Hearing on "Improving FCC Process"

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Chairman Walden, Ranking Member Eshoo and members of the Subcommittee, thank you for this opportunity to testify on the importance of reforming processes at the FCC.

My name is Larry Downes. Based in Silicon Valley, I am an Internet industry analyst and the author of several books on the information economy, innovation, and the impact of regulation. I have also written extensively on the effect of communications regulation on the dynamic broadband ecosystem, and in particular the role played by the FCC. I include several of my prior publications in an Appendix.

Summary

As the nature of technological innovation has both accelerated and mutated in the last decade,[2] the FCC's inability to eliminate needless roadblocks for entrepreneurs and incumbents alike has reached a breaking point. The agency continues to tinker with 21st century problems using a 19th century toolkit. Many of the agency's processes are badly in need of reform and structure. They lack economic rigor, transparency, expediency or consistency.

As Ronald Coase famously wrote, "If you torture the data long enough, nature will always confess."[3]

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[2] *See* Larry Downes and Paul F. Nunes, *Big Bang Disruption*, Harvard Business Review 44 (March, 2013); *A New Kind of Disruption*, HARVARD BUSINESS REVIEW 20 (May, 2013).

[3] Ronald H. Coase, *How Should Economists Choose?* in ESSAYS ON ECONOMICS AND ECONOMISTS 27 (University of Chicago Press 1994).

That, in a nutshell, has become the FCC's unintended *modus operandi*. The agency collects the data it needs to make wise and efficient decisions, but in the absence of clear guidelines and the most basic economic analysis, the Commission cannot resist the temptation to abandon the logical conclusions compelled by that data in the service of vague, idiosyncratic, transient and, often, unarticulated policy goals.

The lack of structure wastes both government and private resources. Worse, it vastly underemphasizes the likelihood that imminent technology disruptors will better and more efficiently advance the communications needs of American consumers with far fewer unintended consequences.

These problems devalue much of the good work of the agency's staff and subvert the often admirable goals of the FCC's Chairmen and Commissioners. They have created an epidemic of negative side-effects, including:

- Many of the agency's reports fail to reach obvious conclusions supported by the thorough data collection the agency performs, limiting their usefulness as policy tools to advance the FCC's longstanding charter to promote communications to all Americans.

- Rulemakings torture their analysis and data to justify what appear to be *ex ante* conclusions to regulate — regardless of the need or cost.

- The value to consumers of license transfers aimed at avoiding an imminent spectrum crisis are dissipated by the unchecked growth of laundry lists of unrelated conditions, many of which become counter-productive or mooted by technological advances years before they expire.

- Recent spectrum auctions have been poisoned by similar policy interventions. The 2008 700 MHz auctions were so weighed down with conditions that the most important auctions failed. The "C" Block auction left billions of dollars on the table. The "D" Block didn't even meet its minimum bid.[4]

[4] Larry Downes, *A Strategic Plan for the FCC: The Future Ain't What it Used to Be*. FORBES (DEC. 5, 2011), http://www.forbes.com/sites/larrydownes/2011/12/05/a-strategic-plan-for-the-fcc-the-future-aint-what-it-used-to-be-2/; *see also* Gerald R. Faulhaber & David J. Farber, *The Open Internet: A Customer-Centric Framework*, 4 INTERNATIONAL JOURNAL OF COMMUNICATION 302 (2010), *available at* http://ijoc.org/index.php/ijoc/article/viewFile/727/411.

In the absence of formal guidelines and processes to complete these core activities, the FCC enjoys considerable flexibility to deal with a fast-changing market. But that informality leaves the agency with no useful mechanism for determining whether any particular intervention will serve consumers more efficiently than simply allowing technological evolution to take its natural course.

Worse, the lack of structure has left the FCC with the mistaken impression that the agency can predict an increasingly unpredictable future, and design what it calls "prophylactic" remedies for consumer harms that have yet to occur.

In effect, the Commission's decision-making process is at war with the agency's own data.

Given rapid changes in the broadband ecosystem, the FCC, of course, needs some measure of flexibility to complete its statutory mission. But applying that flexibility ungrounded by neutral principles, guidelines, and analytic processes invariably does more harm than good.

As markets have become more dynamic thanks to the accelerating introduction of disruptive computing and communications technologies, the FCC has simply dug in its heels, basing its decisions on a strangely siloed view of the industries it oversees. This unstructured approach becomes more dangerous and more anachronistic every day. When push comes to shove--as it always does--the FCC has demonstrated a dangerous and growing tendency to ignore its own data and go with its gut, or worse.

The dynamic nature of the markets and industries the agency oversees requires a 21st century FCC. The agency urgently needs neutral, streamlined, and balanced decision-making processes. With them, the agency could become a genuine partner, accelerating adoption of new technologies and the economic growth that goes with them. Without them, the agency will increasingly stand as an obstacle to achieving the broadband ecosystem's full potential to improve the lives of all Americans.

The foundations for a more productive role for the FCC—a role consistent with the agency's long-stated statutory purposes--are already in place. In preparation for the many reports the agency is required to produce, agency staff have become adept at collecting and reporting vast troves of useful information regarding market conditions, consumer behavior, and competition.

These reports describe an increasingly complex communications ecosystem in which all manner of content is now being delivered on converged IP networks, and in which market discipline

comes not just from direct competitors but from every participant in the ecosystem—including device makers, software developers, service providers, and consumers themselves.

Yet in *applying* that data, whether in reports, rulemakings, amendments, orders, auction designs or transaction reviews, the agency has no process, or at least none based on the uncontroversial principles of basic cost-benefit analysis. With nothing more than the undefined "public interest" lens through which to squeeze this mountain of data, the agency's processes have become unstructured, ranging dangerously far from both statutory and Constitutional limits.

Congress can easily ameliorate the worst symptoms of this breakdown. The two discussion draft bills before you, Federal Communications Commission Process Reform Act of 2013 (HR 3309 in the 112th Congress) and Federal Communications Commission Consolidated Reporting Act of 2013 (HR 3310 in the 112th Congress),[5] provide many common-sense, modest, apolitical repairs, imposing needed structure on the Commission's processes.

This testimony briefly highlights the negative unintended consequences that unstructured reviews are causing, particularly in the broadband ecosystem. I also offer suggestions for additional process controls that are acutely needed as the FCC's role in rapidly evolving technology markets becomes more determinative.

In short, as those of us in the technology industries have learned the hard way, the pace of change has long-since outrun our ability to predict the future, even in the short-term. The FCC must be cured of its counter-productive habit of micromanaging markets that are evolving even as the Commission deliberates. It must weigh the costs of intervention against the likelihood that even demonstrable market failures are increasingly resolved by the imminent next generation of technology, often deployed by enterprises, entrepreneurs and competitors that didn't exist when the agency began its review. And it must focus its remedial and regulatory efforts on relevant consumer harms that are tangible and solvable with both precision and measurable efficacy.

[5] Discussion Draft, *Federal Communications Commission Process Reform Act of 2013,* http://docs.house.gov/meetings/IF/IF16/20130711/101107/BILLS-113pih-FCCProcessReformAct.pdf (July 11, 2013); Discussion Draft, *Federal Communications Commission Consolidated Reporting Act of 2013*, http://docs.house.gov/meetings/IF/IF16/20130711/101107/BILLS-113pih-FCCConsolidatedReportingAct.pdf (July 11, 2013).

Transaction Review

The FCC's process failures are most painfully visible in the agency's transaction review process--in precisely the area where grounded approaches are most urgently needed. Here, the Commission's inability to keep pace with changing technological and competitive dynamics has created a long list of negative unintended consequences, including:

- Long delays in processing applications for license transfers that accompany mergers, acquisitions, and other financial transactions, even as technological disruption accelerates and consumer demand for services explode. Transfers delayed are consumers unserved.
- Needlessly burdensome conditions and "voluntary" commitments that stifle competition rather than preserving it, many unrelated to the actual transaction.
- Inconsistent restrictions applied at different times to different licensees in the same industry that reduce transparency and increase consumer confusion.
- Long periods of expensive and distracting post-transaction reporting, monitoring, and enforcement by the FCC, with no mechanism to determine if technology and market changes have eliminated the need for some conditions, or rendered them counter-productive.
- Duplicative review, using different standards and different burdens of proof, with merger reviews conducted on related transactions by the Department of Justice.[6]

There is an acute need for process reform in the agency's review of license transfers. As someone who works not in Washington but in Silicon Valley, I speak daily with entrepreneurs, innovators, and venture investors. We are now spending more and more of our time dealing with what the FCC accurately termed in 2009 the "spectrum crisis,"[7] which threatens to slow or even stall the remarkable engine of innovation that is the broadband ecosystem. Already, that crisis has foreclosed valuable innovations and services that could instead be serving the insatiable demands of mobile customers.

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[6] In the Verizon-SpectrumCo transaction, the FCC attached competition-related conditions to joint marketing and other commercial agreements that were part of the overall deal but which did not include the transfer of licenses. Whether ancillary or unrelated agreements have anticompetitive effect, however, is appropriately the province of the Department of Justice. Their effect on competition is best measured under the antitrust laws, not the "public interest" standard. If the FCC continues to assert jurisdiction over such agreements as part of its public interest review, its evaluation of license transfers will quickly transform into unfettered authority to regulate any aspect of the merged entity's business. This not only duplicates DOJ review, it also does so under a standard that lacks any clear limiting principles or analytical rigor.

[7] Prepared Remarks of Chairman Julius Genachowski of the Federal Communications Commission, *America's Mobile Broadband Future*, International CTIA WIRELESS I.T. & Entertainment in San Diego, CA (Oct. 7, 2009), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-293891A1.pdf.

Consumers across the world have embraced inventions in mobile computing, most of which continue to originate in the U.S., faster and more enthusiastically than any previous technological innovation we've created. The broadband ecosystem has provided what has sometimes been the lone bright spot on our struggling economy.

But as the National Broadband Plan (NBP) acutely recognized, U.S. consumers, especially in urban areas, are so eager to embrace the latest mobile devices, services, apps and content that they are challenging the natural limits of existing networks to continue to satisfy demand.

Since 2009, remarkably, smartphone adoption has jumped from 30% to 67%.[8] Network traffic has continued to more than double year over year since 2007.[9] Overall, wireless innovation supports nearly 3.8 million American jobs today and contributes nearly $200 billion to the economy.[10] These are just a few of the metrics reported by the FCC; job creation, economic value, U.S. competitiveness, and other measurements have similarly risen.

To support this unparalleled growth, the NBP conservatively estimated that mobile network operators would require an additional 300 MHz of dedicated spectrum by 2015 and 500 MHz by 2020.[11] But for the first time in our history, there is almost no available inventory of usable and unassigned frequencies. The spectrum frontier is now effectively closed.[12]

To their credit, Congress, the FCC, and the White House have worked hard to keep the broadband economy booming. This Subcommittee, on a bi-partisan basis, has done much to support that effort, including introducing legislation authorizing the FCC to conduct Voluntary Incentive Auctions (VIA) (which became part of the Middle Class Tax Relief Act),[13] and

[8] Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services, Sixteenth Report ¶ 349 (Mar. 21, 2013), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-13-34A1.pdf (hereinafter 16th Annual Mobile Competition Report).
[9] *Id.* at 12.
[10] Roger Entner, *Entner: Managing Market Share By Restricting Spectrum Ownership – Warnings of a Managed Economy?* Fierce Wireless (June 8, 2013), http://www.fiercewireless.com/story/entner-managing-market-share-restricting-spectrum-ownership-warnings-manage/2013-06-08.
[11] National Broadband Plan, *Goals and Action Items*, Broadband.gov, p. 26 (last visited July 9, 2013), *available at* http://www.broadband.gov/plan/goals-action-items.html.
[12] Larry Downes, *Averting a Spectrum Disaster: Now for the Hard Part*, CNET (Feb. 25, 2012), http://news.cnet.com/8301-1035_3-57385202-94/averting-a-spectrum-disaster-now-for-the-hard-part/.
[13] Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96 (codified at 47 U.S.C. § 1422 (2012))

requesting monthly status updates from federal agencies on their efforts to free up spectrum for consumer services.[14]

Congress has rightly determined that over-the-air broadcasters and federal government assignees are the most promising sources for unlocking unused and underutilized frequencies that would achieve better and higher use by broadband consumers.

So far, unfortunately, we have little to show for this hard work.

The Voluntary Incentive Auctions have not kept up with the schedule originally proposed by the FCC. And even if VIA design and execution had not become bogged down, it would, realistically, have taken at least a decade to bring new spectrum online—well past the NBP's doomsday clock for the spectrum crisis. And despite now two strongly-worded Memoranda from the White House, federal uses, notably the Department of Defense,[15] have been slow to acknowledge the President's insistence that the federal government cooperate in the FCC's efforts to provide up to 500 MHz by 2020.[16]

As a result of delays and roadblocks, network operators are working overtime to squeeze out additional value from current spectrum licenses by improving the efficiency of existing networks. They are deploying new technologies, including fiber backhaul, smaller cells and smart antennas.[17] And they are doing what they can to get existing customers to migrate to more spectrum-efficient protocols, notably 4G LTE. (The U.S. already leads the world in LTE adoption, with over half of the world's total LTE connections.[18])

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[14] *See* Gary Arlen, *House Commerce Committee Wants Monthly Updates From Federal Agencies on Spectrum Realignment*, BROADCASTING & CABLE (June 28, 2013), http://www.broadcastingcable.com/article/494285-House_Commerce_Committee_Wants_Monthly_Updates_From_Federal_Agencies_on_Spectrum_Realignment.php.

[15] *See* Presidential Memorandum: Unleashing the Wireless Broadband Revolution (June 28, 2010), *available at* http://www.whitehouse.gov/the-press-office/presidential-memorandum-unleashing-wireless-broadband-revolution; *see also* Presidential Memorandum: Expanding America's Leadership in Wireless Innovation (June 14, 2013), *available at* http://www.whitehouse.gov/the-press-office/2013/06/14/presidential-memorandum-expanding-americas-leadership-wireless-innovatio.

[16] National Broadband Plan, *see supra* note 11.

[17] Their ability to do so, however, is limited by the slow pace of local approval for all manner of infrastructure improvement, including replacing existing equipment, adding new equipment to existing cell towers and utility poles, and construction of new towers. *See* Larry Downes, *Does Your iPhone Service Suck? Blame City Hall*, CNET (Sept. 8, 2011), http://news.cnet.com/8301-1035_3-20102911-94/does-your-iphone-service-suck-blame-city-hall/.

[18] Jonathan Spalter, *Spectrum for Brighter Mobile Future*, MOBILE FUTURE (June 26, 2013), http://mobilefuture.org/spectrum-for-brighter-mobile-future/.

The most effective tool for deferring the spectrum crisis so far, however, has been to make innovative use of secondary spectrum markets. These markets allow willing parties to transfer spectrum already licensed for mobile applications among themselves.

As the FCC reports, licensees have completed over a dozen major spectrum transfer transactions since 2007. Secondary markets have enabled license holders such as SpectrumCo to dispose of valuable spectrum that had long sat idle. In other cases, carriers have used the secondary markets to divest licenses in frequencies that are more complementary to the networks of others, and to acquire spectrum that better fits their own portfolio.

In every example, these market transactions have served the policy goal of putting limited spectrum capacity to better and higher uses.

The secondary markets, however, are severely constrained by outdated FCC transfer procedures and policies. And license transfers, by law, are subject to FCC approval.[19] According to the Communications Act, license transfers freely negotiated will nonetheless be rejected unless the FCC makes a finding that the transfer is in "the public interest."

But the public interest standard has never been defined, nor has Congress imposed any rigor on the how the agency applies it. As a result, over the last several years, the agency has demonstrated a disturbing willingness to use its gatekeeping role to advance a wide variety of conflicting and unrelated policy agendas.

With little to guide or constrain such reviews, the FCC's application of the public interest standard has become increasingly unstructured. In the last few years, for example, the agency has shown a dangerous tendency toward "mission creep," using license transfer proceedings to advance unrelated and often eccentric policy agendas or otherwise evade restrictions on agency jurisdiction imposed by Congress. Worse, the agency's often-lengthy transaction-related orders are rendered incoherent by a growing opaqueness in the methods, analysis, and processes used in transaction reviews. Such reviews increasingly appear cobbled together after the fact to support ex ante decisions based on unstated policy goals.[20]

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[19] Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56 (1996) (amending 47 U.S.C. § 310(d) (2012)).

[20] Larry Downes & Geoffery A. Manne, *The FCC's Unstructured Role in Transaction Reviews*, 1 CPI ANTITRUST CHRONICLE 1 (2012); *See also* Larry Downes, *The FCC Scores a Hat Trick of Errors on Internet Regulation*, FORBES (Aug. 27, 2012), http://www.forbes.com/sites/larrydownes/2012/08/27/the-fcc-scores-a-hat-trick-of-errors-on-internet-regulation/.

The FCC's unstructured role has become a bottleneck that threatens the health and dynamism of the broadband ecosystem--the exact opposite of the part the agency should and intends to play. Transfers delayed are consumers unserved. "Prophylactic" conditions intended to remedy potential competitive harms become millstones on the necks of licensees, leaving them unable to respond quickly to rapidly-changing technological and market conditions. Inconsistent rulemakings in the guise of transaction conditions lead to consumer confusion and less, not more, transparency into FCC decision-making.

As the scope of transaction reviews inexplicably expands, for example, reviews take longer, involve messier public records and agency inquiries, and attract more self-serving intervention from competitors and lobbyists. The FCC's review of Sirius's acquisition of XM Radio took seventeen months to complete. Comcast-NBC Universal was approved after ten months, while AT&T/T-Mobile was rejected after seven months. The Verizon-SpectrumCo deal went through, with significant conditions, in eight months.[21]

Transactions that are approved now come with comically-long lists of conditions, including divestitures of some customers or spectrum aimed vaguely at preserving competitive equilibrium even as the market shifts before the ink is even dry on license transfer orders.[22]

The result has been a free-ranging and increasingly drawn-out process, where the agency sometimes imposes over a hundred conditions, some imposed directly and others taking the form of "voluntary" commitments from the parties. These conditions are often imposed for periods much longer than the agency could reasonably anticipate potential consumer harms--for seven years or even longer.

