT. SC. 1580 (2003).

¹⁰² See Lukasz Grzybowski & Pedro Pereira, *The Complementarity Between Calls and Messages in Mobile Telephony*, 20 INFO. ECON. & POL'Y 3, 279 (2008).

¹⁰³ The price elasticity of demand is the percent increase in quantity demanded per percent change in price. Because demand and prices move in opposite directions, it is negative.

¹⁰⁴ See RALF DEWENTER & JUSTUS HAUCAP, DEMAND ELASTICITIES FOR MOBILE TELECOMMUNICATIONS IN AUSTRIA (2007), available at <http://bit.ly/1emdej6>.

¹⁰⁵ See Grzybowski & Pererira, *supra* n. 1022.

¹⁰⁶ See Hausman, *supra* n. 1000.

¹⁰⁷ See Philip Parker and Lars-Hendrik Röller, *Collusive Conduct in Duopolies: Multimarket Contact and Cross-Ownership in the Mobile Telephone Industry*, 28 RAND J. Econ. 207 (1997).

¹⁰⁸ See CTIA Survey.

¹⁰⁹ See DAVID BARDEN ET AL., BANK OF AMERICA AND MERRILL LYNCH, 3Q13 US WIRELESS MATRIX: TABLETS BOOST SUBS, HURT ARPU Tbl. 6 (2013).

¹¹⁰ See USB EQUITY RESEARCH, US WIRELESS 411: VERSION 50 – TOP 10 U.S. WIRELESS TRENDS IN 3Q13 Fig. 19 (2013).

¹¹¹ \$20 Billion = 0.11(\$184B). Reasonable modifications to the assumptions generate annual consumer benefits of \$18 to \$27 billion.



June 13, 2014

The Honorable Fred Upton
Chairman
Committee on Energy and Commerce
U.S. House of Representatives
Washington, D.C. 20510

The Honorable Henry Waxman
Ranking Member
Committee on Energy and Commerce
U.S. House of Representatives
Washington, D.C. 20510

The Honorable Greg Walden
Chairman, Subcommittee on
Communications and Technology
U.S. House of Representatives
Washington, D.C. 20510

The Honorable Anna G. Eshoo
Ranking Member, Subcommittee on
Communications and Technology
U.S. House of Representatives
Washington, D.C. 20510

Re: May 19, 2014 Competition Policy White Paper - Telecommunications Act Update

Chairman Upton, Ranking Member Waxman, Chairman Walden and Ranking Member Eshoo:

On behalf of Cellular One of Northeast Arizona ("Cellular One"), this letter is being submitted in response to the Energy and Commerce Committee's White Paper, released May 19, 2014, seeking comment on competition policy and the role of the Federal Communications Commission, as it relates to an update of The Communications Act of 1934, as amended (the "Telecom Act").

As a smaller-sized regional and rural wireless carrier, Cellular One has built its business by providing excellent customer service and taking an interest in subscribers that have been overlooked and underserved by the nation's larger carriers, specifically those living on Tribal Lands. As industry consolidation becomes more and more commonplace and scarce spectral resources are increasingly controlled by fewer and fewer carriers, there is a real risk that wireless competition from smaller carriers, like Cellular One, will be substantially diminished. Diminished competition will negatively affect wireless prices and the services received by subscribers in rural and harder to reach areas of the country. In making any changes to the Telecom Act, the Committee needs to carefully take into account industry consolidation and take affirmative steps to preserve the ability of smaller carriers to compete in the marketplace.

Company Background

Throughout the Four Corners region of the Southwest (Arizona, New Mexico, Colorado and Utah), Cellular One serves customers in a rural region where most of its service area has less

than ten households per square mile. Starting from scratch over twenty years ago, Cellular One has grown to employ close to 200 people, almost all of them drawn from local communities in Arizona and New Mexico. Over fifty of these employees are Native Americans. With the help of federal Universal Service high-cost support, Cellular One has constructed over 200 cell sites throughout its network. The Company has built extensive wireless coverage, providing service to over 100,000 people, including 56,000 low-income households, mostly on Tribal Lands. Recently, the company upgraded its network to 3G and has acquired spectrum that will enable it to upgrade to 4G in the near future.

Cellular One operates the most extensive commercial mobile wireless network serving the Navajo, Zuni, Hopi, White Mountain Apache, and Ramah Navajo in the Southwest United States, an area roughly the size of West Virginia. Much of the Cellular One network has been constructed and maintained with support from the federal universal service fund. The high-cost and low-income programs are largely responsible for the dramatic increase in telephone penetration in these areas between 2000 and the present. For example, when the Lifeline program was expanded to permit cellular companies to participate and increased the Lifeline subsidy on Tribal Lands, the 2000 U.S. Census reported that less than 40% of Navajo households had access to a telephone. By 2011, Navajo household telephone penetration increased to almost 75%. While its much larger competitors have generally sought to avoid extending their networks beyond major towns and highways, Cellular One's network reaches deep into Tribal Lands, largely as a result of the company's investment to construct, maintain, and upgrade facilities in the region and its long-term commitment to serve tribal residents.

Wireless Market Competition

A smaller and more focused carrier like Cellular One provides higher quality service in areas that would otherwise have been ignored or underserved. For Cellular One, this has translated into a successful business that delivers superior coverage, excellent customer service, job creation, and a boost to the local economy. Accordingly, Cellular One believes strongly that any competition policy pursued by the Committee as part of a Telecom Act update must continue the goal set forth in the current Section 254, to ensure that rural citizens, especially those in Tribal Lands, receive high-quality service that is reasonably comparable to those in urban areas.

Today, four carriers—Verizon Wireless, AT&T, T-Mobile, and Sprint—hold the lion's share of all spectrum, measured on a MHz/POP basis, that is potentially usable for providing mobile wireless services, especially the most valuable spectrum below 1 GHz. The big four now divide up over 95% of the marketplace, with AT&T and Verizon Wireless accounting for nearly 70% of wireless industry revenue.¹

The Department of Justice has concluded that the wireless marketplace is highly concentrated. In 2011, the Department of Justice (DOJ) alleged that the proposed merger between AT&T and T-Mobile would result in a Herfindahl-Hirschman Index ("HHI"), of more than 3,100 for mobile wireless telecommunications services nationwide, an increase of nearly

¹ See <http://venturebeat.com/2013/07/08/iphone-carrier-consolidation/>.

700 points. As DOJ stated, “[t]hese numbers substantially exceed the thresholds at which mergers are presumed to be likely to enhance market power.”²

Excessive market concentration is harmful to rural consumers because it enables the largest carriers to exert tremendous leverage over small carriers on a host of competitive issues.

Competitive Market Issues for Consideration

The following are competitive issues faced by smaller carriers that need to be considered by the Committee in any Telecom Act update:

Interconnection. Smaller regional and rural carriers must interconnect with one of two camps (CDMA and GSM), so that customers’ calls can be completed. The lack of choices confers enormous market power on large carriers, who are empowered to dictate the price of roaming and have the capability to deploy tools to prevent their customers from accessing a small carrier’s network in a rural area, even when a company such as Cellular One provides a strong signal. Any action that prevents a carrier from efficiently interconnecting its network into the Internet, or roaming on another carrier’s network, should be disfavored.

Interoperability. The largest carriers have a lock on the handset marketplace, with power to dictate how handsets are designed, sometimes to the detriment of consumers and smaller regional/rural carriers. In the case of the 700 MHz band, the largest carriers used their leverage over handset design to jeopardize the significant spectrum investments of smaller carriers. Ultimately, the FCC had to step in to force 700 MHz interoperability, to ensure that when consumers buy popular handsets they will work throughout the country on all compatible bands. Congress should ensure that any future spectrum allocations include an interoperability mandate to protect consumers and to preserve competition in the marketplace.