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[21] *See* Memorandum Opinion and Order and Report and Order, *In the Matter of Applications for Consent to the Transfer of Control of Licenses XM Satellite Radio Holdings Inc., Transferor, To Sirius Satellite Radio Inc., Transferee*, FCC 08-178, MB Docket No. 07-57 ¶¶ 20-22 (Aug. 5, 2008), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-08-178A1.pdf; Memorandum Opinion and Order, *In re Applications of Comcast Corporation, General Electric Company and NBC Universal, Inc. For Consent to Assign Licenses and Transfer Control of Licenses*, FCC 11-4, MB Docket No. 10-56 ¶ 20 (Jan. 20, 2011), *available at* http://transition.fcc.gov/FCC-11-4.pdf; Order, *In re Applications of AT&T Inc. and Deutsche Telkom AG For Consent to Assign or Transfer Control of Licenses and Authorizations*, DA 11-711, WT Docket No. 11-65 ¶¶ 1-2 (Nov. 29, 2011), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-11-711A1.pdf; Memorandum Opinion and Order, *In re Applications of Cellco Partnership d/b/a Verizon Wireless and SpectrumCo LLC and Cox TMI, LLC For Consent to Assign AWS-1 Licenses, Applications of Verizon Wireless and Leap for Consent to Exchange Lower 700 MHz, AWS-1, and PCS Licenses, Applications of T-Mobile License LLC and Cellco Partnership d/b/a Verizon Wireless for Consent to Assign Licenses*, FCC 12-95, WT Docket Nos. 12-4, 12-175 ¶¶ 20, 26 (Aug. 23, 2012), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-12-95A1.pdf.

[22] The merger of T-Mobile and MetroPCS, for example, and the imminent acquisition of Sprint by Softbank undermine many of the assumptions built into the FCC's analysis of recent license transfers, reports, and rulemakings.

Worse, many of the conditions, as well as voluntary commitments imposed on the parties, are wildly unrelated to the transaction or even to a permissible policy objective. For Comcast-NBC Universal, the conditions ran to nearly thirty pages, including a requirement that Comcast adhere to a sui generis version of net neutrality regulations that conflicts with the agency's subsequent rulemaking; rate regulation on Comcast's broadband service; and specific requirements on which channels Comcast offers in its cable packages. Some even defined specific commercials the company would need to run, and on which channels.[23]

In effect, the agency now uses transaction reviews to impose the kinds of regulations that would otherwise require a formal rulemaking, and then compounds that error by applying specific versions of such rules just to the parties involved in a particular license transfer. In many cases, these conditions unfairly manipulate the competitive landscape, applying unrelated restrictions on some parties simply because they happen to be in need of FCC permission to complete a license transfer. Often, the conditions impose rules the agency would be prohibited from enacting through the formal process, either because they exceed the agency's statutory authority or because they run afoul of clearly-established Constitutional constraints.

Besides veering wildly outside the substantive limits on the agency's jurisdiction delegated by Congress, this regulation-by-license-condition process also dispenses with formal procedural requirements, notably notice-and-comment. And because they take the form of orders negotiated by the affected parties, these pseudo-rulemakings, while enforceable by the Commission, are effectively unreviewable by courts.

The net result is a regulatory crazy quilt, where different rules apply to different companies at different times, often in different local markets. The complexity needlessly impedes subsequent transactions, effectively compounding the harm of unstructured reviews in future

[23] "C-NBCU shall provide public service announcements ("PSAs") with a value of $15 million each year on digital literacy, parental controls, FDA nutritional guidelines and childhood obesity. The PSAs on digital literacy, parental controls and FDA nutritional guidelines shall run on networks or programming that have a higher concentration than the median cable network (viewers-per-viewing-household) of adults 25-54 with children under 18 in the household. For the PSAs on childhood obesity, C-NBCU shall air one PSA during each hour of NBC's 'core' educational and informational programming, as defined by 47 C.F.R. § 73.671, on the broadcast stations' primary channels, and an average of two PSAs per day shall run on PBS KIDS Sprout. This Condition shall remain in place for five years." Memorandum Opinion and Order and Report and Order, *In the Matter of Applications of Comcast Corporation, General Electric Company and NBC Universal, Inc. For Consent to Assign Licenses and Transfer Control of Licensees*, FCC 11-4, MB Docket No. 10-56, p. 139 § XIII(6) (Jan. 20, 2011) *available at http://transition.fcc.gov/FCC-11-4.pdf*.

reviews. Consumers, at the same time, can't be expected to understand why different rules apply to different products and services. The lack of effective process is chilling the investment climate for companies throughout the broadband ecosystem, in direct contradiction to Congress's clear intent.

HHIs and the Spectrum Screen: Masking a Lack of Process

Regulation-by-license-condition imposes far more harms on consumers than the often theoretical issues such conditions purport to remedy. The FCC can do much better. And it must. Just as the closing of the real frontier in 1890 required reform of land use and transfer policies, so too does the spectrum crunch require new approaches to transaction review and approval.

As a starting point, the FCC should be required to formalize its review process. This includes applying consistent, transaction-neutral cost-benefit analysis to both the review of a proposed transaction's impact on consumers and of any remedies being considered to offset cognizable harms. The FCC should take into consideration its own data on market dynamics, and weigh heavily the very likely potential that technology-driven forms of competition will more effectively and efficiently resolve the kinds of problems the long lists of unrelated conditions seem intended to forestall.

Under the FCC's current unstructured "public interest" review, the agency has backed itself into a crabbed and dismal view of the mobile marketplace, more 19th century than 21st century. It reviews each transaction as if mobile technologies were stagnant, demand were flat, and the only competitive pressure on licensees comes from other "national carriers." The FCC gives no consideration to the vital role played by nearly a dozen distinct forms of technology-driven market discipline (described below) that the agency dutifully catalogs and tracks in its reports.

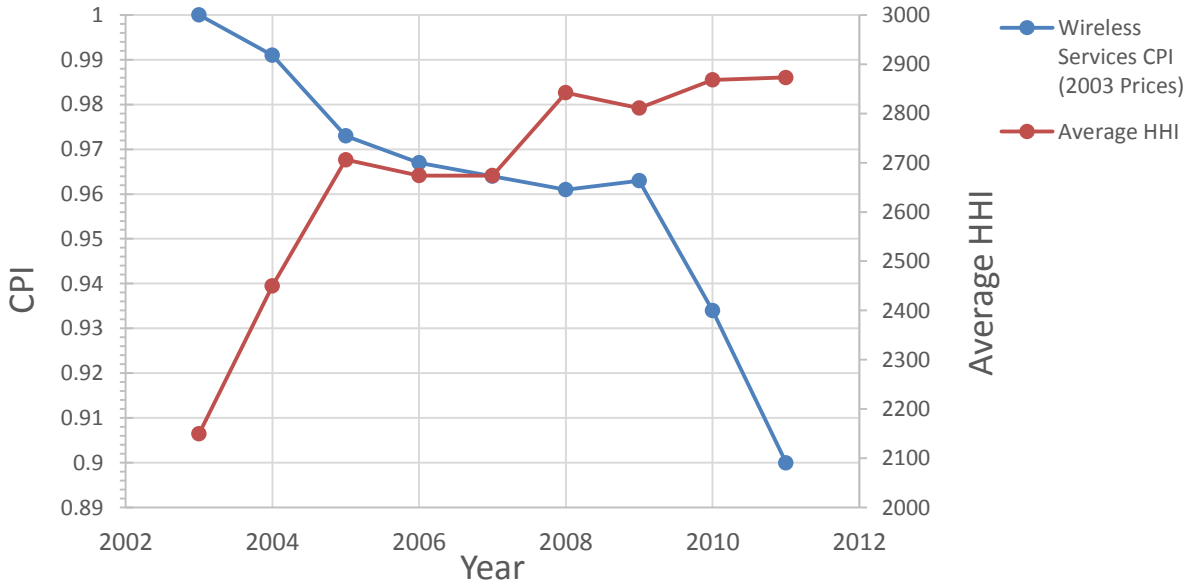
Today, the absence of basic technological or economic rigor in transaction reviews is masked by page after page of detailed data analysis that is then ignored. The FCC then obscures this failure with the misapplication of obsolete and inapplicable pseudo-measures of market concentration, notably the Herfindahl-Hirschman Index (HHI) and the so-called "spectrum screen."

The HHI, a 1940's era calculation that estimates the level of concentration in a given industry, mechanistically sums the squares of market share for each direct competitor in whatever the agency decides is a relevant local market. The FCC then assumes without evidence that arbitrary numerical ranges predict "concentrated" or "highly concentrated" conditions that would result from a merger.

The agency next takes a dangerous leap of faith, assuming that such concentration is likely to lead to anti-competitive behavior the market would not correct on its own, and that such behavior would result in higher prices and other consumer harms.

Yet measured simply by HHIs, the overall mobile industry has been "highly concentrated" since 2005, at levels the FCC has recently said, without any evidence, trigger a "presumption" of "harm to competition."

Figure 1: Industry Concentration is Rising While Cellular Prices are Falling



Source: HHI from 16th Wireless Report Table 14; Wireless CPI from 16th Wireless Report Table 37.
Notes: Population-weighted average HHI of 172 Economic Areas as computed by the Commission. Cellular CPI is denominated in 2003 prices.

As every consumer knows, the untortured data tell a very different story. Despite those levels of concentration, prices for voice, text, and data have continued to plummet. (See Figure 1)[24]

The HHI calculation, in any event, is of no value. As the FCC explains in all of its reports, competition in the mobile ecosystem is much more complex and sophisticated than simplistic market concentration might infer, affected in critical ways by a wide range of factors beyond

[24] *See also* Gerald R. Faulhaber, Rober W. Hahn & Hal J. Singer, *Assessing Competition in U.S. Wireless Markets: Review of the FCC's Competition Reports* (July 11, 2011), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1880964.

the customer base or spectrum holdings of direct competitors. According to the FCC's most recent Mobile Competition reports,[25] for example, these include:

1. **Regional and local competitors** – Despite the FCC's focus on national market share, most consumers choose their carrier based on local alternatives; they don't buy based on the strength of nationwide coverage. At the local level, 90% of U.S. consumers can choose from five or more carriers for voice; 80% have three or more choices for mobile broadband.

2. **Device manufacturers** – The availability of particular tablets and smartphones on a network plays a significant role in which carrier a consumer chooses. From 2008-2009, for example, 38 percent of those who switched carriers did so because it was the only way to obtain the particular handset that they wanted. If anyone has market power, it is the device manufacturers—and that power rises and falls with each new model and the changing market share of different operating systems and app stores.

3. **Operating system developers** – Consumer decision-making is also highly influenced by the availability of a particular operating system (iOS, Android). Android captured 20% of the mobile O/S market in the first six months, giving Google considerable leverage in the market overall.

4. **Apps** – Consumers also make choices based on the availability of preferred apps, including music, video, geolocation, and social networking services. The most popular activity by far for today's smartphone users is games, some of which are only available on some devices or operating systems.

5. **Enhanced spectrum** – Technology has continued to make more bands of spectrum usable for more types of communications. Clearwire now offers mobile broadband using spectrum in the >1 GHz range; Dish Networks has proposed the use of satellite spectrum to offer 4G service. And the LTE protocol is dramatically more efficient in its use of spectrum than earlier generations.

6. **Available spectrum and cell tower infrastructure** – Carriers continue to invest billions every year in enhanced infrastructure. But the quality of service network operators can

[25] *See* 16th Annual Mobile Competition Report*, supra* note 7. *See also* Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Commercial Mobile Services, Fifteenth Report (June 27, 2012), http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-11-103A1.pdf.

provide is still highly constrained by the lack of available spectrum. At the local level, delays and even corruption in approving applications to add towers or antennas makes it difficult for network operators to make the best use of the limited spectrum they have. At the end of 2009, over 3,000 applications to add or modify cell towers and antennae had been pending for over a year; many for over three years.

7. **Off-the-charts demand for capacity** – Carriers are also pressured by incredible increases in demand for mobile broadband. Since the introduction of the iPhone in 2007, AT&T reported an increase of over 8,000% in data traffic.

8. **No-contract carriers** – As capacity constraints push contract carriers to curtail unlimited data plans, competition from no-contract or "pre-paid" providers has intensified. The distinction between pre- and post-paid networks is increasingly meaningless, yet the FCC gives little to no weight to the discipline such providers exert in reviewing transactions...

9. **Inter-modal competition with wired networks** – By 2010, 25% of all U.S. households relied exclusively on mobile connections for home voice service ("cutting the cord."). As high-speed, high-capacity LTE networks (and whatever comes after LTE) are deployed, mobile carriers will increasingly compete with wired carriers for the same customers, including traditional phone and cable companies. The pool of competitors is expanding, not contracting.

Thanks to these varied forms of market discipline, even a mobile ecosystem that is "highly concentrated," at least as measured by HHIs, doesn't seem to have harmed consumers. To the contrary. As every measure of market performance collected by the FCC makes clear, the broadband ecosystem is providing consumers with a phenomenal range of new products and services, at the most competitive prices of any industry.

That's because there are plenty of other sources of competition in the market beyond direct competitors, sources well documented by the FCC itself. Put more simply, concentration measured by HHI concentration has become a worthless tool in evaluating mobile competition.

Backing up the HHI analysis is the voodoo of the spectrum screen, a remarkably elastic and utterly unscientific tool that purports to test the competitive impact in local markets of proposed license transfers.

The spectrum screen was introduced to simplify the review of license transfers,[26] but in recent reviews it has morphed into a presumption of harm in markets where the screen is exceeded.

In either case, the spectrum screen is a poor proxy for several reasons. It includes only some frequencies licensed for mobile services and leaves out others more or less randomly, often modifying that list in different markets — as if radio technology worked differently in California than it does in Virginia.

Worse, the screen treats all the included frequencies as if each band, whether above or below 1 GHz, whether complementary or not to the parties existing holdings or those of its competitors, were of identical value to each network operator. The FCC's own data collection amply reveals the technical and economic fallacy of such a gross simplification.

The screen is also modified from transaction to transaction on an *ad hoc* basis, based on no established or even articulated criteria, leaving the strong impression that the adjustments are made simply to get the numbers to come out the way a majority of the Commissioners wants them to come out, for reasons that can only be guessed. Even the appearance of post hoc rationalization undermines the integrity of the FCC's transaction reviews.

The spectrum screen's failings as an analytic tool are legion. Since its invention, it has never been the subject of any formalization subject to notice-and-comment; the screen simply lumbers, like Frankenstein's monster, from one transaction review to the next. To its credit, the FCC recently issued a Notice of Proposed Rulemaking aimed at making some sense of it, or perhaps to put it to a much-needed demise.[27] But the Commission's true intentions are unclear. As Commissioner Pai pointed out, the NPRM did not, in fact, propose any rules.[28]

There is, in fact, no sense to be made of the screen, beyond its stated purpose to quickly eliminate those local markets that clearly require no competitive review. All that can be said in support of the screen as a measure of harm, on the other hand, is that it is marginally less arbitrary and open to manipulation than the previous *per se* spectrum cap, which, incredibly, the Commission is now considering reinstating.

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[26] Applications of AT&T Wireless Services, Inc. and Cingular Wireless Corporation For Consent to Transfer Control of Licenses and Authorizations, WT Docket No. 04-70, Memorandum Opinion and Order, 19 FCC Rcd 21522, 21552 ¶¶ 58, 106-112 (2004), http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-04-255A1.pdf.

[27] *In the Matter of Policies Regarding Mobile Spectrum Holdings*, WT Docket No. 12-269, Notice of Proposed Rulemaking (Sept. 28, 2012), http://www.fcc.gov/document/mobile-spectrum-holdings-nprm.

[28] Concurring Statement of Commissioner Ajit Pai, *In re Policies Regarding Mobile Spectrum Holdings*, WT Docket No. 12-269, at 49 (Sept. 28, 2012) ("[T]oday's Notice of Proposed Rulemaking contains no notice of proposed rules."), http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-12-119A1.pdf#page=49.

A Modest Proposal for Reform

Against these dangerous pseudo-analytic tools, the proposed FCC Process Reform Act proposes several common-sense reforms. None of them should be the least bit controversial.

They would mandate such obvious improvements as requiring the FCC to identify actual consumer harms before regulating to correct them; to conduct realistic economic analysis; to subject proposed remedies to neutral cost-benefit analysis; to consider more effective alternatives; and to evaluate the performance of rules after they have been put into effect.

That minimal level of analytic rigor has long been mandatory for Executive agencies. As if such confirmation were necessary, in 2011, President Obama made clear that he expected (though could not require) the same basic tools be applied as a matter of course by independent regulatory agencies including the FCC.[29]

The proposed FCC Process Reform Act goes farther in the direction of common sense. The bill would codify informal shot clocks that today fail to impose needed deadlines on agency action. It would require, sensibly, that a Notice of Proposed Rulemaking be preceded by a Notice of Inquiry. This would ensure the agency has first established the need for rules before proposing them.

For rules and amendments that may have a significant economic impact, the proposed bill would require the agency to identify specific market failures, actual consumer harm, the burden of existing regulation and a "reasoned determination that the benefits of the adopted rule or amendment justify its costs," taking into account alternative forms of regulation. In deference to the realities of markets involving digital technology, it also sensibly requires that the agency consider the possibility that "market forces or changes in technology are unlikely to resolve within a reasonable amount of time the specific market failure" or actual consumer harm.

For the increasingly urgent problem of unstructured transaction review, the proposed FCC Process Reform Act would require the agency to tailor attached approval conditions to those that remedy actual harms to consumers that result from the proposed license transfer, and limit those remedies to those within the statutory powers of the FCC when it acts outside the review process. It erases the fiction that "voluntary" commitments are anything of the kind,

[29] Exec. Order No. 13,579, 76 Fed. Reg. 70913 (July 11, 2011), *available at* http://www.whitehouse.gov/the-press-office/2011/07/11/executive-order-regulation-and-independent-regulatory-agencies.

requiring likewise that such commitments be limited to remedies already within the agency's statutory and Constitutional boundaries.

Together, these reforms would greatly improve the transparency and consistency of the FCC's processes and impose realistic deadlines on agency decision-making, reducing the potential for a meandering review or rulemaking to take dangerous turns.

In effect, these modest process improvements replace the free-ranging and often-opaque decision making processes of today's FCC with the reasonable and uncontroversial tool of cost-benefit analysis. Ensuring that the costs of regulation do not exceed their benefits, and requiring agencies to consider alternative rules that could address the same harms more efficiently, has been a goal of "good government" reform for decades. It is an entirely bi-partisan goal.

Indeed, it is a goal shared by the current Administration. In a 2011 Executive Order, President Obama imposed precisely the same rigor on executive agencies.[30] Echoing the proposed FCC Process Reform Act, the Executive Order requires executive agencies to:

> (1) propose or adopt a regulation only upon a reasoned determination that its benefits justify its costs (recognizing that some benefits and costs are difficult to quantify); (2) tailor its regulations to impose the least burden on society, consistent with obtaining regulatory objectives, taking into account, among other things, and to the extent practicable, the costs of cumulative regulations; (3) select, in choosing among alternative regulatory approaches, those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity); (4) to the extent feasible, specify performance objectives, rather than specifying the behavior or manner of compliance that regulated entities must adopt; and (5) identify and assess available alternatives to direct regulation, including providing economic incentives to encourage the desired behavior, such as user fees or marketable permits, or providing information upon which choices can be made by the public.[31]

[30] Exec. Order No. 13,563, 76 Fed. Reg. 3821 (Jan. 18, 2011), *available at* http://www.whitehouse.gov/the-press-office/2011/01/18/improving-regulation-and-regulatory-review-executive-order.
[31] *Id.*

The Executive Order, likewise, requires departments and executive agencies to operate with the same level of transparency called for in the proposed FCC Process Reform Act. Specifically, the order called for agencies:

> to provide the public with an opportunity to participate in the regulatory process. To the extent feasible and permitted by law, each agency shall afford the public a meaningful opportunity to comment through the Internet on any proposed regulation, with a comment period that should generally be at least 60 days. To the extent feasible and permitted by law, each agency shall also provide, for both proposed and final rules, timely online access to the rulemaking docket on regulations.gov, including relevant scientific and technical findings, in an open format that can be easily searched and downloaded. For proposed rules, such access shall include, to the extent feasible and permitted by law, an opportunity for public comment on all pertinent parts of the rulemaking docket, including relevant scientific and technical findings.[32]

There is no relevant reason these common-sense requirements should not apply to independent regulatory agencies such as the FCC, which the President made clear in a subsequent Executive Order extending earlier Orders to independent regulatory agencies, "to the extent permitted by law"[33]

Indeed, given the increasingly significant economic impact of FCC decisions affecting the broadband ecosystem, these reforms are even more urgently needed to meet what the President defined as the goal of cost-benefit analysis: not to neuter regulatory agencies or deny them flexibility but to "protect public health, welfare, safety, and our environment while promoting economic growth, innovation, competitiveness, and job creation."[34]

The FCC's expert staff stands ready, willing and able to help the Commission make reasoned, timely decisions based on simple, economically sound principles that are grounded in real data. The agency already has the capacity to operate transparently, involving the public and explaining itself coherently to consumers. But it must be weaned from the inconsistent and

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[32] *Id.*

[33] *See* Exec. Order No. 13,579, *supra* note 29.

[34] *See* Exec. Order No. 13,563, *supra* note 30. Congress has already mandated such analysis for regulations that affect small businesses, a requirement largely irrelevant to FCC actions. *See* Curtis W. Copeland, *Economic Analysis and Independent Regulatory Agencies* (April 30, 2013), *available at* http://www.acus.gov/sites/default/files/documents/Copeland%20Final%20BCA%20Report%204-30-13.pdf.

dangerous practice of confounding markets with unwise and irrelevant rulemakings, amendments, orders and auction and transaction conditions.

The FCC, as noted, already collects precisely the kind of data it needs to perform meaningful analysis, yet time after time the agency steps back from the brink just before reaching a reasoned decision. Replacing the unstructured processes that have developed in recent decades with the kind of rigorous tools called for in both the President's Executive Order and the proposed FCC Process Reform Act would take the FCC far along the road toward the 21st Century, where we urgently need it to be.

Big Bang Disruption and Regulatory Humility

At a minimum, the FCC should be required to justify its interventions in the market the same level of analytical rigor that Presidents of both parties have long demanded of Executive Agencies. But if anything, the FCC needs to exercise more caution than other agencies. That is because its authority is entirely within zones of economic activity undergoing persistent, dramatic and accelerating technological disruption.

I have recently completed a multi-year research project, in collaboration with Paul F. Nunes, Global Managing Director of the Accenture Institute for High Performance. Our study focused on the changing nature of economic transformation in response to technologies, such as those at the core of the computing and communications sectors, that continue to become both better and cheaper at the same time over long periods of time. We refer to such "disruptors," which include commodities such as computer processors, storage, and data transit, as "exponential technologies."

My co-author and I reported our initial results in a recent cover story for the ***Harvard Business Review,*** which I have included as an Appendix.[35]

Our principal finding is that over the last decade, the pace and the intensity of disruption has increased in every industry, particularly in those whose core products and services are built on exponential technologies. These industries are now experiencing what we refer to as "Big Bang Disruption," where new products and services can emerge overnight from the primordial ooze of direct market experimentation and the combination of off-the-shelf components readily connected to each other at profoundly reduced research and development costs.

[35] Larry Downes and Paul F. Nunes, *Big Bang Disruption*, HARVARD BUSINESS REVIEW 44 (March 2013).

These disruptors are unique in economic history in that they emerge both better and cheaper than established products and technologies. In a matter of days or weeks, as a result, consumers can abandon the old for the new, leaving incumbent providers little time or opportunity to respond. The result is often the decimation of long-standing industry supply chains, a sudden and violent version of what economist Joseph Schumpeter famously characterized as the "perennial gale of creative destruction" of modern capitalist economies.[36]

The smartphone alone has already spawned many such disruptors. Consider just a partial list of the products and services already or soon-to-be retired by mobile devices, including: address books, video cameras, pagers, wristwatches, maps, books, travel games, flashlights, home telephones, Dictaphones, cash registers, Walkmen, day timers, alarm clocks, answering machines, yellow pages, wallets, keys, phrase books, transistor radios, personal digital assistants, dashboard navigation systems, remote controls, newspapers and magazines, directory assistance, travel and insurance agents, restaurant guides and pocket calculators—just to name a few.

This accelerating pace of industry change, I believe, has profound implications for the regulatory process, particularly for agencies operating at the center of the perennial gale. For one thing, the deliberative pace of regulation increasingly means that by the time rules are made, transactions are reviewed, or practices scrutinized for violations, consumers, markets, and providers have long since moved on. Dynamic technology-driven markets, in other words, increasingly remedy their own harms, more quickly and far more efficiently than regulators can.

At the same time, it is simply impossible even for those of us in Silicon Valley and other technology hubs to predict how exponential technologies will evolve and the kinds of markets they will both create and destroy. The FCC must be cured of an institutional hubris that suggests otherwise. The agency's rules, amendments, orders, auction designs and transaction conditions reflect a profoundly dangerous belief that, despite being disconnected from the messy realities of Big Bang industries, the agency can nonetheless predict the future and head off consumer harms that haven't yet occurred.

But the Commission cannot predict the future, even in the short term. No one can. Most of us in the technology sectors have stopped trying. So in addition to replacing the agency's non-processes with the rigor and consistency of basic cost-benefit analysis, I urge both the FCC and Congress to introduce, as part of that analysis, a healthy dose of technological humility—a

[36] Joseph A. Schumpeter, CAPITALISM, SOCIALISM, AND DEMOCRACY (Harper 3d ed. 2008) (1942).

recognition that the costs of regulators getting it wrong often outweigh the costs of not intervening.[37]

This takes the form of the additional requirement, explicit in the modest process reforms already proposed for rulemakings, that in transaction reviews, auction designs, orders and amendments, the FCC must seriously consider the potential for emerging technologies to resolve existing or theoretical consumer harms without the need for intervention.

The FCC should, as proposed in the draft bill, be required to adopt the sensible requirement that it consider the balance of both the costs and benefits of proposed rules, amendments, orders, auction designs and transaction conditions, as well as considering alternative remedies that would solve demonstrated consumer harms more efficiently.

But before taking action, the agency should ***also*** be required to make a reasoned determination that the specific market failure identified will not otherwise be corrected without regulatory intervention. The FCC should be require to demonstrate, in other words, that market forces driven by technological disruptors would not otherwise remedy specific consumer harms within a reasonable period of time absent the proposed rule, amendment, order or condition.

Notably, this was precisely the approach taken by the Department of Justice, for example, in its separate review of the Sirius/XM merger. In its four-page statement closing its in 2008, the Antitrust Division easily concluded that transaction was "not likely to harm consumers." Even though the two parties represented the entire satellite radio market, the Division sensibly found that new forms of competition driven by emerging digital technologies would be more than adequate to discipline the merged entity:

> Any inference of a competitive concern was further limited by the fact that a number of technology platforms are under development that are likely to offer new or improved alternatives to satellite radio. Most notable is the expected introduction within several years of next-generation wireless networks capable of streaming Internet radio to mobile devices. While it is difficult to predict which of these alternatives will be successful and the precise timing of their availability as an attractive alternative, a significant number of consumers in the

[37] Geoffrey A. Manne & Joshua D. Wright, *Innovation and the Limits of Antitrust*, George Mason Law & Economics Research Paper No. 09-54 (Oct. 27, 2012) ("It is because of these dynamic and often largely unanticipated consequences of novel technological innovation that both the likelihood and social cost of erroneous interventions against innovation are increased."), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1490849.

> future are likely to consider one or more of these platforms as an attractive alternative to satellite radio. The likely evolution of technology played an important role in the Division's assessment of competitive effects in the longer term because, for example, consumers are likely to have access to new alternatives, including mobile broadband Internet devices, by the time the current long-term contracts between the parties and car manufacturers expire.[38]

It took the FCC seventeen months and a hundred-plus page order to reach the same conclusion.[39] And despite the fact that the parties controlled only 5% of the overall audio market at the time of the merger, the FCC's eventual order was, as Commissioner McDowell noted at the time, "one of the most heavily conditioned in FCC history."[40]

Needless to say, the emergence of even more forms of disruptive digital technologies for audio content than the Antitrust Division expected have already arrived, and sooner. Consumers have more choices for audio content than ever, including many from providers who did not exist at the time of the Sirius/XM merger.

As this example highlights, the market discipline of exponential technologies is an especially relevant criteria for the FCC to consider, particularly in designing imposed or voluntary transaction conditions and in the design of future spectrum auctions.

And since such conditions apply only to the parties in a proposed auction or license transfer, the agency should also be required to provide evidence that both the harm and the proposed remedy are entirely contained within the proposed license transfer.

If the behavior of other industry parties also contribute to the identified consumer harm, the agency should not wait for future transactions involving those parties to address the problem. If, independent of a proposed transaction, there is a genuine consumer harm that is not likely

[38] Statement of the Department of Justice Antitrust Division on its Decision to Close its Investigation of XM Satellite Radio Holdings Inc.'s Merger with Sirius Satellite Radio Inc., Department of Justice (Mar. 24, 2008), http://www.justice.gov/opa/pr/2008/March/08_at_226.html.

[39] Federal Communications Commission Memorandum Opinion and Order and Report and Order, *In re Applications for Consent to the Transfer of Control of Licenses, XM Satellite Radio Holdings Inc., Transferor, To Sirius Satellite Radio Inc., Transferee,* MB Docket No. 07-57 (Aug. 5, 2008), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-08-178A1.pdf.

[40] Statement of Commissioner Robert M. McDowell, *In re Applications for Consent to the Transfer of Control of Licenses, XM Satellite Radio Holdings Inc., Transferor, to Sirius Satellite Radio Inc., Transferee*, MB Docket No. 07-57, p. 109 (Aug. 5, 2008), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-08-178A1.pdf.

to be corrected by technological disruptors, the FCC should simply issue a Notice of Inquiry and, if warranted, a Notice of Proposed Rulemaking.

Rather than use transaction reviews as piecemeal rulemakings, in other words, the agency should be required, when non-parties are also partly or wholly the cause of the demonstrated harm, to propose its remedy as a rulemaking. In addition to reducing the incidence of inconsistent rules applied to different parties in different markets at different times, this would also ensure that such rules, when they are truly needed, are subjected to both the notice-and-comment process and the possibility of judicial review. Neither is possible when rulemakings are embedded in auction designs and transaction conditions.

Conclusion

I began these comments with reference to Ronald Coase, who turned 102 last year. Coase's work is in fact at the core of all of my recommendations. He is the father of the now conventional wisdom that regulations impose costs, and he was first to propose that such costs should be weighed against their benefits and compared to the costs of alternative remedies, including market-based solutions midwifed by new technological innovation.[41]

And it was Coase who first recognized the value and fungibility of spectrum, proposing the very idea of auctioning frequencies, and to look to the market, rather than the FCC, both to resolve technical problems of interference and to ensure that available bands were put to their best and highest use.[42]

But I want to conclude with the wisdom of another sage, who said of the best ways to improve FCC process:

> The FCC is currently structured along the traditional technology lines of wire, wireless, satellite, broadcast, and cable communications. As the lines between these industries merge and blur as a result of technological convergence and the removal of artificial barriers to entry, the FCC needs to reorganize itself in a way that recognizes these changes and prepares for the future. A reorganization of the agency along functional rather than technology lines will put the FCC in a

[41] Ronald Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 43 (1959).
[42] Ronald Coase, *The Federal Communications Commission*, 2 J.L. & ECON. 9 (1959).

better position to carry out its core responsibilities more productively and efficiently.[43]

The author of that recommendation is former FCC Chairman William Kennard, whose prescient 1999 "Strategic Plan" for the agency still stands as a brilliant and largely unfulfilled vision for a 21st century Commission. The Plan foresaw much of the convergence in technologies and industries that have since unfolded. In advance of the information revolution, the Plan proposed a new structure for the FCC that could, if implemented, still greatly improve its efficiency and, in particular, the Commission's ability to manage spectrum, promote competition, and encourage consumer adoption across all demographic boundaries — in short, to fulfill the agency's core mission.

By eliminating obsolete reporting requirements for the agency and consolidating the remaining reports into a single bi-annual schedule, the proposed Consolidated Reporting Act would take us at least one step in the direction Kennard proposed almost fifteen years ago.

In addition to simplifying the reporting process and saving wasted taxpayer dollars by producing multiple overlapping reports, consolidating to a single report will encourage the FCC to recognize explicitly what is obvious to all consumers: the convergence of many if not all of the communications technologies the agency oversees, and the growing interdependence and inter-modal competition within the Internet ecosystem, where content, communications, and computing have mingled in ways that produce profound new value for consumers.

Consolidated reporting would force the FCC's bureaus to tear down the walls that anachronistically divide them today, imposing the kind of methodological rigor that, as I have said, the agency desperately needs across its activities.

Appendices

- Larry Downes and Paul F. Nunes, *Big Bang Disruption*, HARVARD BUSINESS REVIEW 44 (March 2013).

[43] FCC, STRATEGIC PLAN: A NEW FCC FOR THE 21ST CENTURY (1999), http:// transition.fcc.gov/2 1st century/draft-strategicplan.pdf.