Size of Geographic Licenses. When the FCC allocates new spectrum for auction, the largest carriers favor large geographic license areas, despite specific language in Section 309(j) of the Telecom Act requiring the FCC to allocate spectrum so as to *increase* opportunities for small business, women, minority groups and rural telephone companies. In the upcoming incentive auction, the largest carriers sought license areas defined along 176 Basic Economic Areas, rather than 734 Cellular Market Areas.

Auctioning spectrum using smaller geographic blocks increases opportunities for small business and raises more money for the U.S. Treasury, due to increased competition throughout the country. Specifying smaller blocks also increases the quantity of service in rural areas. A buyer of a large block can meet its build-out obligations by constructing network facilities in the urban/suburban parts of its licensed area, without ever having to build in the rural parts. By contrast, when a rural carrier purchases a rural block, it must meet its build requirement by constructing a network in the rural areas. All of these factors should lead Congress to improve

² See *USA v. AT&T, Inc., T-Mobile USA, Inc. and Deutsche Telekom, AG, Complaint, Case No. 1:11-cv-01560*, available at, <http://www.justice.gov/atr/cases/f274600/274613.htm> .

Section 309(j) of the Act to ensure that small geographic spectrum blocks are used at auction.

Spectrum set-asides for smaller carriers. Responding to concerns that some of the largest wireless companies would dominate the upcoming incentive auctions and take control of the most sought-after spectrum, the FCC recently adopted rules to set aside certain sought-after spectrum exclusively for smaller carriers. By doing so, the FCC took an important step towards: (1) preserving a smaller carrier's ability to compete in the marketplace; and (2) ensuring that subscriber served by smaller carriers in rural and harder to reach areas of the country have access to comparable wireless services that are available to urban subscribers. Spectrum set asides for smaller carriers should be incorporated into any update to the Telecom Act.

Tribal Lands. As the Committee considers competition policy and its impact on an update to the Telecom Act, special consideration should be given to making sure that the residents of Tribal Lands have access to much-needed telecommunications and Internet broadband services.

Most of the Tribal communities Cellular One now serves had no wireless service before the company constructed facilities. Many had no telephone service of any kind. Extreme poverty in the Tribal communities contributes significant challenges to building infrastructure. The National Tribal Telecommunications Association (“NTTA”) has previously noted that unemployment on the Navajo Nation consistently hovers around 40 percent, and that over 50 percent of the population is below the poverty line, with per capita income of just over \$7,000 per year.

Although it has taken some steps, the FCC has not done enough to recognize many tribal areas as having special needs when it comes to wireless infrastructure. For example, the FCC has allowed the legacy universal service support mechanism to lapse on Tribal Lands, replacing it with an amount of support that, at present, appears to be insufficient. Infrastructure investment on remote tribal lands in Cellular One’s service area is significantly behind where it would have been, but for the reduction in high-cost support. To its credit, the FCC has proposed to not reduce the amount of support it has designated for Tribal Lands in the 2011 Connect America Fund Order, however that amount remains insufficient to bring many Tribal Lands up to a level considered reasonably comparable to urban areas, as required by the current statute.

Cellular One asks Congress to look carefully at steps which can be taken to identify Tribal Lands with extraordinary needs, and direct universal service and other grant funds to such areas, so that all carriers can compete for such funds and ultimately deliver advanced competitive telecommunications services to Tribal Lands that have for decades trailed the rest of the country. Care must be taken in any update to the Telecom Act to provide sufficient support for these areas, otherwise the needs of Tribal residents will likely be ignored or vastly underserved.

* * *

Cellular One remains ready to the assist the House Energy & Commerce Committee as it undergoes the process of updating the nation's telecommunications laws. A critical element of any rewrite must be that the nation's citizens living in rural and more remote areas of the country

are not ignored or underserved, but are provided access to comparable telecommunications and broadband services that are being deployed throughout the country. To do otherwise will only create areas of the country that lack any reliable access to wireless voice and high-speed broadband services, thereby negatively affecting economic growth and community development -- a result that is not in the public interest.

Respectfully submitted,

/s/ Justin E. Hinkle

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June 13, 2014

Committee on Energy and Commerce
U.S. House of Representatives
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Re: CenturyLink Response to Committee White Paper on Competition Policy and the Role of the Federal Communications Commission

CenturyLink commends the Members of the House Energy & Commerce Committee for examining how to update the nation’s competition policy given sweeping changes in the communications industry, and define an appropriate role for the Federal Communications Commission (FCC) in developing and enforcing that policy.

As noted in the third white paper, there is good reason to question the “monopolistic assumptions” on which the current Communications Act is based. Two decades of massive competitive deployment and technological convergence have rendered the Act nearly as obsolete as plain old telephone service. Once-dominant incumbent phone (ILEC) providers such as CenturyLink now serve only three of ten households in their incumbent service territories, and four in ten households are wireless-only. And nearly 90 percent of Americans can choose from five or more fixed or mobile broadband providers. If anything, business markets are more competitive, with more than 30 providers offering enterprise broadband services nationally or to large areas of the country.

Federal communications regulation has failed to keep up. CenturyLink and other ILEC providers are still subject to much more burdensome regulation than non-ILEC competitors providing functionally indistinguishable services. Such asymmetric regulatory dictates include requirements to maintain legacy ILEC networks and services, thus diverting limited capital necessary to deploy customer-enhancing next-generation broadband networks.

As recognized in the third white paper, it is critical that updated legislation be flexible enough to accommodate these rapid changes in the communications industry. This can best be accomplished by forging competition policy legislation based on three principles:

1. **Competitive and Technological Parity.** “Like” services, meaning those that are used interchangeably, should be subject to the same regulation, regardless of technology and provider. In

particular, Congress should disband ILEC-specific regulation, which threatens to slow the ongoing TDM-to-IP transition and dampen further competition and innovation.

2. ***Narrowly-Circumscribed Public Interest Principles, Rather than Prescriptive Regulation.*** While Congress may not be able to “future-proof” new communications legislation, it can dramatically increase its staying power by grounding it in carefully- defined public interest principles, rather than detailed prescriptive regulation.
3. ***Meaningful Periodic Review.*** All the Communications Act’s competition policy oriented provisions should be subject to automatic sunset provisions, by which these statutory obligations would cease to be in force after a certain date unless affirmatively retained and justified by the FCC.

It is also important that Congress focus the FCC’s authority on enforcing the light-touch regulation applicable to all competing providers, rather than engaging in prescriptive rulemaking or imposing burdensome commitments on the merger transactions that fall within the FCC’s jurisdiction.

1. ***How should Congress define competition in the modern communications marketplace? How can we ensure that this definition is flexible enough to accommodate this rapidly changing industry?***

As the Committee notes, the current Communications Act does not contemplate the convergence of digital technologies and therefore imposes different regulatory obligations on services and technologies that consumers now view as functionally equivalent. The various titles in the Communications Act, and the major amendments to those titles, were adopted to address specific technologies and market conditions that existed at the time. While they were coherent and reasonable frameworks for those technologies and market conditions, they no longer make sense or serve the public interest because of vast technological and market changes. An updated Act must abandon this siloed approach and define competition in a manner that considers the full spectrum of competing providers.