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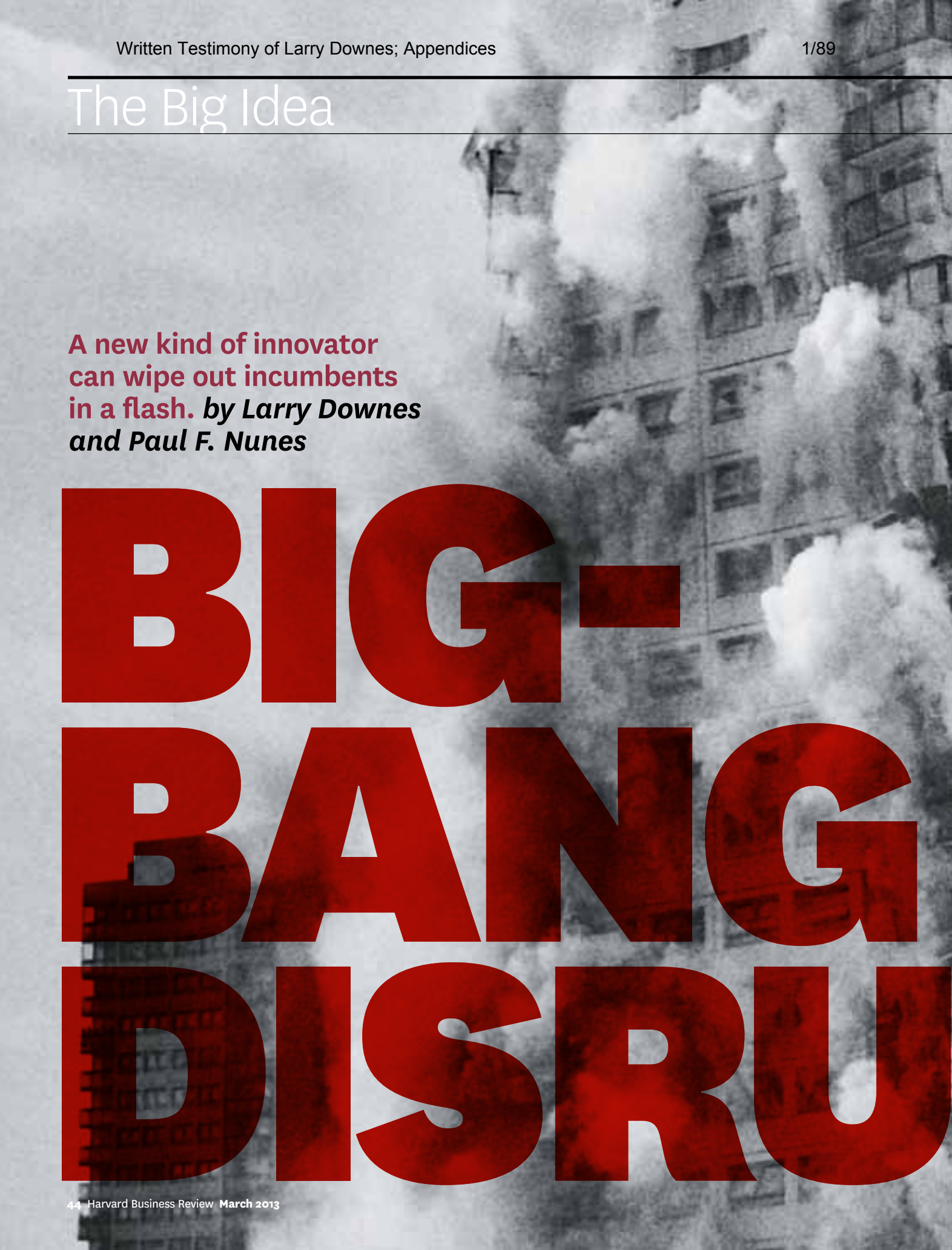


A new kind of innovator can wipe out incumbents in a flash. ***by Larry Downes and Paul F. Nunes***

BIG-BANG DISRU


PTION

By now any well-read executive knows the basic playbook for saving a business from disruptive innovation. Nearly two decades of management research, beginning with Joseph L. Bower and Clayton M. Christensen's 1995 HBR article, "Disruptive Technologies: Catching the Wave," have taught businesses to be on the lookout for upstarts that offer cheap substitutes to their products, capture new, low-end customers, and then gradually move upmarket to pick off higher-end customers, too. When these disrupters appear, we've learned, it's time to act quickly—either acquiring them or incubating a competing business that embraces their new technology.

But the strategic model of disruptive innovation we've all become comfortable with has a blind spot. It assumes that disrupters start with a lower-priced, inferior alternative that chips away at the least profitable segments, giving an incumbent business time to start a skunkworks and develop its own next-generation products.

That advice hasn't been much help to navigation-product makers like TomTom, Garmin, and Magellan. Free navigation apps, now preloaded on every smartphone, are not only cheaper but better than the stand-alone devices those companies sell. And thanks to the robust platform provided by the iOS and Android operating systems, navigation apps are constantly improving, with new versions distributed automatically through the cloud.

The disruption here hasn't come from competitors in the same industry or even from companies with a remotely similar business model. Nor did the new technology enter at the bottom of a mature market and then follow a carefully planned march through larger customer segments. Users made the switch in a matter of weeks. And it wasn't just the least profitable or "underserved" customers who were lured away. Consumers in every segment defected simultaneously—and in droves.

That kind of innovation changes the rules. We're accustomed to seeing mature products wiped out by new technologies and to ever-shorter product life cycles. But now entire product lines—whole markets—are being created or destroyed overnight. Disrupters can come out of nowhere and instantly be everywhere. Once launched, such disruption is hard to fight.

We call these game changers "big-bang disrupters." They don't create dilemmas for innovators; they trigger disasters.

In this new era, strategy needs a rethink. We've spent the past 15 years studying disruptive technologies and are now completing a multi-industry survey of those that defy the accepted wisdom. We've found that big-bang disruptions are unplanned and unintentional. They do not follow conventional strategic paths or normal patterns of market adoption. And while there's not a lot of evidence yet on how incumbents can survive them, we offer some strategic principles that we think can help.

A Difference in Kind

The first key to survival is understanding that big-bang disruptions differ from more-traditional innovations not just in degree but in kind. Besides being cheaper than established offerings, they're also more inventive and better integrated with other products and services. And today many of them exploit consumers' growing access to product information and ability to contribute to and share it.

In the age of Facebook, Twitter, and Tumblr, internet fads (or "memes") can infect the whole world in a matter of days. Products can, too. An ad-supported version of the game Angry Birds was downloaded over a million times in the first 24 hours it was available on Android devices. (That number might have been even higher had the enthusiastic response not crashed the developer's servers.) Seven months later the game had been downloaded more than 200 million times.

Upstart products and services in a slew of industries have likewise grown fast enough to leave incumbents gasping. Consider CampusBookRentals and Khan Academy in education, Pandora and Spotify in radio and recorded music, Skype and FaceTime in voice and video calling, and Square in mobile credit-card processing. These offerings' lightning-fast adoption is a function of near-perfect market information. Wherever customers are, mobile devices let them search a wide range of specialized data sources—including online sites like Yelp, TripAdvisor, Amazon, and other free databases of user-generated reviews—to find the best price and quality and the next new thing.

The shock waves from big-bang disruptions emanate far beyond information-based goods and

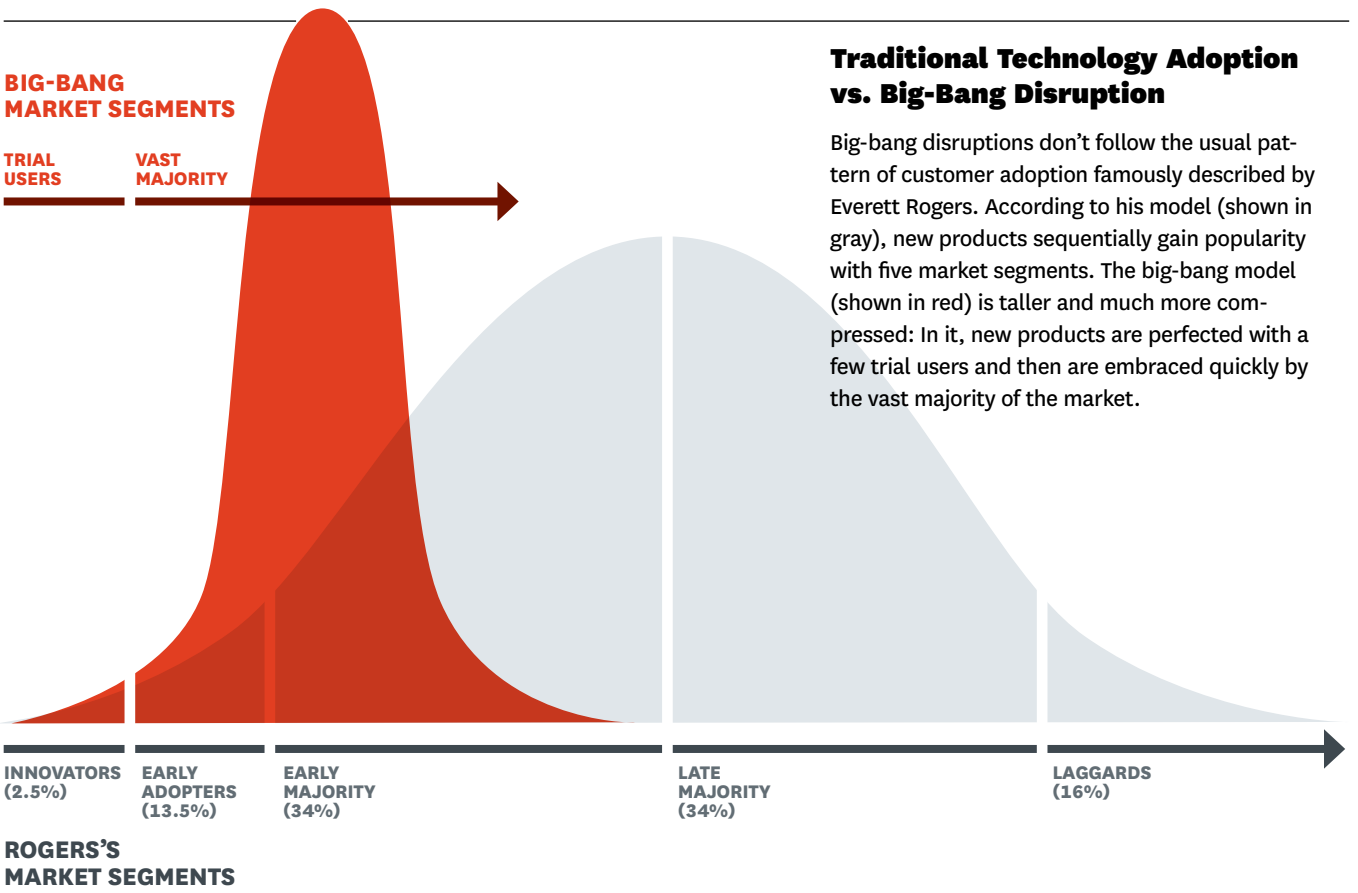
Idea in Brief

Disruptive technological innovations have traditionally started out cheap and simple, gradually improving in quality until they challenged incumbents.

New digital platforms such as the smartphone, however, are enabling innovations that offer customers both a better experience and a much lower price, right out of the gate. (Think of free mobile apps' superiority to dedicated GPS devices.)

These "big-bang" disruptions are often unplanned and unintentional. They do not follow conventional strategic paths or normal patterns of market adoption.

To survive them, incumbents need to develop new tools to detect radical change in the offing, new strategies to slow down disrupters, new ways to leverage existing assets in other markets, and a more diversified approach to investment.



Traditional Technology Adoption vs. Big-Bang Disruption

Big-bang disruptions don't follow the usual pattern of customer adoption famously described by Everett Rogers. According to his model (shown in gray), new products sequentially gain popularity with five market segments. The big-bang model (shown in red) is taller and much more compressed: In it, new products are perfected with a few trial users and then are embraced quickly by the vast majority of the market.

services. Food and cars, for example, can't be replaced by smartphone apps. But restaurants now depend on online reservations, customer-generated reviews, coupons delivered through mobile devices, and location-based services to drive business. In automobiles, information technology powers sophisticated dashboard systems and, in the not-too-distant future, may control self-driving cars.

But perhaps the biggest challenge to incumbents is that big-bang innovations come out of left field, combining existing technologies that don't even seem related to your offerings to achieve a dramatically better value proposition. Big-bang disrupters may not even see you as competition. They don't share your approach to solving customer needs. And they're not sizing up your product line and figuring out ways to offer slightly better price or performance with hopes of gaining a short-term advantage. Usually, they're just tossing something shiny in the direction of your customers, hoping to attract them to a business that's completely different from yours.

When digital image technology first infiltrated consumer photography, for example, its developers weren't aiming to destroy the film industry. But

PHOTOGRAPHY: GETTY IMAGES

they did. When President Clinton declassified high-quality GPS data, in 2000, it wasn't because map publishers were clamoring to create better navigation aids. Someone else—in electronics—saw that possibility.

Or recall how Jeff Bezos decided to enter the book business. E-commerce, he realized, was the natural solution for a fragmented market with an enormous number of SKUs; a small, shippable product; and a stable supply chain characterized by many sellers served by a few dominant middlemen. He settled on books not because he had any expertise in publishing but because books were a coldly rational choice. They fit the tool he wanted to apply.

Competitors like that can blindside you. They do not simply create the need for faster strategy formulation and execution, and more-effective operations. They create a need for entirely new innovation, strategy, and go-to-market approaches.

Three Devastating Features

Once big-bang disrupters enter the market, it's up, up, and away. They deliver surprise after surprise, thanks to three defining characteristics: unencumbered development, unconstrained growth, and undisciplined strategy.

Unencumbered development. Right now, at Silicon Valley companies large and small, engineers and product developers are getting together late at night in what are popularly known as "hackathons." Their goal is to see what kind of new products can be cobbled together in a few days. You know, for fun. The innovators are not even trying to disrupt your business. You're just collateral damage.

Twitter, for example, began its commercial life humbly at the 2007 South by Southwest conference, following its invention at a hackathon the year before. Its developers wanted to test sending standard text messages to multiple users simultaneously, an experiment that required almost no new technology. Today the company boasts more than 200 million active users and half a billion tweets a day. Twitter has destabilized everything from the news and information ecosystem to unpopular national governments.

Twitter's sudden success with minimal investment underscores an important dimension of big-bang innovations: They are often born of rapid-fire, low-cost experiments on fast-maturing, ubiquitous technology platforms. They don't need budget approval and aren't vetted before development begins. When cost is low and expectations are modest, entrepreneurs can just launch their ideas and see what happens.

Like Twitter, these innovations are often built out of readily available components that cost little or are free. So-called over-the-top internet services, including Netflix, Hulu, and Skype, use existing home internet connections and nonproprietary audio and video compression protocols to challenge the bundled channel selections and voice services of cable and phone companies. These new tools allow consumers to pick and choose the content and features they want, thwarting the strategic plans of the very companies that provide the infrastructure. In the future the most successful innovators may be those who simply happen upon the right combination of other people's technologies.

As disruptive technologies become cheaper to manufacture and deploy, innovators can experiment with new applications at little risk to investors, abandoning prototypes that do not quickly prove popular. Generally these experiments take place directly in the market, using open platforms built on the internet, cloud computing, and fast-cycling mobile devices. New businesses can be launched without their own foundation. If the application catches on with users, computer processing, business software, data storage, and communications capacity can all be leased or purchased in real time. In the bizarro world of big-bang disrupters, it is perfectly rational to churn out dozens of new products and see which ones take hold. Like venture capital investments, most will fail outright. But just one success can pay off big.

Unconstrained growth. Big-bang disruptions collapse the product life cycle we know: Everett Rogers's classic bell curve of five distinct customer segments—innovators, early adopters, early majority, late majority, and laggards. Now there are only two segments: trial users, who often participate in

The innovators who create products at "hackathons" aren't even trying to disrupt your business. You're just the collateral damage.

product development, and everyone else. The adoption curve has become something closer to a straight line that heads up and then falls rapidly when saturation is reached or a new disruption appears. (See "Traditional Technology Adoption vs. Big-Bang Disruption.")

This change obviates the need for the carefully timed shifts in marketing strategy that Geoffrey Moore described in *Crossing the Chasm* (1991). Moore focused on making the big leap from targeting early adopters to marketing to the early majority. (The gap between the two groups is what he dubbed the "chasm.") But big-bang disruptions can be marketed to every segment simultaneously, right from the start. When the iPad arrived, it wasn't just for people who couldn't afford a laptop. Every millionaire wanted one, too.

The new product cycle can be simplified into three basic stages: development, deployment, and replacement. It is much faster, approximating the speed at which computing power doubles, which, as Intel cofounder Gordon Moore famously predicted in 1965, happens every two years. We're now doubling an enormous amount of power, which greatly accelerates the rate of disruption, too. Gordon Moore's law, not Geoffrey's, now sets the pace.

The adoption of disruptive innovations is no longer defined by crossing a marketing chasm. Instead, the innovators collectively get it wrong, wrong, wrong—and then unbelievably right. That makes it even harder for businesses wed to today's products and services. All those failed experiments seem like evidence that the emerging technologies just aren't ready. In reality, in today's hyperinformed world, each epic failure feeds consumer expectations for the potential of something dramatically better.

Consider such captivating but ultimately unsuccessful launches as Magnavox Odyssey (home gaming), Apple's Newton (tablet computing), Napster (digital music), Betamax (home video recording), and the first-generation electric cars. When declining technology costs finally make the right solution feasible, the appetite of consumers has been thoroughly whetted. It's then too late for incumbents to jump in. Waiting for the market to take off and hoping to be a fast follower is now a recipe for irrelevance.

Seemingly random experiments and crash-and-burn flops may actually be your best warning of an urgent need for a change in strategy, or "strategic pivot." It's like a battlefield, where near misses signal not that your enemies are confused or incapable of hitting you but that they are zeroing in on your position—walking their fire onto the target, shell by shell—before unloading a full barrage on your exact location.

The combination of false signals and a natural resistance to change creates a lethal trap. When the wildly popular file-sharing service Napster was stopped dead in its tracks by litigation, in 2001, for example, recording industry executives breathed a deep sigh of relief, comfortable that they could now ease into digital distribution on their own

Down the Drain

The decline and fall of pinball provides an early example of big-bang disruption. In a few short years, a thriving industry was razed—in much the same way that at least 30 other industries are being wiped out today.

After decades of prohibition in many U.S. cities, pinball machines came roaring back in the 1970s. Electronic components replaced mechanical ones, expanding the opportunities for innovative design. A new distribution channel—the stand-alone arcade—emerged to satisfy a growing baby-boomer market for entertainment. The quarters were overflowing. Yet the industry was nearly dead by the mid-1990s. How did that happen?

Early arcade video games, such as the primitive Pong, contained the seeds of pinball's destruction. But because they were simple and offered no real substitute for pinball, both pinball manufacturers and pinball wizards dismissed them. With the release of Space Invaders in 1978, momentum shifted. In that game a succession of crudely animated aliens marched relentlessly down the screen to the sound of an electronic drumbeat, gaining speed as each row shifted. The game was strangely addictive and a perfect metaphor for what was to come. The invasion was on.