In 1996, ILECs (like CenturyLink) provided telephone service to *nearly all households*. Today, CenturyLink serves *only 3 in 10 households* in its incumbent service territory. In just the past six years, wireless-only households increased from 16% to nearly 40% nationwide. With regard to broadband, nearly 90 percent of Americans now have a choice of five or more fixed or mobile broadband providers, and ILEC wireline broadband services account for only 41% of fixed residential broadband connections and less than 16% of all broadband connections. If anything, business markets are more competitive, with more than 30 providers offering enterprise broadband services nationally or to large areas of the country.

Providers like CenturyLink face competition from all sides— cable TV operators (*e.g.*, Comcast, Cox), wireless providers (*e.g.*, AT&T, Sprint), other wireline telecommunications providers (*e.g.*, tw telecom, XO), Internet-based companies (*e.g.*, Google, Facebook) and an endless list of start-ups, which may begin as niche providers but ultimately seek to expand into broader communications services. Many provide service without the need for substantial capital investment or the cost of maintaining a legacy network. From a

consumer standpoint, the services offered by ILECs and their non-ILEC competitors are often seen as indistinguishable, as evidenced by ILECs' dwindling share of these dynamic markets.

Given these realities, there is no justification for maintaining burdensome regulation on a handful of competitors based on distant ties to the historical Bell System. Congress can best accommodate rapid market and technology changes by replacing such provider- and technology-specific regulation with light-touch regulation applicable to all providers of services that are widely viewed as interchangeable. It is simply impossible to predict how the industry will evolve, particularly when tomorrow's powerhouse competitors may not even exist today. Only by imposing minimal uniform regulation on all competitors can Congress avoid enacting legislation that is outdated almost as soon as it is signed. In particular, Congress should eliminate regulations requiring incumbents to maintain legacy networks, thus diverting the flow of investment capital away from new network infrastructure.

Regulatory flexibility also depends on refining the FCC's responsibilities to focus on enforcing narrowly-defined public interest regulations rather than adopting broad prescriptive regulations and ensuring meaningful periodic review of all regulations. All the Communications Act's provisions should be subject to automatic sunset provisions, by which those statutory obligations would cease to be effective after a certain date unless affirmatively retained and justified by the FCC.

2. What principles should form the basis of competition policy in the oversight of the modern communications ecosystem?

Congress should forge a new Communications Act founded on three basic tenets:

- ***Competitive and Technological Parity***

"Like" services, meaning those that are used interchangeably, should be subject to the same regulation, regardless of technology and provider. In particular, Congress should disband ILEC-specific regulation, which threatens to slow the ongoing TDM-to-IP transition and dampen further competition and innovation.

- ***Narrowly-Circumscribed Public Interest Principles, Rather than Prescriptive Regulation***

While Congress may not be able to "future-proof" new communications legislation, it can dramatically increase its staying power by grounding it in carefully-defined public interest principles, rather than detailed prescriptive regulation. This approach will give providers incentives to design services based on anticipated consumer demand, rather than favorable regulatory treatment. And, by sticking to narrowly-circumscribed public interest principles in a new Communications Act, Congress is much less likely to trigger multi-year litigation and investment-sapping uncertainty like that which followed the 1996 Act.

The substance of the new Communications Act should be driven solely by need. Traditional “incumbent” providers, such as CenturyLink, no longer control a bottleneck into American homes and businesses. Since 1996, ILECs have lost half their access lines, with 82% and 84% of consumers, respectively, now opting to obtain voice services and broadband services from non-ILEC providers. Moreover, any perceived market power arising from ILECs’ control of legacy TDM networks will further dissipate as communications services and customers increasingly transition to next-generation IP networks. Congress need not wonder how this inevitable transition to IP will affect the communications marketplace. For two decades, IP providers have successfully exchanged data traffic through commercially-negotiated peering arrangements without government oversight. These dynamic arrangements have performed remarkably well, as Internet traffic has skyrocketed and new bandwidth-intensive services have been brought online every day. As the IP transition progresses, voice services currently carried on the ILECs’ traditional TDM networks will continue to migrate to IP, where they will become one of the many services carried on those dynamic networks. Thus, there is no longer a need to regulate provider-to-provider interconnection arrangements, which should be addressed through commercial contracts, free from regulatory oversight, except in instances of clear market failure.

Given these ongoing trends, Congress should tread lightly as it considers new legislation, to avoid distorting these consumer-enhancing developments. In general, Congress should err toward less regulation. It can do so with knowledge that any instance of *under*-regulation will be readily apparent in the future—and easily remedied by Congress or the FCC—whereas *over*-regulation will not be so easily detected, despite its corrosive impact on investment, innovation and competition.

Of course, certain consumer protection and public safety principles must be guaranteed, such as privacy, access to emergency services, and cybersecurity. It is important that rules addressing these matters be applied in a competitively neutral fashion, and that the costs of compliance be fully compensated.

A new Communications Act should focus in particular on accomplishing the core objective of: “mak[ing] available, so far as possible, to all the people of the United States, without discrimination on the basis of race, color, religion, national origin, or sex, a rapid, efficient, Nation-wide, and world-wide wire and radio communications service[.]”¹ Such key issues as universal service and wireless auctions appear to fall within the scope of this objective. With regard to universal service, continuing service in high-cost areas now depends on reliable government funding. The days when ILECs could subsidize high-cost areas through above-cost pricing in urban areas are long past. Similarly, so-called “carrier of last resort” obligations simply do not fit today’s competitive environment. To be clear, CenturyLink does not question the public policy goal of ensuring universal access to essential telecommunications and information services. But such access must

¹ 47 U.S.C. § 151.

be funded by the government and not individual carriers and their customers. For this reason, such remnants of monopoly regulation should now be discarded.

In order to accomplish this narrow focus, Congress may need to constrain the FCC's rulemaking authority and refocus the agency's responsibilities to enforcing the narrowly-circumscribed public interest obligations in the updated Act.

- Meaningful Periodic Review

As noted, federal competition policy should avoid detailed prescriptive requirements—particularly service-, technology-, and provider-specific requirements. But it is also important to establish a mechanism that guarantees meaningful periodic review of existing regulation to ensure that it continues to be necessary and well-suited to current marketplace conditions. All the Communications Act's provisions aimed at addressing competition policy matters should be subject to automatic sunset provisions, by which these statutory obligations would cease to be in force after a certain date unless affirmatively retained and justified by the FCC. The 1996 Act included such a provision in section 272 for most separate affiliate requirements applicable to Bell Operating Company long distance services. Several years ago, the FCC allowed these requirements to sunset, based in part on the disappearing standalone long distance market and growth of intermodal competition for long distance services. Without this sunset provision, which enabled Bell companies to eliminate inefficient corporate structures and practices without harm to consumers, it is likely that at least some of these plainly unnecessary provisions would still be in effect today.

The FCC's reluctant use of forbearance and biennial review mechanisms since 1996 aptly demonstrates the need for both an automatic trigger and a duty to justify retention of any statutory or regulatory provisions consistent with reasoned decision-making. Such safeguards are essential to keeping a new Communications Act as relevant and up-to-date as possible.

3. How should intermodal competition factor into an analysis of competition in the communications market?

Intermodal competition is the driving factor for a Communications Act rewrite. Through its siloed structure, the current statute largely ignores such competition. While the FCC has to some extent used forbearance to account for intermodal competition, its efforts in that regard have been too little and too late. For example, despite intense competition, FCC rules still require CenturyLink to tariff its Ethernet services in some parts of the country, *which prevents it from reducing its prices to offer competitive rates to individual customers*. The FCC has yet to act on CenturyLink's petition to allow it to provide the customized prices and features that enterprise customers demand, in line with its larger competitors. If the statute is not substantially reformed and harmonized to eliminate such disparities, the legislative framework can only harm the public interest and hold our nation back as we compete in the global marketplace.