At first, by drawing even more kids to arcades, Space Invaders, Pac-Man, and their ilk actually helped the pinball business. Pinball machine sales hit an all-time high in 1993. It was in the next year, though, that big-bang disruption arrived. In 1994, Sony released PlayStation, a home game console that offered superior play at an unbeatable price. Arcade pinball machines could cost up to $7,500. The PlayStation, which supported hundreds of games, sold for $299. Sony quickly sold millions of units. Pinball sales imploded as arcades were shuttered in rapid succession. Within a few years all but one manufacturer had shut down forever.

"The real backbreaker came when home video finally hit the marketplace," says Tom Nieman, former head of licensing for Bally's.

timetable. Yet earlier that same year, Apple had launched iTunes, eventually leveraging it to secure market dominance over music's ongoing reinvention. The legal defeat of Napster said nothing about the irresistible qualities for consumers of anywhere-anytime music.

Or consider electronic book readers. When Amazon introduced the Kindle, in 2007, the company had learned from a decade of doomed efforts by players such as Sony and SoftBook. The first-generation Kindle finally provided the storage, battery life, and display technology that consumers needed. Just as important, Amazon offered a dedicated wireless network that seamlessly checked books in and out of a virtual personal library.

Amazon's real innovation was waiting just until the right combination of technologies was ready for mainstream use and then leveraging its powerful brand and customer network to launch Kindle with easy access to a huge catalog of books on day one. Since 2007, e-books have risen from trivial sales to account for nearly 20% of all book revenue. Along the way, they have thoroughly scrambled every link in the publishing supply chain.

Undisciplined strategy. Big-bang disrupters contradict everything you know about competitive strategy. According to Michael Treacy and Fred Wiersema's classic *The Discipline of Market Leaders* (1995), businesses should align strategic goals along one—and only one—of three value disciplines: low cost ("operational excellence"), constant innovation ("product leadership"), or customized offerings ("customer intimacy"). Failing to choose, said the authors, meant "ending up in a muddle." Michael Porter offered similar starting points in what he called his three generic strategies for achieving competitive advantage and warned against pursuing more than one.

Big-bang disrupters, however, are thoroughly undisciplined. They start life with better performance at a lower price and greater customization. They compete with mainstream products on all three value disciplines right from the start.

How can better also be less costly? The faster, cheaper, and smaller computing power predicted by Moore's law is still the key driver, but it's now deployable on a global scale and delivered through the cloud to inexpensive mobile devices. Consider the three major costs in a product or service: the parts and manufacturing, the embedded technologies and intellectual property, and a prorated share of development costs. By continually and dramatically lowering all three at once, today's technology makes it possible to sell new products and services more cheaply than the inferior alternatives they displace.

Customers are so accustomed to this effect that they are coming to expect every product or service to get cheaper and better with each passing day. Incumbents must now innovate continuously just to keep prices and revenue from dropping.

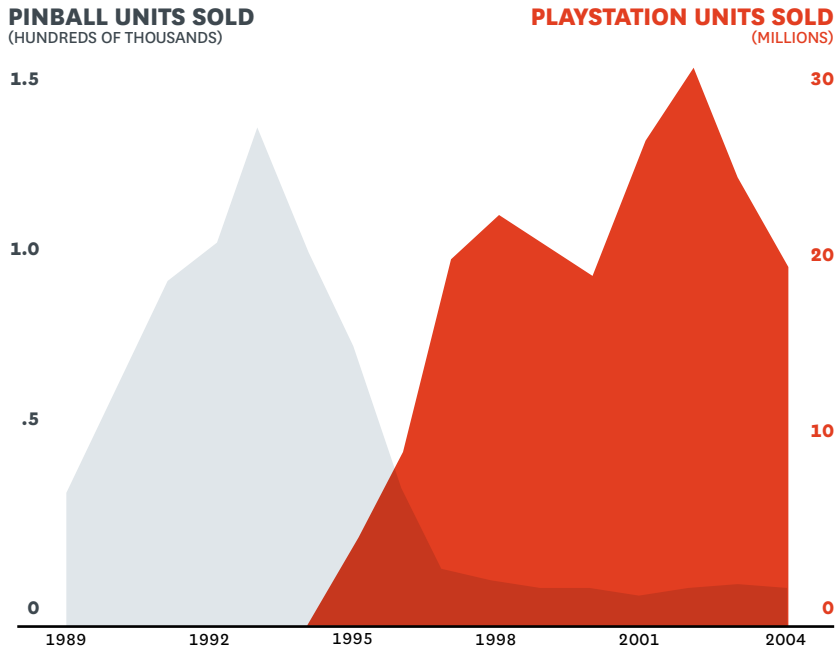
"Now kids weren't collecting in one spot and having that social interaction. It really spelled the end of the pinball era."

All the elements of big-bang disruption are here in prototype. Disruption happened rapidly, with no warning signs that home consoles were even competing with arcade machines. Sony was suddenly beating pinball on every strategic dimension—price, innovation, and customer intimacy. And its impact wasn't felt just at the low end of the market but throughout the supply chain.

Of the major pinball manufacturers, only Stern is now left, producing games for a new nostalgic home market. Williams pivoted to video slot machines, while Bally's completely escaped, transforming itself and entering entirely different businesses, including casinos and fitness. For the rest, it was game over.

How PlayStation Killed Pinball

Pinball sales reached an all-time high in 1993 but began to fall drastically after PlayStation's release, in 1994.



Under these conditions you can't win simply by becoming more disciplined with your current strategy. Pulling back to focus on your best customers or on delivering higher quality or a lower price will buy you only a little time, if any. More rigorous strategic focus just blinds you to the next wave of disruption coming at you from the side.

Consider again portable navigation tools. Mapmaking was a mature industry dominated by a few companies and the not-for-profit automobile clubs. Competition came first from free internet sites for route directions, such as MapQuest and Yahoo Maps. Then came stand-alone and in-dash devices that use GPS satellite data to generate real-time routes and turn-by-turn spoken directions. The big-bang disruption, however, turned out to be the smartphone, a device never intended to compete with traditional navigation aids. The Google Maps Navigation app, for example, offers virtually all the features of high-end GPS devices, and it costs nothing—it's just another add-on for the free Android operating system. It has been installed on millions of smartphones and remains in perpetual "beta" release.

Google Maps Navigation competes with stand-alone GPS devices on all three value disciplines: It is clearly the cost leader. It is constantly being updated and rereleased, making it the leading innovator as well. And by offering seamless integration with mobile phone contact lists, the web, e-mail, and apps such as Yelp, it likewise wins on the dimension of customer intimacy. No surprise, then, that after years of steady growth, the GPS device industry is in a tailspin. Garmin lost 70% of its market capitalization in the two years after navigation apps were introduced; TomTom nearly 85%.

Surviving Big-Bang Disruption

Big-bang disrupters are rewriting the rules of industry after industry—and the new rules hold only until the next wave of disruption comes along. There's almost no time to adapt. Bold strategies are the only way to cope.

A decade and a half ago in *The Innovator's Dilemma,* Clayton Christensen warned incumbents to recognize new entrants' picking off low-end customers as an early indicator of industry transforma-

There's almost no time to adapt to big-bang disruptions. Bold strategies are the only way to cope.

Upending the Conventional Wisdom

Big-bang disruptions contradict the traditional thinking on strategy, marketing, and innovation. The classic "rules" of business don't apply to them.

	CONVENTIONAL WISDOM	BIG-BANG WISDOM
Strategic Discipline	Focus on only one strategic "discipline" or "generic strategy"—low cost, product innovation, or customer intimacy.	Compete on all three disciplines at once.
New-Product Marketing	First target a small group of early adopters and later enter the mainstream market.	Market to all segments of users immediately. Be ready to scale up—and exit—swiftly.
Innovation Method	Seek innovation in lower-cost, feature-poor technologies that meet the needs of underserved customer segments.	Seek innovation through rapid-fire, low-cost experimentation on popular platforms.

tion—and as a signal to begin experimenting with emerging technologies while there was still time. Surviving disruption, his research showed, often required a separate organization to incubate a competitive response. If you did everything right and the stars aligned, you could then move the new product into the market using your company's existing infrastructure and advantages of scale, making up quickly for lost time.

None of that was easy, but it was at least possible. Today, given the potential for "sudden death" from a big bang, you may have no time to develop an incubated alternative.

And the scale of your current business won't help you launch a response quickly enough to compete. Big-bang disruptions usually feature not a *vertically* integrated supply chain but a *virtually* integrated one: They are manufactured and deployed via the infrastructure of the cloud. In the face of such nimble yet perversely well-resourced competition, your operational assets suddenly morph into liabilities.

So how do you stay out of the path of the incoming comet? Here are four strategies that incumbents have used to survive and even thrive in the face of big-bang disruption:

See it coming. Learning to recognize the warning signs is key to survival. But since the early market-based experiments usually fail, the familiar signals sent by low-end customers jumping ship may never arrive. You need new tools to recognize sooner than your competitors do that radical change is on the way, and that means interpreting the real meaning behind seemingly random experiments.

Filter out the noise generated by unencumbered development by finding internal or external seers who can predict the future with insight and clarity. In every industry there are a handful of these visionaries, whose talents are based on equal parts genius and complete immersion in the industry's inner workings.

We call such seers "truth tellers," after the characters on soap operas that advance the plot by revealing big secrets. Your truth tellers may be easy to identify, if not to accept. They may be employees far below the ranks of senior management, working on the front lines of competition and change. They may not be your employees at all. Longtime customers, venture capitalists, industry analysts, and science fiction writers may all be truth tellers.

If finding a truth teller is hard, learning when to listen is even harder. Truth tellers are often eccentric, and their lucidity can easily be mistaken for arrogance and stubbornness. Consider such difficult personalities as Steve Jobs and other technology luminaries like Bill Gates, Alan Kay, and Mark Zuckerberg.

A prime example is Yukiyasu Togo, who pushed Toyota to launch Lexus after recognizing fundamental shifts in income and spending patterns in the American car market. Despite his vision and his essential role in Toyota's ongoing operations, Togo could not get the company to invest in a luxury brand without threatening to resign. The insights of a truth teller may not come in easily digested forms. You need to learn not only whom to listen to and when, but also how.

Slow the disruptive innovation long enough to better it. The best survival strategy may simply be to ensure that disrupters can't make money from their inventions until you're ready to acquire them or you can win with a product of your own. You can't stop a big-bang disruption once its unconstrained growth has taken off, but you can make it harder for its developers to cash in. Many big-bang disrupters build market share and network effects by offering their early products free. You can delay their profitability by lowering prices, locking in customers with long-term contracts, or forming strategic alliances with advertisers and other companies critical to your rivals' plans.

Meanwhile, look for opportunities to leverage your surviving assets elsewhere. When pinball

machines were disrupted by video games, the industry's biggest player, Williams Electronics (now WMS), licensed early home games and turned them into arcade machines. Then it exited the business altogether by moving sideways into high-tech slot machines, where it now thrives. The company learned what it needed to know about the new technology and then applied it to a new business where there were fewer innovators to compete with.

Get closer to the exits, and be ready for a fast escape. It's up to senior management to confront the reality that even long-successful strategies may be suddenly upended, requiring a radical recreation of the business. To compete with undisciplined competitors, you have to prepare for immediate evacuation of current markets and be ready to get rid of once-valuable assets.

Incumbents are often trapped by their balance sheets. Traditional accounting still has little to say about the value of expertise, brands, patents, and other intangibles. But in a fight against a big-bang disruption, they are the most valuable of your existing assets—perhaps the only ones you'll want to take with you. Knowing you have them, and their true worth, can make all the difference to your survival.

In the fight against this kind of disruption, intangibles are your most valuable assets—and perhaps the only ones you'll want to take with you.

For all other kinds of assets, a big-bang disruption can set off a rapid decline in value, making it important not only to shed those technologies but to do so before they become worthless. Take a page from the semiconductor industry, where fabricators are now hedging investments in new capacity by contracting to sell plants at a future time and price, often before they're even built. Or consider the recently announced acquisition of the venerable New York Stock Exchange by the upstart IntercontinentalExchange. With the rapid transformation of financial trading from physical to electronic, the residual value of the NYSE would appear to be largely in its brand.

Facing the imminent arrival of a big-bang disrupter, companies must ruthlessly reassess their M&A strategies. Once customers shift to the new technology, it's too late for a graceful exit—at best, it's time for a fire sale. In the end Borders Group wasn't acquired; it was liquidated, as were many other brick-and-mortar retailers that could not compete with the lower cost and better service of online alternatives. Industry leaders that fall behind may find their market worth is little more than the value of their patent portfolio and cash on hand, as bankrupt photo giant Kodak recently discovered.

Try a new kind of diversification. Diversification has always been a hedge against risk in cyclical industries. As industry change becomes less cyclical and more volatile, having a diverse set of businesses is vital. Fujifilm, a perennial also-ran in the film business, has survived the transformation to digital photography by transitioning to other products and services that draw on subsidiary technologies, ranging from nanotechnology to the manufacture of flat-panel TVs. A move into cosmetics, for example, was made possible by repurposing chemical processes developed to keep photos from fading. TomTom has begun to ease its reliance on its automotive navigation systems business by signing a deal last June with Apple to provide mobile mapping services.

How do you launch your own innovations? Make sure future strategies are built on a platform that can easily be extended and experimented with, and quickly scaled both up and down. The profitable life of a big-bang disrupter may be short, and you'll need to be ready with the next one before someone beats you to it. Think again of Amazon, which isn't so much a set of businesses as it is a technology platform that allows the company to repurpose its intangible assets—its expertise in e-business, its remarkable efficiency in forming collaborative partnerships with thousands of other businesses, and its leadership in software virtualization—as market conditions change. Amazon now sells not just books but everything and leases its core technologies to

In many mature industries, we've seen early failed experiments that could signal big bangs in the making.

third-party resellers. It even offers its expertise in online retailing and cloud computing to unrelated businesses that outsource their hardware and software needs to Amazon.

Your Business Is Already Being Disrupted

You can't see big-bang disruption coming. You can't stop it. You can't overcome it. Old-style disruption posed the innovator's dilemma. Big-bang disruption is the innovator's disaster. And it will be keeping executives in every industry in a cold sweat for a long time to come.

The impact of big-bang disrupters is certainly amplified for technology- and information-intensive businesses, but most industries are at risk. In automobiles, for example, manufacturers are aware of the threat posed by the electric car, having seen versions of it since the late 1800s. But so far there has been no steadily growing market of early adopters, despite a wide range of offerings today from both start-ups and global incumbents. As purely electric vehicles continue to improve their core technologies, including faster charging and more-dependable batteries, consumers seem to be waiting for the industry to get it just right. That's a big bang in the making.

Likewise, payment processing is poised to migrate from credit cards to smartphones, and it may not be today's dominant players that launch the winning app. Given the rapid success of payment innovations like Kenya's M-Pesa in the developing world, the right solution in developed markets is likely to hit big and fast when it finally coalesces.

Even in industries where regulations limit competition, there is growing pressure from big-bang disrupters homing in on large-scale inefficiencies. Education is being privatized and moving online, exposing just how little our public institutions have invested in technology that visibly advances their core teaching mission. Hospitals are reluctant to embrace telemedicine, even though it offers the potential to provide quality, affordable health care regardless of location. Highly regulated taxi and limousine markets are being invaded by new car services such as Uber, which allows customers to order and pay with a smartphone and track dispatched rides using mobile location services.

These and other mature industry segments—including many professional services, manufacturing, distribution, and retailing—are already experiencing their early failed experiments. Today's experiments may not be scalable, but an undisciplined disruption could lurk within them all. Their big bangs may not be far off.

The good news is that big-bang disruptions hold immense potential for those who can quickly learn the new rules of unencumbered development, unconstrained growth, and undisciplined strategy. Your current business may be replaced by something more dynamic and unstable but also more profitable. And the change will come not over time but suddenly. In other words, not with a whimper—but with a bang.

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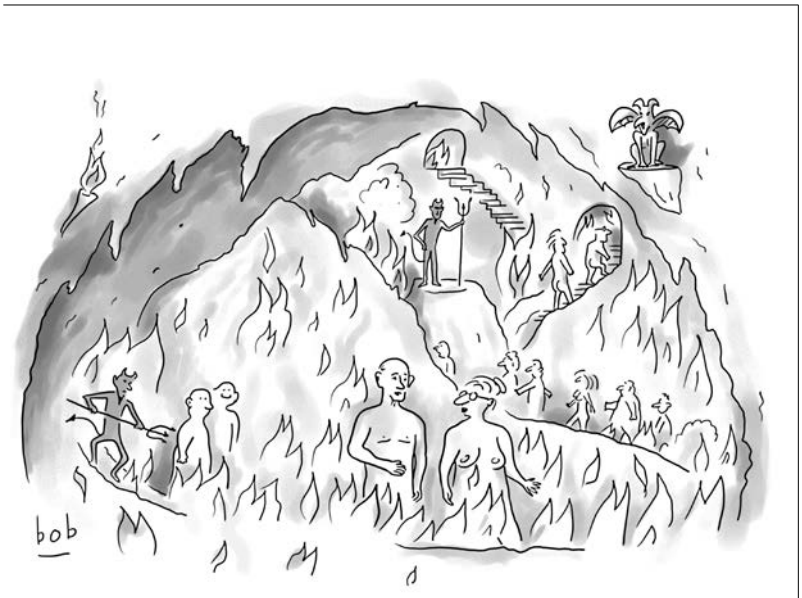

"Well, what did TripAdvisor say about this place?"

CARTOON: BOB ECKSTEIN

Forbes

Larry Downes, Contributor
I cover the Internet industry

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The FCC Scores a Hat Trick of Errors on Internet Regulation

With Congress in recess and Washington largely abandoned last week, the FCC issued three major orders, comprising some four hundred pages of dense text. The rulings addressed widely different topics: reporting the progress of broadband deployment by private networks, price regulation over middle mile Internet (what the agency calls "special access"), and the proposed sale to Verizon of wireless spectrum currently being warehoused by a consortium of cable companies.

Seal of the United States Federal Communications Commission. (Photo credit: Wikipedia)

The timing was no coincidence. In its last major overhaul of the agency in 1996, Congress left the FCC with almost no authority over the Internet, whether content, transmission or the devices and software that consumers use to enjoy it. All three of last week's orders pushed well beyond the FCC's legal authority. Issuing them in rapid succession was the act of a petulant teenager, loudly defying a parent he knows has already left the room.

Each decision in its own way reflected the fierce determination of FCC Chairman Julius Genachowski and his two Democratic colleagues to recast the agency whenever possible for a starring role in the Internet economy. They genuinely believe their "prophylactic" agenda will help consumers, despite a long history that demonstrates repeatedly the folly of slow-moving governments trying to micromanage the evolution of disruptive technologies.

Despite the range of subjects, the orders were in fact three variations on a single theme. All three–along with major FCC decisions since 2010 including the open Internet or "net neutrality" rules, a mandatory data roaming order for mobile carriers, the mutation of Universal Service from a telephone subsidy to a broadband fund, and the eventual approval of the Comcast-NBC Universal merger—tell the same story. The Internet needs us. Desperately.

But as each order unintentionally reveals, the agency couldn't be more wrong.

1. Imagining Defeat in Broadband's Victory

As I wrote last week, the eighth annual Broadband Progress Report was poisoned by a pervasive double-speak that even the majority had a hard time taking seriously. The bottom line is clear: today, nearly 300 million Americans have access to broadband Internet speeds.

But as it has for the last three years (but not the five before that), a bare majority made up of the FCC's three Democratic Commissioners concluded after two hundred pages of data to the contrary that the deployment of broadband in the U.S. is just not happening in "a reasonable or timely fashion."

That determination defies logic and the law, but was a necessary fiction for the agency to continue operating under limited emergency powers that such a finding invokes. To keep their special powers, the majority had to conclude in the teeth of common sense that 95% penetration of broadband access in the U.S. in less than ten years, at a cost of nearly a trillion dollars–almost none of it taxpayer money–somehow signaled a severe market failure, one that could only be rescued through "immediate action" by the FCC.

These "actions" include passage of the 2010 net neutrality rules, whose absence was seen as somehow holding back future deployments of broadband infrastructure. It also includes raiding the bloated, multi-billion dollar Universal Service Fund (fed by a fully regressive tax paid by all phone customers) to subsidize broadband services for the poor and for rural consumers. (Both actions are the subject of pending legal challenges.)

Concluding that 95% access is somehow a national disgrace is absurd, even more so given that it's not even the right number. Significantly, the majority left off entirely the fast-growing mobile broadband market, completely ignoring deployments of LTE and WiMax networks by most of the major mobile carriers. The data on mobile broadband wasn't solid enough, the majority concluded, so instead they pretended that not one single person had an iPhone, Android or other broadband device.

Ridiculous, right? No matter. The majority assures us that even if they had counted mobile broadband, there's still a tiny fraction of Americans–nearly all of them in rural areas–who can't get broadband service today. Broadband deployment, the majority says in no uncertain terms, can no longer be deemed "reasonable and timely" until literally 100% of American consumers have at least one provider (already, most have two or more).

Never mind that, as fellow Forbes contributor Adam Thierer has written, almost no consumer technology has ever reached 100% penetration. That includes the telephone, which peaked below 95% after 100 years of effort. Indeed, counting mobile broadband, more Americans already have access to high-speed Internet services than have complete plumbing. But in the interest of extending their special Internet powers, the FCC will stop at nothing, it seems, including denying reality.

2. Returning "Special Access" to the Stone Age

Last week's second order concerned price regulations for leased data communications services, the middle mile of the Internet known in agency jargon as "special access." Special access includes services to link cell towers to high-speed backbones ("backhaul"), as well as private corporate data

networks and dedicated Internet access for small businesses.

The FCC has long imposed complicated price controls for these services when they are offered over old-fashioned switched phone networks. Since 1999, however, the agency has exempted from some of its pricing controls special access services in markets where there are multiple providers.

In 2002, the FCC opened an inquiry to determine if its process for granting exemptions wasn't both over and under-inclusive in different parts of the country.

That inquiry was never completed, but in last week's special access order, the three Democratic Commissioners voted to suspend the exemption process, concluding that the special access market had changed so much that it needed new rules. They didn't actually issue any new rules, however, because the majority also decided they didn't have enough data to do so. They also didn't determine what data they needed or how they were going to collect it, but promised to start that process real soon now.

After decades of regulations, rulemakings, and hundreds of "pricing flexibility grants," piecemeal tinkering with special access is a dangerous hobby. Consider just one part of the current calculation, the Price Cap Index, which limits how much incumbent phone companies (or "local exchange carriers") can charge for special access. Here's the simplified explanation from the FCC:

> The PCI has three basic components: (1) a measure of inflation, i.e., the Gross Domestic Product (chain weighted) Price Index (GDP-PI); (2) a productivity factor or "X-Factor," that represents the amount by which LECs can be expected to outperform economy-wide productivity gains; and (3) adjustments to account for "exogenous" cost changes that LEC's [sic] control and not otherwise reflected in the PIC.

Got that?

Well the good news—or what should be the good news—is that none of this matters very much anymore. The Internet's middle mile is shifting dramatically from slow copper to faster Ethernet, cable, and fiber solutions. Price regulations already dull the incentives for non-incumbent phone companies to invest in the kind of new infrastructure we actually need, especially for mobile backhaul. If we stopped subsidizing the cost of using slow copper, we'd get to an all-IP infrastructure that much sooner.

In Europe, for example, where regulators have an even heavier hand on the special access scales, efforts to micro-manage pricing have left incumbent providers unable to make a profit or develop any long-term strategy. Neelie Kroes, the E.U.'s chief regulator, has now acknowledged the serious harm that excessive regulation has unintentionally caused. She recently proposed changes that would make it possible for landline, cable, and mobile networks to compete more freely. That is, by deregulating.

The FCC should likewise be deregulating legacy copper as fast as possible, letting the natural migration to faster technologies happen unencumbered. And perhaps that is the future of special access regulation, once the FCC actually collects the data it needs to analyze the market.

But the majority admits it still lacks the information to determine how those mechanisms should be updated; it doesn't even have a plan yet for how it's going to collect the data, but promised to start the process within sixty days.

As FCC Commissioner Ajit Pai points out in his dissent, however, that just means that under the fastest possible timetable, new rules can't be put in place until at least sometime in 2015. In the "interim," the existing process, flawed as it might be, is now suspended.

The FCC is moving in precisely the wrong direction. As Fred Campbell, himself a former Bureau Chief at the FCC, wrote, "Making special access lines available at government subsidized rates will only encourage potential competitors to become reliant on the services of the incumbents. Why should competitors build innovative, ultra high-speed fiber networks that would provide real competition when the government is giving them a break on copper wire?"

Again, the majority's logic just doesn't scan. Existing price regulation isn't flexible enough to encourage the construction of high-speed, all-IP network infrastructure. But we don't have the data to figure out how to do it better, even though we've been trying to collect it for ten years. We don't even have a plan for getting that data. So let's immediately suspend the existing exemptions and go back to regulating the hell out of the increasingly irrelevant copper network while we figure out what data we need to determine how we can get people off the copper network even faster.

Why the sudden urgency to deal with a problem that was first identified a decade ago, and for which there's still no agreement on how to resolve it? Why immediately suspend the existing mechanisms for regulatory relief that have been in place since 1999 and which, if not perfect, at least provide some measure of incentive for an IP transition?

The answer is that the rapid migration to IP-based special access has the agency worried, not so much about price controls as about its own continued relevance in running the market. Copper, which the FCC can regulate, no longer provides fast enough speeds for today's broadband demands. So the real motivation for the half-baked special access order is to ensure the FCC will be in charge of the next generation of special access, the one based entirely on Internet technologies.

That's the only explanation for this decision. The FCC is setting the stage for a naked power-grab over the entire middle mile—fiber, cable, and all. Precisely the approach the Europeans have admitted has ruined the global competitiveness of their networks—so much so that the major E.U. carriers have now resorted to begging the United Nations to intercede.

Maybe in 2015, when the "interim" suspension of pricing flexibility still hasn't been resolved, that won't seem so funny.

3. Creating a Spectrum Crisis, then Ensuring it Doesn't get Resolved

The third of last week's troika of decisions begrudgingly approved Verizon's purchase of valuable AWS spectrum from a consortium of cable companies, who won auctions for the licenses in 2006. The consortium planned to build a mobile network to offer customers wireless voice and data services, but later decided not to proceed. The spectrum has been sitting fallow, until Verizon offered to buy it last year for close to $4 billion.

That price tag reflects a serious problem of supply and demand. Verizon and

other national and regional mobile carriers are in desperate need of more spectrum. Mobile data use has exploded with the release of next-generation smartphones and other devices, and networks across the country are straining to meet consumer demand.

Verizon, AT&T, and other carriers are migrating as quickly as possible to more efficient standards, including LTE and WiMax. But with demand growing by thousands of percent, and with local zoning authorities slow to approve new tower construction or even modifications, more spectrum is essential.

Just ask the FCC, which sounded the alarm over a "spectrum crunch" in the 2010 National Broadband Plan. According to the plan, keeping the mobile broadband party going would require 300 Mhz. of new spectrum by 2015 and 500 Mhz. by 2020.

Unfortunately, the FCC, which manages all non-governmental frequency allocations, has almost no available inventory to auction–at any price. Prying licenses out of the hands of both commercial and governmental users who are no longer putting their spectrum to especially valuable uses, however, has proven nearly impossible. The FCC has no serious expectation of meeting its own timetable, threatening the health of one of the only growth sectors in the sluggish economy.

So the easiest way for existing carriers to get more capacity is to acquire licenses on the secondary market. Which is exactly what Verizon is trying to do, and what AT&T hoped to do in its bid to merge with T-Mobile USA last year.

The FCC, along with the U.S. Department of Justice, squashed the AT&T/T-Mobile deal. But after months of protracted negotiations, both agencies have now agreed to let the Verizon purchase go through. That's the good news. The bad news is that the agency loaded down the deal with burdensome conditions and "voluntary" modifications that limit how Verizon will be able to use the spectrum it's acquiring.

Two of the conditions are particularly worrisome, reflecting once again the FCC's determination to become the regulator of choice for the Internet economy.

First, Verizon had to agree to significant modifications to a marketing agreement that would have allowed Verizon and the cable companies to sell each other's products. This would have made possible the creation of new bundled services, for example, that would have added mobile access to today's "triple play" of voice, TV, and Internet access. But the FCC bowed to self-styled consumer advocates who argued that new choices would somehow harm consumers, or, more likely, competitors who didn't have a quadruple play offering of their own.

The FCC admits that it's too soon to predict how the co-marketing would affect competition. So the agency is content just to force Verizon to limit the scope of the arrangement and agree to "a number of monitoring and reporting conditions" for years to come. In other words, we'll let you know what we object to once we've figured it out.

The second condition commits Verizon to mandatory data roaming agreements with other mobile providers who want to use the newly-acquired spectrum. The FCC already issued a nationwide data roaming order in 2011,

so why the redundant condition here? The answer is that the 2011 order almost certainly exceeded the agency's legal authority, and indeed is already the subject of a legal challenge—by Verizon!

Mandatory data roaming actually disincentivizes the kind of investment the FCC thinks is essential for healthy mobile competition. But regulating by placing specific conditions on individual license transfers is a bad idea no matter what.

The Comcast-NBC Universal deal, for example, included dozens of conditions, many of which had nothing to do with preserving competition or, to use the FCC's longstanding but still undefined term, the "public interest." These included a different and stricter version of the net neutrality rules than were ultimately passed and which are now also the subject of a court challenge.

Comcast has to adhere to a different version of net neutrality than everyone else, and will be bound by those rules even if the court throws out the "real" ones. Now Verizon has to follow a different form of data roaming. If the 2011 order is thrown out, likewise, Verizon will still be subject to it, at least for the spectrum involved in this deal.

Both the actual data roaming and net neutrality orders are being challenged, by the way, on the sensible and likely successful legal theory that the FCC was never given authority from Congress to sink its teeth so deeply into the Internet economy. If the agency can't get by the courts and Congress, however, they can still impose themselves on individual transactions between some industry participants.

Merger conditions, in other words, assure the FCC of some role in regulating the Internet even where Congress and the courts have told it not to. Companies who volunteered to abide by different versions of rules later invalidated, in the interest of getting deals done, will still have to follow them.

The agency's growing addiction to regulating by license transfer has created a patchwork of different rules for different companies and even different markets. It's a mess—and a source of total confusion, not just for the industries and the regulators, but most of all for consumers. You know, the supposed beneficiaries of all this meddling.

We're the FCC. We're Here to Help

I believe FCC Chairman Julius Genachowski is sincere in his oft-stated belief that the Internet is essential to "education, health care and job-creation opportunities" for all Americans.

But would the former venture capitalist and Internet entrepreneur be so confident of the need for a strong FCC presence in the Internet ecosystem if he wasn't the agency's Chairman? Is it possible his view is skewed by the enthusiastic support of a staff that needs a role in the IP networks of the future to justify the continued relevance of the agency, so much so that he's willing to step over the line of legal authority and invite repeated rebukes from Congress and the courts?

Last week's three orders suggest, unfortunately, that the answer is a resounding yes.

Clearly, the FCC wants to cast off the legal shackles that bind it to the mundane world of last century's communications technologies. The agency seems desperate, increasingly so in the run-up to this year's Presidential election, to find its seat in the glistening halls of Internet Valhalla. And then regulate the hell out of it.

But anyone looking for evidence of what the Internet market would be like under even more aggressive FCC intervention need look no farther than the industries traditionally regulated by the agency: broadcast TV and wireline telephone service. Both these industries were initially put under severe federal and state regulation at a time when few alternatives existed – TV was long-dominated by the three major networks, and telephone service, until 1984, was a regulated monopoly of the former AT&T.

Cable, satellite and now fiber-optic TV have long-since outpaced the over-the-air broadcasters in innovation, giving nearly all Americans the option of hundreds of channels of diverse content, on-demand movies and other programming, time-shifting, interactive features and bundled services. And consumers are increasingly getting their content from the Internet, mixing and matching their choices and payment options.

Yet the FCC still regulates over-the-air broadcasters as if TV were a delicate flower, one requiring constant fussing by an overanxious gardener. The agency continues, for example, to fight to retain its ability to censor language that wouldn't shock a ten year old.

After decades of the same kind of well-meaning "public interest" regulation that Chairman Genachowski has in mind for the Internet, over-the-air TV has now declined to almost a non-entity despite what is otherwise a content renaissance. The unregulated market has taken us to 95% broadband availability in less than ten years. But today, less than 10% of American homes rely on over-the-air broadcast. That figure is in large part the result of regulatory shackles, not a sign that more intervention is required.

Likewise, traditional local and long-distance telephone service over the copper network is being displaced by better technology from cable and fiber. At the same time, telephony is making the transition from inefficient switched networks to Internet-based solutions that run on the same protocols that carry every other kind of information.

The traditional business, as Wall Street knows, is in ruins. Here too, the FCC's helpful intervention has unintentionally sped up the decline of the industry it purported to regulate to ensure better service for consumers. Oops, they did it again.

Chairman Genachowski and his colleagues are right to believe that the Internet is the future of global communications, and that the U.S.'s unparalleled success in inventing, deploying, and exploiting its still untapped capabilities is our greatest source of competitive advantage.

But the Chairman and his colleagues also believe that unless the FCC starts storming the beaches of the Internet, regulatory guns blazing, all will be lost.

Quite the contrary. We have arrived at the golden age of communication without the FCC's help—indeed, because of the wisdom of Congress reflected in the 1996 Communications Acts–a bi-partisan decision to keep the agency from tampering with a new technological frontier.

The results speak for themselves.

Please, FCC, we're begging you. Go help someone else for a change.

Follow me on Twitter @LarryDownes. At least until the FCC takes over.

This article is available online at:
http://www.forbes.com/sites/larrydownes/2012/08/27/the-fcc-scores-a-hat-trick-of-errors-on-internet-regulation/

CNET News

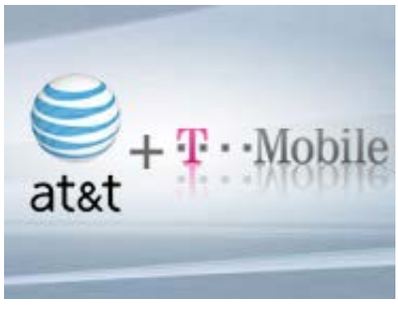
For AT&T merger, Sprint dusts off its Christmas list

Sprint recently asked Congress to block the AT&T-T-Mobile merger because of its impact on competition for cellular backhaul. But the merger has nothing to do with backhaul--only on Sprint's bottom line.

by Larry Downes | May 25, 2011 4:00 AM PDT

It's called "regulation by merger condition." And at the Federal Communications Commission, it's a problem that has become epidemic [http://truthonthemarket.com/2008/08/02/the-price-of-merger-approval-and-triple-federal-enforcement/] . As part of a drawn-out process the agency follows for approving proposed mergers in the communications industry (where it shares review authority with the Department of Justice), companies are persuaded to volunteer or are sometimes simply forced into accepting pages and pages of conditions that limit the merged entities' operating flexibility for years to come.

In part, the voluntary conditions are offered just to get the process moving. Though the FCC is required to complete its review in 180 days, it has the power to stop the clock at will--a power it exercises with abandon.



Many of the conditions have nothing to do with the merger itself. Instead, the FCC uses its leverage to impose sweeping new regulations it wants but doesn't have congressional authority or the political will to pass on its own. It's like Christmas all year at the FCC.