The Communications Act therefore must be revised to fit today's technologies and markets, whether through wholesale revision or by adding a new title that supersedes the others with respect to broadband and IP-based services. In either case, Congress must recognize that it is impossible to predict the development of the communications industry and counterproductive to try to do so. Instead Congress should forge a new Communications Act founded on the three principles outlined in response to Question 2.

4. *Some have suggested that the FCC be transitioned to an enforcement agency, along the lines of the operation of the Federal Trade Commission, rather than use broad rulemaking authority to set rules a priori. What role should the FCC play in competition policy?*

CenturyLink supports proposals to restructure the FCC's competition policy operations along the lines of the Federal Trade Commission. Given rapid and ongoing changes in the industry, the FCC cannot adopt effective a priori rules regarding competition. The agency should instead focus its resources on enforcing narrowly-tailored public interest obligations applicable to all competing providers, as well as addressing clear instances of anticompetitive conduct. In particular, the FCC should have very limited authority over broadband services, with no authority to regulate the rates, terms and conditions for these services outside the context of universal service.

5. *What, if any, are the implications of ongoing intermodal competition at the service level on the Commission's authority? Should the scope of the Commission's jurisdiction be changed as a result?*

The Commission should be given authority sufficient to apply the same narrowly-tailored public interest obligations to all providers of services and technologies that customers view as interchangeable.

6. *What, if any, are the implications of ongoing intermodal competition on the role of the FCC in spectrum policy?*

Over the past three decades, Congress and the FCC have successfully applied light-touch regulation to the wireless industry, in sharp contrast to continuing heavy-handed regulation of wireline telecommunications providers. While this distinction may have made sense in the early years, it clearly no longer does, given that wireless connections long ago outstripped wireline connections and 40 percent of American households now rely exclusively on wireless service. Congress therefore should establish a regulatory framework that applies the same service regulations to wireline competitors as their spectrum-based competitors.

7. *What, if any, are the implications of ongoing intermodal competition at the service level on the FCC's role in mergers analysis and approval?*

Technological convergence has resulted in the FCC having authority over the mergers of some communications providers but not others. This is a serious problem given that the FCC often insists on burdensome merger conditions that at times have little relevance to any perceived harm resulting from the proposed transaction. In light of ongoing technological convergence, authority to review proposed mergers should be vested in government agencies of general jurisdiction, such as the Department of Justice, rather than the FCC.

- 8. *Competition at the network level has been a focus of FCC regulation in the past. As networks are increasingly substitutes for one another, competition between services has become even more important. Following the Verizon decision, the reach of the Commission to regulate “edge providers” on the Internet is the subject of some disagreement. How should we define competition among edge providers? What role, if any, should the Commission have to regulate edge providers – providers of services that are network agnostic?***

Edge providers increasingly compete with network providers and in some cases are building their own facilities to bypass existing networks and effectively prioritize their services over other edge providers. Thus it is increasingly difficult to distinguish between network and edge providers and any such distinctions no longer form a legitimate basis for regulation. For these reasons, it is critical that all competing providers and technologies be subject to the same light-touch regulation.

- 9. *What regulatory construct would best address the changing face of competition in the modern communications ecosystem and remain flexible to address future change?***

New legislation should be based on the three principles noted in response to Question 2 above.

- 10. *Given the rapid change in the competitive market for communications networks and services, should the Communications Act require periodic reauthorization by Congress to provide opportunity to reevaluate the effectiveness of and necessity for its provisions?***

The Act currently is structured around particular service categories, such as telecommunications services (Title II), radio communications (Title III) and cable communications (Title VI). Within these titles, the Act further classifies services and providers in ways that determine the applicability of hundreds of prescriptive regulations. While these classifications and regulations may have made sense in the past, that is no longer the case with respect to competition policy and disparate treatment of services, due to pervasive intermodal competition and continual technological innovation. Moreover, while there is no reason to think that these market developments are over, today's Communications Act also contains no effective means to adapt to these changing conditions.

CenturyLink believes that an automatic sunset provision presents a good way to account for such rapid market changes. All the Communications Act's competition-related provisions should be subject to automatic sunset provisions, by which these statutory obligations would cease to be in force after a certain

date unless affirmatively retained and justified by the FCC. In theory, this could also be accomplished through periodic congressional reauthorization, but such an approach would depend on government action and therefore could create investment-sapping uncertainty. In any event, the key is to impose an affirmative obligation to prove the continuing need for a given regulation.

Conclusion

CenturyLink commends the Committee for taking a hard look at the appropriate framework for evaluating competition in today's vastly transformed communications markets. Pervasive and competition and continual innovation over the past 18 years have transformed the competitive landscape in the communications industry. Consumers now have choices and capabilities they could not have imagined in 1996, and once-dominant providers such as CenturyLink now serve only three of ten households in their local services territories. As a result, the provider-specific regulations in the current Communications Act no longer serve a useful purpose and now hinder competition and investment, particularly to the extent they require ILECs to use precious capital dollars to maintain obsolete legacy networks, rather than to deploy next-generation broadband networks.

Any legislative overhaul must account for these realities by forging a new Communications Act founded on three basic tenets: competitive and technological parity; narrowly-circumscribed public interest principles, rather than prescriptive detailed regulation; and meaningful periodic review.



EVA CLAYTON
Former Congresswoman

June 13, 2014

The Honorable Fred Upton
Chairman
House Energy and Commerce Committee
2183 Rayburn House Office Building
Washington, DC 20515

The Honorable Greg Walden
Chairman
Subcommittee on Communications and Technology
House Energy and Commerce Committee
2182 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Upton and Chairman Walden:

I'm writing today to provide input on your committee's consideration of options to reform the Communications Act of 1996. Thank you for the opportunity to weigh in on this important issue and for your efforts to help ensure the United States maintains a dynamic and competitive driven digital marketplace.

Since its inception, the Internet has served as a dynamic, vibrant forum for commerce, communication, and innovation. Over the past decade, groundbreaking developments have transformed that space into a medium of social and economic change – especially for communities of color and underserved communities. Yet, its continued growth will depend on sensible policy that is able to keep pace with new technologies and encourage investments in rural and minority communities. For example, in rural eastern North Carolina, telemedicine at East Carolina University is able to connect patients to specialists they do not have access to or would have to travel long distances to see – this is the type of innovation that policymakers must consider as policy is crafted.

Innovation and investment thrive with competition, and competition brings real value for consumers. For this reason, lawmakers should continue to pursue policies that encourage competition, investment,

and innovation, especially in the communications market so that consumers from both rural and urban corners of our country can continue to reap the benefits of new transformational technologies.

An encouraging statistic for underserved communities is that U.S. broadband providers have invested more than \$1.2 trillion over the past 18 years to deploy and maintain America's broadband networks. Unfortunately, these companies operate under the same rules and requirements that were last modified at that time, during a period when consumers primarily relied on landline phones, not mobile phones, as a means to communicate. Today, consumers have a wide range of options when choosing a method or platform to meet their communications needs outside of traditional landline phone service: mobile voice, text message, email, social networks, VoIP, wireless home services, and fiber optic cable just to name a few.

All changes to the Communications Act must reflect and keep up with the steady and frequent changes occurring in this digital space and recognize that the Internet marketplace is highly competitive and dynamic.

Every day, new companies and platforms offer services on even faster and more sophisticated networks with new and improved devices from tablets to Bluetooth. Moreover, government should ensure continued growth, investment, and innovation by crafting policy that evolves and adapts to the ever-changing communications marketplace.

I urge you and your colleagues to update the Communications Act in a manner that reflects the constant evolution of today's digital space and to do so in a manner that preserves its steady growth for rural and minority communities.

Thank you again for your leadership on this important issue and for the opportunity to provide input as you consider changes to the Communications Act. I look forward to working with you further.

Sincerely,

A handwritten signature in cursive script that reads "Eva Clayton". The signature is written in black ink and is positioned below the word "Sincerely,".

Congresswoman Eva Clayton (Retired)

117 Northside Drive
Littleton, NC 27850

Dear Mr. Upton and Mr. Walden,

Thank you for your efforts to consider changes to the Communications Act for the modern day. As our economy grows more technology centric federal policies should encourage innovation and experimentation. Our technology industry has boomed, the correct policies will continue this growth adding jobs and output to the American economy.

The Communications Act was revised in 1996. At the time it was not conceived that the Internet traffic would travel over wireless, satellite, phone lines, fiber to the home and cable. Many legacy regulations in the current law do not consider the convergence of these technologies, and that today competition is more robust than ever.

The most efficient way to update the Communications Act for the modern day is to treat all Internet traffic the same. Currently, there are distinctions between information and telecommunication services. However tools like Skype, Vonage, Google Hangout and FaceTime are making communication over the Internet even easier. In 1996 there was not enough bandwidth for voice chat, let alone video chat.

As technology changes, a Communications Act should allow for innovation and the development of new tools that offer consumer benefits. Our company, ClusterFlunk, would not be possible without high-speed connections. Broadband allows college students to chat, share documents and coordinate on projects through our platform. Laws that facilitate future innovation instead of preventing it will help breed the next generation of Internet-enabled applications growing jobs in our country.

Members of the Committee, thank you for considering my comments. I have attached an op-ed I had published last year that dives deeper into the importance of how broadband contributes to entrepreneurial ventures such as mine.

Thank you for your time,

Adam Nelson,

CEO

ClusterFlunk

<https://clusterflunk.com/>

Higher education depends on ubiquitous broadband

By, Adam Nelson and Joe Dallago

September 16, 2013

http://www.press-citizen.com/article/20130916/OPINION02/309160007/Higher-education-depends-ubiquitous-broadband?gcheck=1&nclick_check=1

Success in today's college classroom is increasingly dependent on high-speed Internet. And while broadband is more available than ever before, we still have work to do to get more lowans online so they are not left behind.

College students returning to school this fall may find online textbooks, virtual classrooms and tablets to be abundant. And they will continue to benefit from a constant influx of game-changing innovations.

For example, our company ClusterFlunk allows college students to study with other classmates online - without the age-old requirements of needing to be in the same location or even having to know each other beforehand.

College lecture halls, which often have more than 300 people in a classroom, are a difficult place to connect with others. A student is lucky to know the five or 10 people who sit in their immediate vicinity.

With ClusterFlunk, students don't have to worry about being part of the right study group. They can easily access the brainpower and knowledge of the entire class online - leading to better test scores and better understanding of the course materials.

This success in the college classroom has a direct impact on a student's future. Unemployment rates for those with a college diploma are less than half of those for people without one.

Receiving a college diploma significantly increases future earning potential. On average, college graduates aged 25 to 34 earned a whopping 60 percent more than those with only a high school diploma, according to the National Center for Education Statistics.

And the ways in which the Internet is transforming education is not limited to college classrooms. From elementary school on up, students are now able to access virtual learning opportunities made possible by broadband Internet.

These advances in education are rooted in the rapid expansion of high-speed broadband access. In 2000, about 90 percent of Americans still used dial-up. Today, more than 80 percent of households can access super high-speeds of 100 megabits per second (Mbps).

Unfortunately, a surprising 29 percent of Iowa residents still do not subscribe to broadband service. Even more troubling, this number almost doubles to 56 percent among low-income families in the state.

If this gap in Internet adoption is not closed, the future of many of our state's residents will be jeopardized - especially the students who must compete in a complex digital world.

That's why we're proud to be taking part in Faces of Innovation, an online movement that highlights and promotes the visionaries who are using the Internet to transform industries like education and who bring the benefits of broadband to millions across America.

It is imperative that in addition to creating new Internet-based services, we also focus on closing the remaining digital divide. It's a simple equation: more high-speed Internet means a better education for more students - paying huge dividends for Iowa and our economy as a whole.

Adam Nelson and Joe Dallago are the co-founders of ClusterFlunk

COMPTEL's Response to Questions in House Energy and Commerce White Paper
"Competition Policy and the Role of the Federal Communications Commission"

COMPTEL, the leading industry association for competitive communications service providers, submits its response to the questions in the Committee on Energy and Commerce's third white paper, which focuses on "Competition Policy and the Role of the Federal Communications Commission." COMPTEL appreciates the Committee's commitment to pro-competition policies and the opportunity to respond to its white paper on competition. For more than 30 years, COMPTEL and its members have advocated for competition-based policies that will ensure *all* consumers benefit from the innovation and investment that competitors bring to the communications marketplace.

Question 1: How should Congress define competition in the modern communications marketplace?

How can we ensure that this definition is flexible enough to accommodate this rapidly changing industry?

Competition in the modern communications marketplace should be defined as it is in any other industry. The Horizontal Merger Guidelines, which are utilized by the antitrust agencies, provide a reliable framework for measuring the extent of competition in any given industry or marketplace. The FCC has and should use a market power framework consistent with the Horizontal Merger Guidelines to evaluate the state of competition in telecommunications markets. Under this framework, the FCC defines relevant product and geographic markets, identifies market participants and examines market share data. This method of analyzing the state of competition is more than flexible enough to accommodate changes in the dynamic communications marketplace.

When Congress enacted the Telecommunications Act of 1996, it set the stage for new entrants to compete in the local telephone market by removing legal barriers to entry, imposing interconnection requirements and requiring the incumbent telephone companies to lease access to their last-mile facilities so

that customers could have a choice of providers. The availability of wholesale inputs enables competitors to serve customers where it would otherwise require substantial uneconomic investment to duplicate the ubiquitous networks of the incumbents and to introduce new products and services, including DSL broadband and IP-based services. Indeed, the competitive industry has been leading the IP evolution. The development of competition made possible by the Act spurred the network investments and upgraded service offerings that consumers enjoy today.

As the FCC found in the National Broadband Plan, a well-functioning wholesale market is a critical component of retail competition and customer choice, because “it is not economically or practically feasible for competitors to build facilities in all geographic areas.” (Plan at 47). Federal policy that facilitates the availability of wholesale inputs and the development of a competitive retail market is necessary to ensure that consumers continue to enjoy the benefits of innovation in both products and services in the future.

Question 2: What principles should form the basis of competition policy in the oversight of the modern communications ecosystem?

Consistent with the Horizontal Merger Guidelines and the FCC’s market power framework, appropriate geographic and product markets must be identified and analyzed to determine the existence and extent of competition. Such an analysis must review the alternatives that are available to purchasers and sellers in any given retail or wholesale market, whether particular products or providers are substitutes for one another in any given retail or wholesale market, and whether there is a sufficient choice among providers so as to insulate and protect against predatory pricing and other anticompetitive behavior. Finally, communications competition policy must recognize and reflect the differences between residential and business service markets and retail and wholesale markets. Businesses, government entities, schools, libraries, and hospitals purchase different communications products, such as special access, than do residential consumers and retail customers have different needs than wholesale customers.