Among other fallout, "regulation by merger condition" has left behind a minefield of different rules and restrictions for different companies in the same business, some longer-lived than others. Recent examples of this embarrassment include the 2005

merger of SBC and AT&T, the 2008 XM-Sirius satellite radio deal [http://www.cnet.com/8301-1035_3-10000241-94.html] (which took 16 months to "review"), and, most notoriously, last year's approval of Comcast's takeover of NBC Universal [http://www.cnet.com/8301-30686_3-20030080-266.html].

The nearly 200-page order [http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-304134A1.pdf] (PDF) in the Comcast case included dozens of unrelated conditions [http://truthonthemarket.com/2011/01/20/fcc-approves-comcast-nbc-merger-with-conditions/], such as requirements for Comcast to add more children's programming on Telemundo, staying out of any decision making in its partly-owned Internet start-up Hulu, and living with the commission's Net neutrality rules even if Congress or the courts ultimately reject them. These were in addition to "voluntary" conditions [http://blogs.wsj.com/deals/2011/01/18/comcast-nbc-merger-read-the-fcc-approval-letter/] Comcast offered during the course of the year-long review.

This regulatory feeding frenzy led the FCC's two Republican commissioners to call for a complete overhaul of the merger review process. "While many of these commitments may serve as laudable examples of good corporate citizenship," the two wrote in a joint concurrence to the Comcast order, "most are not even arguably related to the underlying transaction."

Competitors now getting in on the fun

But apparently we ain't seen nothing yet. In the early days of what will likely be an even longer and more coercive review of AT&T's proposed merger with T-Mobile USA, there are already signs that not only the FCC, but some of AT&T's competitors would like to use the merger to settle old scores and extract concessions for themselves.

In recent testimony before a Senate Judiciary Subcommittee, for example, Sprint CEO Dan Hesse dusted off his Christmas list and began reading it to Congress, hoping that the FCC will ultimately answer his letter to Santa.

Case in point: Hesse wants the merger blocked or at least crippled with regard to AT&T's cellular backhaul services. What is backhaul? Briefly, after cellular voice and data traffic travels from your mobile device to a cell tower, it must be offloaded to a high-speed network to reach its destination on the Internet or the telephone network. As cellular networks explode with data traffic, backhaul transport (or "special access" as it's known in industry jargon) is increasingly important to ensure overall performance.

Hesse complained that AT&T and Verizon together control most of the backhaul market [http://judiciary.senate.gov/pdf/11-11-5%20Hesse%20Testimony.pdf] (PDF). Today, Hesse says, Sprint pays $2 billion a year for backhaul, at prices that are "very very high." If the merger is approved, according to Hesse, "Two companies would control most of the nation's wire line

infrastructure and the critical last mile that Sprint and the rest of the industry need to provide affordable rates and quality service."

Facts don't support Sprint's claims on backhaul non-competition

Sprint, it seems, wants to use merger review to get itself lower prices for backhaul. But Hesse is wrong on the facts and wrong in his conclusion. First, the backhaul market is competitive and growing quickly. Besides AT&T and Verizon, wireline backhaul services are offered by a variety of other companies including CenturyLink and cable providers Comcast, Cox, and Time Warner Cable. Comcast is projecting $1 billion in backhaul revenue [http://www.heavyreading.com/cable/document.asp?doc_id=188445].

And backhaul is provided by other technologies, including microwave and Ethernet. There are many providers here, including AboveNet, AirBand, Windstream, Level 3, and XO Communications. Indeed, in some markets Verizon is now buying microwave backhaul from Level 3.

Or consider Clearwire, a 4G WiMax pioneer that is majority-owned by Sprint. According to the company's CEO, Clearwire's network relies on microwave for 90 percent of its backhaul needs [http://www.dragonwaveinc.com/docs/cases/Clearwire%20Case%20Study.pdf] (PDF). And in many cases, Clearwire shares cell towers with Sprint. Neither AT&T nor Verizon offer microwave backhaul.

Of course no one is forcing Sprint to buy backhaul service from its competitors. While others in the communications industry have invested billions in new fiber, cable and copper upgrades, and other infrastructure, Sprint has stuck to wireless. Sprint made a strategic choice to lease rather than build backhaul capacity. If the company now regrets that decision, it's hardly the role of the FCC to bail them out.

Hesse claims that AT&T and Verizon earn "enormous profits" on backhaul, though the exact prices and costs are conveniently kept secret within the industry. But if huge profits are there to be made, why doesn't Sprint build its own infrastructure?

In part, the answer is that the company is doing just that. Late last year, Sprint announced a $5 billion initiative it calls Network Vision [http://phx.corporate-ir.net/External.File?item=UGFyZW50SUQ9ODQwMjZ8Q2hpbGRJRDotMXxUeXBlPTM=&t=1], which the company describes as "multimode technology to enhance service--coverage, quality and speed--create network flexibility, reduce operating costs and improve environmental sustainability." This innovative approach is likely to reduce Sprint's reliance on backhaul providers.

Backhaul won't be affected by merger in any case

But let's assume for the moment that Sprint is at the mercy of AT&T and Verizon for mobile backhaul. What does that have to do with the T-Mobile deal? T-Mobile does not sell backhaul service of any kind. For its own needs, the company relies almost

exclusively on Ethernet [http://mobile.eweek.com/c/a/Mobile-and-Wireless/Sprint-Fears-Getting-Priced-Out-of-Existence-by-ATandTTMobile-Deal-874176/]. So T-Mobile is neither a customer of AT&T nor a competitor in the backhaul business.

The merger of AT&T and T-Mobile USA, in other words, would have absolutely no impact on the competitive landscape for backhaul, nor on current or future prices.

So why does Sprint think this is a relevant issue for Congress and the FCC to consider in its review of the merger?

The answer is clear, if depressing. Sprint is hoping the agency will force conditions on the merger that will improve its own bottom line. In this case, though the company didn't say so directly, it appears Sprint wants the FCC to return to its long-abandoned role as regulator of backhaul rates and conditions, at least as far as AT&T is concerned. (Verizon would continue to charge market prices--at least until its next merger review.)

What Sprint is suggesting goes beyond "regulation by merger condition." This is wholesale regulatory arbitrage based on unrelated and inaccurate facts.

And no doubt this is just one of what will surely be a record haul of red herrings by Sprint and others. The FCC's merger review process is already so befuddled, why not co-opt it for their own gain?

Merger review process is what needs correcting

In the end, the demands of AT&T's competitors, special interest groups, and perhaps suppliers and customers, will add up to nothing less than an attempt to restructure the communications industry and needle the FCC into acting beyond its authority.

Perhaps it is time for serious regulatory reform--the last major rewrite of U.S. communications law, after all, was passed in 1996. But that is a decision for Congress, not the FCC, to make. And certainly not in the course of reviewing a pending transaction.

If something urgently needs to be brought under control, it's the FCC's merger review process. Until then, competitors, interest groups, and everyone else who wants to take advantage of the merger review free-for-all will keep adding to their Christmas lists. Before looking in their stockings, though, these kids better hope the FCC doesn't ask if they've been naughty or nice.

[http://www.cnet.com/profile/LOD3/]

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The FCC's Unstructured Role in Transaction Reviews

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The FCC's Unstructured Role in Transaction Reviews

Larry Downes & Geoffrey A. Manne[1]

I. INTRODUCTION

Some of the most significant transactions singled out recently for intensive federal review involve the communications industry. These include the merger of Comcast and NBCUniversal, the failed merger of AT&T and T-Mobile USA, a multi-billion purchase of spectrum by Verizon from a consortium of cable companies and, just recently, the announced acquisition by T-Mobile USA of rival MetroPCS and Softbank's offer for Sprint.

The predominance of communications transactions is not surprising. With the remarkable boom in mobile devices and applications that took off with the 2007 release of the first Apple iPhone, mobile broadband has emerged as the fastest-growing and most dynamic consumer category in an otherwise sluggish economy. Today, consumers are gobbling up an expanded range of devices and operating systems, downloading billions of apps and moving massive amounts of data—including high-definition video—through the cloud.

Unfortunately, communications providers face serious and potentially fatal problems of supply. Radio spectrum—the chief input and most severe constraint on the ability of carriers to support more users and more data—is essentially unavailable at any price.

That's because the Federal Communications Commission ("FCC"), which oversees the licensing of public airwaves, has run out of usable, unassigned spectrum to license. Moreover, a century-old allocation scheme that earmarks different bandwidths for specific applications makes it difficult for carriers to acquire more capacity from secondary markets, even when doing so would put underutilized frequencies to better and higher use. Reassigning frequencies for different technologies (e.g., satellite to terrestrial), as companies including Dish Network and LightSquared can testify, requires extensive, time-consuming, and politically charged agency rulemaking.

As consumers pull orders of magnitude more data to their smartphones, tablets, and notebook computers, carriers are becoming desperate.[2] Network operators, already experiencing what the FCC warned in 2010 as an imminent "spectrum crunch," have little choice but to acquire spectrum assets from other mobile operators, whose licenses can be put to immediate use once the agency approves the transfer. They have been doing so as quickly as possible, attempting or completing over a dozen major transactions since 2007.

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[2] The other major inputs are cellular infrastructure, including towers, antennae, and pole attachments. In brief, the more infrastructure, the more efficiently carriers can use their existing spectrum licenses. But investments are being artificially constrained by local zoning authorities, a combination of aesthetic and health concerns, incompetence, and corruption. *See* Larry Downes, *Does your iPhone Service Suck? Blame City Hall*, CNET News.com (Sept. 8, 2011).

As the urgency of spectrum-related transactions has increased, the FCC has come to play an increasingly problematic—and largely unstructured—role in the government's review of transactions in the communications industry.

II. MISSION CREEP IN THE FCC'S APPROACH TO LICENSE TRANSFERS

Under the Clayton Act, the Department of Justice ("DOJ") must approve substantial mergers and asset transfers. But only the FCC can approve the transfer of FCC licenses. This has led to the emergence of closely orchestrated but nevertheless duplicative joint reviews of communications industry transactions by the two agencies.

While the Department of Justice reviews transactions under antitrust case law and its published interpretive guidelines, license transfers are evaluated under the FCC's far-squishier "public interest" standard.[3] With little to guide or constrain such reviews, the FCC is easily distracted, with increasingly troubling consequences. In the last few years in particular, the agency has demonstrated a dangerous tendency toward "mission creep" in several directions.

For example, as the scope of proposed transactions expands, reviews take longer, involve messier public records and agency inquiries, and attract more lobbying from Congress and self-styled consumer advocates. Comcast-NBCUniversal was approved after ten months, while AT&T/T-Mobile was rejected after seven months. The Verizon-SpectrumCo deal went through, with significant conditions, in eight months. There is no indication yet of a timetable for T-Mobile/MetroPCS.

Transactions that are approved now come with comically long lists of conditions, including divestitures of some customers and/or spectrum, as well as wildly unrelated remedies. For Comcast-NBCUniversal, the conditions ran to nearly thirty pages, including (i) a requirement that Comcast adhere to net neutrality even if the Open Internet Order is overturned, (ii) rate regulation on Comcast's broadband service, and (iii) specific requirements on what channels Comcast offers in its cable packages.

In effect, the agency now uses transaction reviews to impose the kinds of regulations that would otherwise require a formal rulemaking. In addition to side-stepping notice-and-comment requirements, this regulation-by-merger-condition creates a crazy quilt where different rules apply to different companies, sometimes in different markets. The version of net neutrality Comcast agreed to in the NBCUniversal deal, for example, is dramatically different than the version the agency ultimately passed. Consumers can't be expected to understand why different rules apply to different products and services. Future transactions are needlessly complicated, with the industry experiencing increased regulatory uncertainty.

The agency is also reaching further into transactions, again duplicating the DOJ's review and applying its own non-standards. The FCC's authority extends only to license transfers, and Congress intentionally limited the scope of that review. For example, arrangements that do not convey licenses are outside FCC jurisdiction, whether such deals "accompany" a license transfer or not.

[3] *See*, e.g., 47 U.S.C. § 310(d) (1996).

Yet in the Verizon-SpectrumCo case, the FCC attached competition-related conditions to joint marketing and other commercial agreements that were part of the overall transaction, but which did not include the transfer of licenses. Activists successfully urged the FCC to extend its reach in the SpectrumCo deal on the theory that the commercial agreements could influence the industry's competitive landscape.

Whether ancillary or unrelated agreements in a larger transaction have anticompetitive effects, however, is appropriately the province of the DOJ. Any effect on competition is best measured under the antitrust laws, not by the FCC's vague "public interest" standard.

If, as in the SpectrumCo case, the FCC continues to assert jurisdiction over such agreements as part of its public interest review, its evaluation of license transfers will soon morph into unfettered authority to regulate any aspect of the merged entity's business. This not only duplicates DOJ review, it also does so under a standard that lacks any clear limiting principles or analytical rigor.

The burden of proof is also significantly different under the FCC's antitrust-like review. The DOJ must sue for injunctive relief to block proposed transactions, and has the burden under the Clayton Act of showing they may "substantially lessen competition." But when the FCC rejects the transfer of spectrum licenses, it is up to the parties to demonstrate that the proposed transaction is in the public interest. The shifting of burdens makes it far easier for the agency to extract "voluntary" conditions—too easy.

III. REVISITING THE "SPECTRUM SCREEN"

The scope and timeframe of FCC transaction review, the imposition of merger conditions that effectively apply rulemaking regulations only to some parties in the industry, and "mission creep" in the agency's assertion of unrelated jurisdiction are just some of the more worrisome features of the agency's expanding role in shaping the structure and operation of communications industries. The more outrageous of these encroachments have already attracted unwelcome attention from Congress.[4]

Some at the agency, on the other hand, seem largely unaware of just how unprincipled its reviews have become, or of the unintended consequences its mixed messages have on long-term investments by participants in the communications ecosystem. In a recent filing, for example, the FCC casually describes its *ad hoc* (or "case-by-case") methodology for reviewing license transfer applications thusly:

> Beginning in 2004, the Commission has used a two-part screen to help identify markets where the acquisition of spectrum provides particular reason for further competitive analysis. The Commission does not, however, limit its consideration of potential competitive harms in proposed transactions solely to markets identified by its initial screen….For those markets highlighted by one or both steps in the analysis, the Commission routinely conducts detailed, market-by-market reviews to determine whether the transaction would result in an increased

[4] In March 2012, for example, the House passed The FCC Process Reform Act, which would strictly limit the ability of the agency to attach conditions to license transfers and restrain the agency's tendency to arbitrarily extend the timeframe of its reviews. *See* Andrew Feinberg, *Telecom Industry Applauds Passage of FCC Reform Bill*, THE HILL (March 28, 2012).

> likelihood or ability in those markets for the combined entity to behave in an anticompetitive manner. The case-by-case analysis considers variables that are important in predicting the incentives and ability of service providers to successfully reduce competition on price or non-price terms, and transaction-specific public interest benefits that may mitigate or outweigh any harms arising from the transaction.[5]

This is an unintentionally damning explanation of what happens in FCC transaction reviews, which are filled with pseudo-mathematical calculations, arbitrary adjustments, and catch-all "transaction-specific public interest factors" applied to mask decisions actually made *a priori* on other, unarticulated grounds. It's hard to see any actual rigor—as opposed to the disarmingly misleading appearance of rigor—in the process.

The document just quoted, released days before the announced acquisition of MetroPCS by T-Mobile USA, is a Notice of Proposed Rulemaking ("NPRM") intended to codify some of the more troubling elements of the agency's case-by-case approach. Or maybe not. As Commissioner Pai pointed out in a concurring statement, the NPRM didn't actually propose any new rules—it didn't propose anything at all. It merely sought input from interested parties on whether or not the agency should change its process, and, if so, how.

The NRPM is largely concerned with the so-called "spectrum screen," a significant element in the agency's license transfer analysis and one that is emblematic of mission creep in the FCC's unstructured approach to transaction review. Since it's a feature of the review over which all five of the agency's current Commissioners have expressed concern, it's worth looking at in more detail.

The screen is a bit of agency legerdemain that measures the impact of a proposed transaction on spectrum holdings in each of several hundred local markets. Application of the screen is supposed to simplify the process of approving the transaction. If the merged entity would control less than a third of the usable spectrum allocated to commercial mobile applications in a given market, that market is presumed to be competitive and no further analysis is performed; the transaction is said to pass the screen.

In markets where the screen fails, more detailed competitive analysis of the proposed transaction is performed. Likely costs to the "public interest" are supposedly weighed against likely benefits, and the scales are tested to see where, on balance, the proposed transfer falls.

The evolving spectrum screen is actually the second part of the review. The first part is the application of the infamous Herfindahl-Hirschman Index ("HHI"), a simplistic calculation that measures market shares and the arithmetic change in market concentration a transaction would yield.

Both are born of the same outdated structural presumption that simply infers anticompetitive effects from high levels of concentration. But in markets characterized by

[5] Federal Communications Commission, *In the Matter of Policies Regarding Mobile Spectrum Holdings*, WT Docket No. 12-269, Notice of Proposed Rulemaking, Sept. 28, 2012.

technological innovation, multidimensional competition, and economies of scale, the reality is that we have no idea what level of concentration is commensurate with optimal outcomes.[6]

While the HHI analysis at least provides a degree of regulatory consistency, the spectrum screen achieves the opposite result. On a market-by-market basis, the FCC regularly updates the amount of total usable spectrum based on changes in technology and previous spectrum reassignments, adjusting the numbers further to take into account the different technical characteristics of different bands, which can be more or less useful for different applications depending on the frequency. The amount of spectrum attributed to different carriers based on partial ownership of subsidiaries is also subject to adjustment.

Different transactions, therefore, are subject to different versions of the screen, adjusted unpredictably at the time of review. The agency is unbound by any concrete formula for its specific adjustments, and no party knows ahead of time—or at the time it submits a request for license transfer—what the screen's key inputs will look like when negotiating an acquisition.