Question 3: How should intermodal competition factor into an analysis of competition in the communications market?

To determine whether particular intermodal services or products compete with one another, a determination must first be made that the products or services are in the same product market category. Again looking at residential, business, retail and wholesale markets separately, do customers consider particular intermodal products or services to be substitutes for one another? If so, to what extent are those replacement products or services available to be purchased at individual customer locations and do the products and services constrain another intermodal providers' pricing?

For instance, an Over-The-Top (OTT) voice or mobile service may not be substitutable for the managed, wireline voice and data services that many business customers require for a number of reasons, including reliability and security. As such, the product market must be carefully defined and substitutability examined among comparable products not generic "replacement" products or services.

Moreover, in examining intermodal competition, it is important to take into account the underlying infrastructure or inputs that support that service or product. For instance, next-generation broadband and wireless networks rely on wired networks—networks that are largely owned by the largest of the incumbent telephone companies. Where those companies exercise market power over competitive inputs, they are dominant and should be treated as such.

In addition, intermodal competition in the business and wholesale markets remains limited. A large number of businesses continue to be addressed by only one or two last-mile connections, and absent Congressional and FCC oversight and action to ensure competitive access, businesses would be subject to monopoly or duopoly pricing. Competitors usually can't make a viable business case to replicate the incumbent providers' last-mile connections, except to serve the very largest customers. This is due to a variety of factors, including high sunk costs of constructing last-mile facilities (i.e., costs that once incurred cannot be readily

recovered), local government regulations that delay and raise costs for new deployments, and building owners' refusing access to new carriers or seeking to charge competitors extending networks into their buildings.

Question 4: Some have suggested that the FCC be transitioned to an enforcement agency, along the lines of the operation of the Federal Trade Commission, rather than use broad rulemaking authority to set rules a priori. What role should the FCC play in competition policy?

The FCC has been, and continues to be, the expert agency on the communications marketplace. The agency should continue to gather the information and data about the marketplace so that competition can be properly measured and monitored. While the FCC could improve its data collection and analysis of the business and wholesale marketplace, it should maintain its authority to administer the Communications Act, including through rulemaking. Moreover, the agency should continue to vigorously enforce the Communications Act, and the Commission's rulemaking authority must be preserved to protect consumers, advance competition, and promote the public interest.

Question 5: What, if any, are the implications of ongoing intermodal competition at the service level on the Commission's authority? Should the scope of the Commission's jurisdiction be changed as a result?

The FCC has the appropriate jurisdiction to address new services and innovations in the communications marketplace. The majority of the provisions of the Communications Act are technologically neutral. For example, the definitions of telecommunications and information services do not depend upon the mode of technology a provider uses to offer these services—it can be wired or wireless. While the FCC has not approached some rulings in a technologically neutral manner, the Commission's jurisdiction should remain unchanged regardless of any changes in technology.

Question 6: What, if any, are the implications of ongoing intermodal competition on the role of the FCC in spectrum policy?

The capability of one technology to compete with others and provide intermodal competition is necessarily impacted by the access to the inputs needed to offer service. For mobile providers, one such input is spectrum. It is necessary and appropriate for Congress to consider whether any competitor (no matter the technological platform) has the necessary inputs to compete.

Question 7: What, if any, are the implications of ongoing intermodal competition at the service level on the FCC's role in mergers analysis and approval?

The FCC judges mergers using a public interest standard, as well as a market power analysis based on the principles of the Horizontal Merger Guidelines that are utilized by the Department of Justice and the Federal Trade Commission. The existence of intermodal competition does not, in of itself, change the need to examine whether a particular transaction increases market power, lessens competition overall, or harms the public interest.

Question 8: Competition at the network level has been a focus of FCC regulation in the past. As networks are increasingly substitutes for one another, competition between services has become even more important. Following the Verizon decision, the reach of the Commission to regulate "edge providers" on the Internet is the subject of some disagreement. How should we define competition among edge providers? What role, if any, should the Commission have to regulate edge providers - providers of services that are network agnostic?

As discussed in Question 1, competition in the modern communications marketplace, including competition among "edge providers," should not be defined any differently than competition is defined in any other industry. While "edge providers" may be network agnostic, they need access to a provider's last mile network to reach their customers. The framework of the 1996 Telecommunications Act provides the flexibility

for the FCC to address last-mile network access. Many of the provisions in the Act are technology agnostic, so the focus should not be on "regulating edge providers." Instead, the Commission should continue to focus on whether market power, and the potential for its abuse remains in gaining last mile access to the end-user.

Also consistent with remarks above, in the business and wholesale markets, the issue of "network substitutability" is less apparent. Services to business customers are generally delivered over traditional wireline telephone networks, which are comprised of both fiber and copper. While incumbent cable providers have begun to enter the business market, most businesses still only have one wireline network connection at their premises. Most competitors offering business services require wholesale access to the last mile from the incumbent providers, because it is economically impractical for competitors to replicate those bottleneck facilities in most cases, particularly to serve small and medium businesses.

Question 9: What regulatory construct would best address the changing face of competition in the modern communications ecosystem and remain flexible to address future change?

As discussed in Questions 1 and 8, the existing framework of the 1996 Telecommunications Act, and the FCC's process for evaluating market power and dominance best address changes in the marketplace. In particular, an agency charged with overseeing those markets that are not effectively competitive is necessary to ensure that consumers are protected.

Question 10: Given the rapid change in the competitive market for communications networks and services, should the Communications Act require periodic reauthorization by Congress to provide opportunity to reevaluate the effectiveness of and necessity for its provisions?

Congress is well within its constitutional authority to evaluate, review, and amend particular provisions of the Communications Act without subjecting the entire Communications Act to a reauthorization process on a periodic basis.

Thank you for the opportunity to comment.

Alan Hill
Senior Vice President, Government Relations
COMPTEL

C O U N C I L F O R



Thomas A. Schatz
President

June 13, 2014

The Honorable Greg Walden
Chairman
Subcommittee on Communications and
Technology
Committee on Energy and Commerce
U.S. House of Representatives
2123 Rayburn House Office Building
Washington, DC 20515

The Honorable Anna Eshoo
Ranking Member
Subcommittee on Communications and
Technology
Committee on Energy and Commerce
U.S. House of Representatives
2123 Rayburn House Office Building
Washington, D.C. 20515

Dear Chairman Walden and Ranking Member Eshoo,

On behalf of the more than one million members and supporters of the Council for Citizens Against Government Waste (CCAGW), I extend our appreciation of your continued work in modernizing the Communications Act of 1934.

The last major overhaul of the Communications Act of 1934 occurred with the Telecommunications Act of 1996. While the law addressed the state of communications at the time of enactment and included the Internet in broadcasting and spectrum allotments, it did not anticipate the dramatic changes that have occurred in the intervening 18 years. The convergence of voice, data, and video has created a new ecosystem that existing law is ill-equipped to regulate.

I am submitting the following responses to the questions posed by the Committee in its most recent white paper on "Competition Policy and the Role of the Federal Communications Commission." Should you have any questions, please feel free to contact either myself, or Deborah Collier, CAGW's director of technology and telecommunications policy at (202) 467-5300.

Sincerely,

A handwritten signature in black ink that reads "Thomas Schatz".

Thomas A. Schatz
President

Questions for Stakeholder Comment:

- 1) How should Congress define competition in the modern communications marketplace? How can we ensure that this definition is flexible enough to accommodate this rapidly changing industry?**

Response:

CCAGW recommends that the Committee define competition as the provisioning of similar services within a marketplace in an environment free of onerous regulations. These include provisions of Title II of the Communications Act which set up unnecessary regulatory delays for providers of telecommunications services.

CCAGW encourages the Committee to use a light regulatory touch to allow for innovation in the marketplace, regardless of the method used to transmit the communication, rather than an overly restrictive, top-down approach that stifles positive market forces. New technologies are constantly evolving, and Congress must include flexibility in the law to allow for these new technologies to flourish.

- 2) What principles should form the basis of competition policy in the oversight of the modern communications ecosystem?**

Response:

Providers offering similar or the same types of services (i.e. video, telephony, Internet) should be required to follow the same set of regulations for that particular service, regardless of the mode of transport (cable, fiber, wireless etc.) in order to create an even and level playing field for all competitors in the marketplace.

The regulations issued should be technology neutral, but service specific, and apply to all involved in the competitive communications marketplace. This is not to be confused with network neutrality (also known as the Open Internet Order), which leads to regulations that seek to resolve problems that do not exist.

- 3) How should intermodal competition factor into an analysis of competition in the communications market?**

Response:

The analysis of competition should be reviewed on the actual service provided to the consumer in the marketplace, rather than the mode of transport. That said, knowledge of the types of transport available in a given region may also be

important as new technologies evolve to provide an improved rate of service and consumer satisfaction.

- 4) Some have suggested that the FCC be transitioned to an enforcement agency, along the lines of the operation of the Federal Trade Commission, rather than use broad rulemaking authority to set rules *a priori*. What role should the FCC play in competition policy?**

Response:

CCAGW believes that the FCC should execute the laws that Congress enacts, and not enforce regulations beyond the scope of existing law, to include reinterpreting Section 706 of the Communications Act to provide a basis to overturn state laws, and regulate broadband.

On April 19, 2013, in a speech at George Mason University School of Law in Arlington, Virginia, FTC Commissioner Joshua D. Wright provided several reasons why he believed that the FTC's antitrust mandate is particularly well-suited to address the concerns that have been raised over the years in the debate surrounding net neutrality about the FCC's ability to enforce anti-trust laws relating to consumer welfare and vertical arrangements.¹

- 5) What, if any, are the implications of ongoing intermodal competition at the service level on the Commission's authority? Should the scope of the Commission's jurisdiction be changed as a result?**

Response:

As previously noted, under current law, video service providers using cable as the mode of transport function under a different set of rules than a video provider using fiber telephone lines for delivery. This disparity in the law must be corrected in order to provide for these service providers to compete on a level playing field.

- 6) What, if any, are the implications of ongoing intermodal competition on the FCC in spectrum policy?**

Response:

Different bands of spectrum have different properties. For example, wireless routers operate on a very high frequency, in gigahertz (GHz). This allows large amounts of data to be packed into transmissions, but within a limited range.

¹ Joshua D. Wright, "Broadband Policy & Consumer Welfare: The Case for an Antitrust Approach to Net Neutrality Issues," Speech at George Mason University School of Law, Arlington, Virginia, Federal Trade Commission, April 19, 2013, http://www.ftc.gov/speeches/wright/130423wright_nn_posting_final.pdf.

Council for Citizens Against Government Waste

Most wireless phones operate on the 800 MHz band because the properties of this part of the spectrum allow transmissions from phones to travel long distances.

Given the different uses for the various bands of spectrum, spectrum policy should relate more to the actual use of a given portion of spectrum as opposed to concerns about intermodal competition.

9) What regulatory construct would best address the changing face of competition in the modern communications ecosystem and remain flexible to address future change?

Response:

A more nimble construct would be for the FCC to limit its scope to existing methods of communications allowing them to continue, while facilitating future innovations in technology by allowing the market to function, with intervention from the FTC only when absolutely necessary.

10) Given the rapid change in the competitive market for communications networks and services, should the Communications Act require periodic reauthorization by Congress to provide opportunity to reevaluate the effectiveness of and necessity for its provisions?

Response:

Yes, as Congress should do with every other federal agency, the FCC should be subject to a rigorous periodic review through a reauthorization process, in order to ensure that the agency continues to operate within its set roles and responsibilities, while allowing for new technological innovations to evolve.



Paul G. Scolese

Assistant Vice President, Government Affairs

June 13, 2014

Via E-mail to commactupdate@mail.house.gov

The Honorable Fred Upton
Chairman
Committee on Energy and Commerce
United States House of Representatives
2125 Rayburn House Office Building
Washington, D.C. 20515

The Honorable Henry Waxman
Ranking Member
Committee on Energy and Commerce
United States House of Representatives
2125 Rayburn House Office Building
Washington, D.C. 20515

Re: Cox Communications, Inc. Comments on Third Committee White Paper on Modernizing Communications and Technology Laws

Dear Chairman Upton and Ranking Member Waxman:

As a longstanding and significant participant in the competitive markets for video, broadband, and voice services, Cox Communications, Inc. (“Cox”) is pleased to be able to participate in the current efforts of the Committee on Energy and Commerce to consider appropriate modernization of laws and regulations governing the communications and technology sectors of the American economy.

The third in the related series of white papers issued by the Committee rightly observes that relevant industries and markets have changed dramatically since the last major revision of the law, perhaps requiring renewed revision of many of its parts. As Cox suggests in the attached comments, however, it will be important for the Committee to also recognize that at least some structures in the existing law – for example, the current regulatory framework for voice network interconnection – are drivers of the level of competition consumers now enjoy and should be retained.

Thank you for the opportunity to take part in this important process.

Respectfully submitted,

Paul G. Scolese
Assistant Vice President, Government Affairs
Cox Enterprises, Inc.

Attachment



**Comments of Cox Communications, Inc.
In Response to the House Committee on Energy and Commerce White Paper on
Competition Policy and the Role of the Federal Communications Commission.**

As the House Committee on Energy and Commerce continues its consideration of how best to modernize federal communications laws for the 21st century, Cox Communications, Inc. (“Cox”) appreciates the opportunity to provide the Committee with its views on the state of competition and the appropriate role of regulation in the communications industry. As one of the country’s largest cable system operators, a leading provider of broadband Internet services, and a major provider of voice communications, Cox’s operations are significantly affected by the current Communications Act. Cox therefore has a great interest in many facets of any proposed revision to the Act and may communicate with the Committee on a number of related issues as your work progresses.

At this time, however, we limit our comments to important considerations for the Committee as it reviews potential changes to regulation of the wireline voice communications services market. Government action since the Telecommunications Act of 1996 (“1996 Act”) has created a highly competitive retail voice market that allows the Committee and the Federal Communications Commission to consider now substantial reductions to the regulation of retail voice services. At the same time, however, the Committee should ensure that the FCC retains the existing regulatory framework for network interconnection that is so critical for the competitive voice communications markets to continue to function and flourish.

Introduction and Summary

Cox exemplifies the emergence and ongoing evolution of competition in the voice communications market. Cox entered the voice service market in 1997 and initially offered services using the time division multiplexing (“TDM”) technology utilized by legacy telephone companies. Over time, Cox has evolved its network to provide Internet Protocol (“IP”)-based services to many of its wireline telephony customers. Today, Cox is the seventh largest provider of voice services in the United States, with more than 2.6 million residential voice customers and more than 275,000 commercial voice customers.

By many measures, the pro-competitive framework established by the last major overhaul of telecommunications law – the 1996 Act – has succeeded in bringing consumers the benefits of a richly competitive voice services market. The competition in wireline telephony fostered by the 1996 Act greatly expanded the competitive alternatives available to consumers, and those new choices have been buttressed by improvements in wireless technology that have enabled mobile devices to emerge as a substitute for landline voice service, as well as by the introduction of widely available voice over Internet protocol (“VoIP”) services. Because consumers now

enjoy a wide range of options and offerings for retail voice communications services, there is less need for government-imposed price and service regulations to function as proxies for the discipline of a competitive marketplace. As a result, public policy should now seek to reduce such unnecessary regulation of retail wireline services.

But it is important to recognize that the emergence and continued viability of new sources of competition and choice at the retail level is founded upon policies that ensure that competing providers have the ability to interconnect their networks with the facilities of incumbent local exchange carriers (“ILECs”). Interconnection allows competing providers to obtain access to key network services and features that consumers expect; to indirectly interconnect with other carriers through the ILECs’ networks; and to connect their customers to the businesses and households that continue to be served by the ILECs. The regulatory framework established by Sections 251 and 252 of the Communications Act reflects the importance of competition and has been the key driver in enabling consumer choice by ensuring that alternative providers can obtain interconnection with ILECs on fair and reasonable terms. Any revision to the Communications Act should take care to preserve this essential prerequisite for competition, and make sure that the policies that ensure the ability to interconnect today continue to preserve that right for the voice networks of the future.

I. While Increased Competition May Allow for Deregulation of Retail Voice Services, Interconnection Regulation Must Be Maintained to Allow Voice Competition to Flourish.

There is no question that the market for retail communications services has changed substantially since adoption of the 1996 Act. Wireless voice services now compete with wireline voice services, and nearly 40 percent of all households do not even possess a wireline telephone. At the same time, the market for wireline voice services has also become increasingly competitive, with over 40 percent of all wireline voice connections now provided by competitive service providers. Given consumers’ access to competitive alternatives, there is a reduced need to protect retail end users from unfair treatment by monopoly telephone companies.

The level of competition that has developed in retail voice service markets – a level that may permit significant deregulation of retail services – is inextricably linked to a policy framework that ensures that competitive providers can interconnect their networks with networks controlled by ILECs. By requiring ILECs to negotiate in good faith for interconnection at just and reasonable rates, subject to arbitration of disagreements by a state regulatory commission, the regulatory framework established in Sections 251 and 252 of the Communications Act has been a key element undergirding the expansion of competition in voice service markets.

An important part of the Act’s framework maintaining competitors’ access to interconnection and associated rights has been its technology-neutral application. For example, as incumbents and competitors upgraded their networks from analog to digital switching, the Act ensured that interconnection rights continued to apply. The process continues today as industry participants – wireline and wireless alike – work through the transition to all-IP networks, and technological neutrality continues to be of utmost importance to sustaining competition. It is critical that such technological neutrality – an essential attribute of the regulatory framework –

be maintained in any Communications Act revision to ensure that competition can continue to flourish.

Competitive carriers require an effective policy framework to obtain access to key inputs controlled by ILECs, including access to emergency calling facilities and databases, number portability, operating support systems, and other elements needed to provide competitive voice telephone service. The 1996 Act correctly recognized that the only reasonable way for a competitive network to obtain many of these essential network inputs and features is through interconnection with and cooperation from the local ILEC, and that conclusion continues to hold true today.

Interconnection with ILECs is also how competitive carriers indirectly interconnect their networks with other carriers. Because ILECs are the only carriers that interconnect with all other carriers in their local calling areas, the ILECs form an indispensable link called transit service between competitive carriers and every other carrier that connects with the ILEC. ILECs must continue to make transit service available as a form of interconnection, allowing a competitive carrier to connect calls between its customers and customers of every other carrier that also has an interconnection agreement with the ILEC. This policy eliminates the need for the competitive carrier to have a direct connection to each of the other carriers, which is not only a more efficient result, but in many cases may be the only reasonable way to create these connections, because the level of traffic between one competitive carrier and another may not justify direct interconnection. While competitive transit providers exist as an alternative to ILECs in some markets, even the most successful competitive transit provider does not reach all of the carriers with which a competitive carrier will need to interconnect, leaving indirect interconnection through an ILEC as the only alternative.

Finally, competitors need to interconnect with ILECs to connect their customers with the nearly 60 percent of landline customers that continue to receive service via ILEC networks. ILECs still maintain the largest market share in nearly every local retail voice service market – and in markets where AT&T or Verizon is the ILEC, the ILEC also controls access to customers of the country's two largest wireless carriers. Without access to those customers at reasonable rates and on reasonable terms and conditions, a competitive carrier cannot last in the marketplace.

II. The Transition to All-IP Networks Does Not Reduce the Need for Regulatory Oversight of Voice Service Interconnection.

As modern voice networks transition to all-IP networks – over 30 percent of wireline voice connections are now provided as VoIP services – the change in technology does not obviate the need for the regulatory framework for interconnection. Claims that regulatory oversight of interconnection through Sections 251 and 252 or other means will no longer be necessary misapprehend the impact of the all-IP transition on voice networks and fail to show how the regulatory goal of the interconnection framework is satisfied. While the transition to IP networks may allow interconnection to be more efficient and economical, for example by potentially allowing exchange of traffic at fewer points of interconnection, the change in technology from TDM to IP does not alter the need for competitive providers to interconnect, nor

does it alter the ILECs' bottleneck control over key resources or the role ILECs fill as transit providers.

IP voice networks are and will remain for the foreseeable future very different from Internet access services. It is misleading to suggest that because the Internet has been able to flourish without regulatory oversight of broadband interconnection, voice networks will similarly no longer need interconnection oversight once they convert to all-IP. Managed interconnected VoIP service, like that offered by Cox and other competitive service providers, offers real-time, full duplex communication that requires an expected, predictable, and controllable level of service throughout the duration of the voice communication. The "best efforts" model that works for broadband services over the public Internet cannot guarantee these essential requirements, which are needed to ensure not only good quality phone service but also the reliable connection needed for 911 emergency calling and other necessary services. Only continued regulatory oversight of IP voice service interconnection will fully protect consumers and competition.

A critical distinction can be made in the broadband data interconnection arena. The fact that these interconnection arrangements have concluded successfully in a largely deregulated environment does not affect the need for continued regulatory protections for IP voice service. Internet connections have succeeded because the Internet has always been predicated upon interconnection of disparate networks and was never characterized by a legacy of monopoly local providers. In this largely positive history of peering and fair dealing between networks, there is no need to closely regulate interconnection of Internet services.

In contrast, in the wireline voice context, ILECs have long had a history of refusing to offer competing network providers interconnection on fair and reasonable terms and conditions. While the legacy of ILEC monopoly in wireline voice continues to recede as a result of the emergence of – and traction gained by – competing providers, the vigorous competition at the retail level has emerged as a result of a robust policy framework that ensures interconnection. That policy must continue, regardless of the technology used for transmitting voice calls over the networks.

Conclusion

Cox appreciates the Committee's focus on updating the Communications Act to reflect the growth of competition in communications services and the evolution of network technologies. In the retail marketplace, the Committee should promote deregulatory policies that reflect the emergence of new choices and alternatives in voice communications for consumers. At the same time, however, the Committee should recognize that the prerequisite for these new competitive options and alternatives has been – and should continue to be – a strong policy framework that ensures the robust network interconnection that allows consumers to have full leeway to exercise the choices available to them.

June 13, 2014