Given the changing dynamics of the mobile marketplace, any spectrum screen would need to be regularly reviewed and clearly articulated, but the FCC continues to make its adjustments more-or-less randomly. There's no actual methodology—or none expressed—as to how adjustment decisions are made. For example, BRS spectrum is included in the spectrum screen in some markets, but not in others, and EBS spectrum is not included in the spectrum screen at all. Because Clearwire's network uses only these two spectrum bands, Sprint's holdings in Clearwire are excluded from the screen.

The screen is so loosely defined that it's proven irresistible to manipulation. Changes seem to be made arbitrarily, often in ways that help the agency reach a preferred outcome. The lack of any real process, in fact, has led to fears that the agency is actually perpetuating another kind of screen: a smoke screen.

Consider how the agency accidentally exposed itself with its thumb pressed down hard on the scale in its review of the AT&T/T-Mobile transaction.

Once it became clear to the parties that the transfers were going to be rejected, the applications were withdrawn. Though un-reviewed and unapproved by the full Commission, FCC Chairman Julius Genachowski was confident the staff's partial analysis made clear why the deal, still pending at the DOJ, was an anticompetitive non-starter. So, contrary to agency protocol and over the objection of the parties, the Chairman released the nearly complete staff report.[7]

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[6] The DOJ now downplays the value of a structural presumption, especially in the broadband ecosystem. According to the DOJ: "We do not find it especially helpful to define some abstract notion of whether or not broadband markets are 'competitive.' Such a dichotomy makes little sense in the presence of large economies of scale, which preclude having many small suppliers and thus often lead to oligopolistic market structures. The operative question in competition policy is whether there are policy levers that can be used to produce superior outcomes, not whether the market resembles the textbook model of perfect competition." Ex Parte Submission of the United States Department of Justice, *In the Matter of Economic Issues in Broadband Competition*, GN Docket 09-51 (Jan, 4, 2010).

[7] John Eggerton, *FCC Chair Defends Release of Draft AT&T-T-Mobile Report*, BROADCASTING & CABLE (Nov. 30, 2011).

The agency was caught flat-footed, however, when the spectrum screen findings in the staff report didn't actually tote up. That's because at the beginning of the review, the staff made a significant adjustment to the screen. Tucked away in a footnote, the report noted that the total amount of SMR spectrum used in the screen was being reduced from 26.5 MHz to 14 MHz.

The adjusted numbers had a significant impact on evaluation of the deal. With the adjustment, the transaction failed the screen in 274 of roughly 700 markets. Without the adjustment, the transaction failed in only 192 markets, a difference of roughly a third. Given so many failures of the screen, the staff seemed inclined to ignore its own process and simply reject the transaction outright rather than conduct the required market-by-market reviews in the affected locations.

The footnote explained that the change to the spectrum screen had been approved in a related proceeding involving spectrum licenses that AT&T was acquiring from Qualcomm. But when the final order in the Qualcomm transaction was published, it made no mention of any adjustment. Apparently the draft report on the AT&T/T-Mobile deal was referring to a proposed adjustment that, in the end, wasn't made. But the staff's eagerness to make use of a pending change, and to assume it would actually make it into the Qualcomm order, betrayed a desire, certainly communicated from the Chairman, to make the AT&T/T-Mobile transaction look as bad as possible.

IV. TAKING A BREATH, AND A GIANT STEP BACK

The Qualcomm scandal badly damaged the supposed objectivity of the spectrum screen, leading in part to the recently released NPRM. The FCC is now seeking comment "on retaining or modifying the current case-by-case analysis," as well as whether it should implement the "bright-line limits advocated by some providers and public interest groups." To this end, it is asking interested parties whether the agency should formalize the screen into a rulemaking, and, if so, what it should actually look like.

By "bright-line limits," the NPRM means returning to the days prior to 2003 of a fixed cap on the amount of spectrum a carrier can control in each local market. Reinstating a cap would represent a big step backward, one that elevates form over substance and ossifies the unsupportable structural presumption. As Commissioner McDowell points out in his concurrence to the NPRM, the cap was eliminated "after determining that spectrum aggregation limits were no longer necessary due to meaningful competition among providers of telecommunications services."

As far as the screen is concerned, there's no evidence that a carrier that controls more than a third of the usable spectrum in a market has the ability to inflict harm on consumers. And there's certainly not the kind of data that would justify a fixed cap in a market as dynamic as today's mobile ecosystem.

The need to make frequent and unscientific adjustments to the screen on a regular basis, instead, makes clear that it was an unmanageable proxy in the first place; more obviously so the more the staff tries heroically to keep it relevant. And while a fixed cap would provide administrative relief, it would severely hamstring the continued evolution of this dynamic market.

So instead, we'd like the FCC to consider a different course: Do away with the screen, caps, and reliance on the HHI calculation altogether, and place the burden on the agency to demonstrate likely harm to consumers before imposing limits on license transfers under the "public interest" balancing test. The reasons are simple. There is no basis for the presumptions that animate the screens; there is no intelligible or articulated basis for the precise triggers they employ; and their unpredictable application and politicized interpretation lead to significant and costly regulatory uncertainty.

Meanwhile, there is plenty of direct evidence of competitive conditions in these markets—including prices, broadband speeds, number of users, churn, advertising expenditure, innovation, infrastructure investment, and more—more than enough for the agency to perform a far more reliable and realistic, data-driven analysis of the costs and benefits to the public interest of proposed transfers in the future.

The FCC already collects most of the data needed for that kind of evaluation as part of its regular reports on mobile competition, broadband deployment, and video competition.[8] Indeed, that data is the basis on which the agency, by its own rules, is already supposed to weigh the costs and benefits of requested license transfers. But meaningful, data-driven analysis has given way to increased deference to a mechanical formula without meaning or objectivity, masking the absence of real analysis or cynically justifying a conclusion already reached.

V. CONCLUSION

The misguided reliance on the spectrum screen, as the FCC itself now recognizes, has potentially and unnecessarily made more hostile an already difficult business environment for communications companies. Together with other defects in the agency's unstructured transaction review—including manipulation of the review calendar, extending the scope of reviews to include ancillary agreements, and unprincipled use of conditions to achieve unrelated regulatory and political goals—it has damaged the FCC's reputation as an independent agency. In many cases, the agency has almost certainly exceeded its legal powers, and in ways that are practically or procedurally non-reviewable.

The agency's expanding presence, ironically, is an indirect result of its own errors and inefficiency in providing spectrum sufficient to meet voracious demand. Thanks to the FCC's mismanagement of the airwaves, we can expect more, not fewer, mergers among carriers—necessitating more, not fewer, agency reviews. Even as T-Mobile USA announced its acquisition of MetroPCS, for example, news reports surfaced that Sprint was considering its own, perhaps hostile, takeover of the smaller carrier, reports that were soon followed by Softbank's offer to acquire70% of Sprint. The stage is set for more charged and politicized battles over spectrum—the outcome of which may be determined by the FCC's ungrounded and unpredictable review process.

Rather than expanding the FCC's unstructured approach to transaction reviews, we should be reining it in. In particular, we should wherever possible leave to the Department of Justice's experts the task of evaluating the competitive consequences of proposed transactions.

[8] *See*, e.g., Larry Downes & Geoffrey A. Manne, *FCC Mobile Competition Report is One Green Light for AT&T/T-Mobile Deal*, BNA DAILY REPORT FOR EXECUTIVES, 132 DER B-1 (July 11, 2011).

That, at least, would be the better way to serve the "public interest."

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Downes: FCC at a Crossroads

By Larry Downes
March 13, 2013, 6:49 p.m.

As the once-separate wired and wireless communications networks for voice, video and data converge on the single Internet Protocol standard, the Federal Communications Commission stands at a crossroads. It can serve as midwife in the transition to next-generation networks. Or the agency can put on the blinkers and mechanically apply regulations designed for a bygone era.

FCC Chairman Julius Genachowski, for one, believes the agency is clearly on the side of the future. In an op-ed last week in The Wall Street Journal, the chairman took justifiable pride in the focus his agency has demonstrated in advancing America's broadband advantage, particularly for mobile users.

Mobile broadband has clearly been a bright spot in an otherwise bleak economy. Network providers and their investors have spent more than a trillion dollars since 1996 building next-generation mobile networks, essential for today's high-bandwidth ecosystem of innovative products and services.

Mobile broadband is entirely dependent on the continued availability of new radio spectrum. In the first five years following the 2007 introduction of the iPhone, mobile data traffic increased by 20,000 percent. No surprise the 2010 National Broadband Plan conservatively estimated that mobile consumers desperately needed an additional 300 megahertz of spectrum by 2015 and 500 MHz by 2020.

With almost all usable spectrum long allocated, the plan acknowledged the need for creative new strategies. But so far, despite initiatives to employ TV "white spaces" and the passage early in 2012 of incentive auction legislation, almost no new spectrum has been freed up. The last significant auction was in 2008, based on capacity made available in the digital television transition.

The "shared" spectrum the agency has recently been touting would have to be shared with the Department of Defense and other agencies, which have stonewalled a 2010 executive order to vacate unused or underutilized allocations. (The federal government is, by far, the largest holder of usable spectrum today, possessing as much as 60 percent of the total.)

And after more than a year of ongoing design, there is still no timetable for incentive auctions to reassign spectrum being wasted by over-the-air TV broadcasters, who may in any case refuse to cooperate.

Even in the best-case scenario, it will be years before significant new spectrum becomes available for mobile devices. In the interim, the mobile revolution has been kept alive by creative use of secondary markets and by mergers and acquisitions. But not all transactions have been approved. And efforts to reallocate or reassign underutilized satellite spectrum are languishing. Delays are endemic.

So even as the FCC pursues its long-term plans for spectrum reform, the agency must redouble efforts to encourage optimal use of existing resources. The agency must accelerate its review of secondary market transactions, and place the immediate needs of mobile users ahead of hypothetical competitive harms that have yet to emerge.

In conducting the incentive auctions, unrelated conditions and pet projects need to be kept out of the mix, and qualified bidders must not be artificially limited to advance vague policy objectives that have previously spoiled some auctions and unnecessarily depressed prices on others.

Let's hope Congress holds Genachowski to his promise to "[keep] discussions focused on solving problems, and on facts and data ... so that innovation, private investment and jobs follow." We badly need all three.

Larry Downes co-authored "Big Bang Disruption" with Paul F. Nunes in the current issue of the Harvard Business Review. Downes' most recent book is "The Laws of Disruption," published by Basic Books.

CNET News

Averting a spectrum disaster: Now for the hard part

With new legislation authorizing incentive spectrum auctions, it's tempting to think the crisis in mobile broadband has been avoided. But it will take at least 10 years to put new spectrum to work, and the FCC's own estimate is that we have only three years left before hitting the wall.

by Larry Downes | February 25, 2012 2:37 PM PST

With the passage last week of legislation authorizing the FCC to conduct new spectrum auctions [http://www.cnet.com/8301-30686_3-57379723-266/spectrum-auction-compromise-part-of-payroll-tax-cut-bill/], you might think that the looming spectrum crisis [http://www.cnet.com/8301-30686_3-57379526-266/how-politics-inflame-the-spectrum-crisis/] has been averted.

Nothing could be farther from the truth--or more dangerous to the continued health of the mobile ecosystem.

To avoid severe service interruptions or outright collapse of mobile networks, the FCC's 2010 National Broadband Plan [http://www.broadband.gov/plan/] estimated that mobile users will need an additional 300MHz of spectrum by 2015 and an additional 500 MHz by 2020. Many industry insiders believe these estimates are actually low.

The FCC now has the authority to conduct auctions to get that capacity into the hands of mobile carriers. The problem is that we don't have anywhere near that much usable spectrum left.

The frontier is now closed

Barely a blip a few years ago, mobile broadband is growing at an astronomical pace. AT&T reports that since offering the iPhone on its networks in 2007, data volumes had increased by 8,000 percent by 2010 [http://www.cnet.com/8301-30686_3-20085179-266/is-at-t-considering-throttling-heavy-data-users/]. According to a report last week from the White House Council of Economic Advisers (PDF [http://www.whitehouse.gov/sites/default/files/cea_spectrum_report_2-21-2012.pdf]), mobile data traffic will increase twenty-fold between 2010 and 2015.

Existing networks simply cannot handle that increased demand without access to more bands of usable radio spectrum.

That would have been easy in the old days. Radio frequencies were plentiful, and users were few and far between. But as George Mason University economist Thomas Hazlett noted last week in Washington [http://hudson.org/index.cfm?fuseaction=hudson_upcoming_events&id=921], after 85 years of handing out spectrum licenses, often at minimal charge to the licensee, the U.S. has run out.

We don't have 500 or even 300MHz of usable spectrum left to auction, at any price. Today's available inventory is closer to zero.

The problem is that we don't have anywhere near that much usable spectrum left.

While technological innovation expands the range of usable frequencies, there's no doubt among engineers and policymakers that as things stand today, mobile users will soon hit a very unforgiving wall. The "frontier" is closed, just as historian Frederick Jackson Turner concluded about the American West in 1893. Going forward, spectrum will no longer be allocated. It can only be reallocated.

How have we come so perilously close to running out of spectrum? Part of the problem has to do with the FCC's increasingly outdated licensing system. Assignments have historically been based on transient and idiosyncratic criteria that favored once-promising new applications and technologies (e.g., UHF television, pagers, satellite radio).

This "command and control" model has resulted in a badly splintered and increasingly unmanageable allocation table of more than 50,000 localized licenses. Many of these licenses arbitrarily limit their use of spectrum to applications that have faded or disappeared, but there's no easy mechanism for reclaiming spectrum that could be put to better use. The FCC doesn't even have a working inventory [http://www.cnet.com/8301-1035_3-20038572-94.html] of all its licenses.

(The federal government itself holds vast swaths of spectrum, much of it warehoused, but no central authority has the power to free up under- or unused bands.)

New auctions aim to dislodge underutilized frequencies

In the 1990s, the FCC finally shifted to an auction model, removing some of the whimsy from the process and, not incidentally, generating billions of dollars for the Treasury. But the agency still has a hard time resisting old temptations. Instead of picking winners and losers directly, the FCC now attaches conditions or limits auction eligibility to micromanage emerging markets and industries--or try to in any case. One result of this tinkering has been that several recent auctions failed to meet their reserve price.

The legislation enacted last week will curb some of these abuses. It will also test a novel approach to reallocating existing spectrum licenses. Over-the-air television broadcasters, who hold spectrum particularly well-suited for mobile broadband uses, will be asked to name a price to give back some or all of their current allocations.

If enough volunteers come forward, the agency will auction off that spectrum to mobile providers--or anyone else, including other broadcasters--who values the frequency more than the current licensee. The government will then share the proceeds of the auctions with the participants, reducing the deficit and redirecting spectrum to higher-valued uses.

New licenses will come with flexible use permission, making it easier for future market transactions to reallocate it again when future applications or technologies find a better use. (Existing spectrum licenses can be sold today on secondary markets with FCC approval, but use limitations and conditions still apply.)

The federal government itself holds vast swaths of spectrum, much of it warehoused, but no central authority has the power to free up under- or unused bands.

This "incentive auction" model is promising, and Congress and the FCC are to be commended for passing this critical legislation after two years of logjams and tangential fights that kept even bipartisan proposals stalled.

But the law doesn't come close to solving the spectrum crunch--not by a long shot.

For one thing, it isn't at all clear that enough broadcasters will volunteer. Over-the-air viewership has fallen dramatically over the last two decades as over 90 percent of all households shifted to cable, satellite, and now broadband Internet alternatives. But the economics of local television stations are complicated. For example, federal law allows local broadcasters to force cable providers to carry their signal or negotiate a price for retransmitting it. Careful exploitation of this right often masks what are actually failed businesses.

And while the FCC will have the ability to "repack" nonparticipating channels to create contiguous nationwide licenses, that process will be long and contentious. In the lead-up to passage of incentive auction legislation, broadcasters lobbied intensely to limit the agency's ability to maximize auction outcomes. The lobbying will only get more aggressive as the FCC gears up to design the new system.

Time now for the short and medium-term solutions

At best, it will take upwards of 10 years before significant new spectrum for mobile broadband can be deployed from the incentive auctions. And we're already two years into the FCC's own doomsday clock toward spectrum exhaustion.

So now that the legislative battle is over, it's well past the time to think about short and

medium-term plans to stave off an epic failure of the mobile revolution. The stakes are high. The mobile industry is one of the few bright spots in the otherwise sour economy. According to a recent Deloitte study [http://www.deloitte.com/us/impactof4g] , investment in 4G networks could range from $25 billion to $53 billion over the next four years, generating up to $151 billion in GDP and as many as 771,000 new jobs. And that doesn't count the revenue from app stores and the services they make possible.

So what can we do while waiting for the incentive auctions to get under way? Until recently, carriers in need of more spectrum could merge with other carriers to achieve economies of both scale and technology. In the past six years, the FCC approved nearly a dozen mobile mergers, nearly all of which were motivated by the need to make better use of limited mobile bandwidth.

But in rejecting AT&T's proposed merger with T-Mobile last year [http://www.cnet.com/8301-30686_3-57332490-266/at-t-and-t-mobile-merger-madness-recap-faq/] , the FCC sent an unmistakable signal that it will no longer allow market transactions as a work-around to its own plodding and sclerotic mismanagement of the nation's airwaves. The battle is heating up, for example, over Verizon's pending acquisition of AWS spectrum [http://www.cnet.com/8301-13506_3-57382918-17/t-mobile-asks-fcc-to-block-spectrum-sale-to-verizon/] from a consortium of cable companies. T-Mobile, ironically, is now aping the familiar claim that allowing Verizon to purchase any additional spectrum will harm competition. The spectrum being transferred, however, is not currently being used for anything [http://www.cnet.com/8301-1035_3-57335486-94/verizon-wireless-nabs-cables-wireless-spectrum-for-$3.6b/] .

Besides more spectrum, the most significant way a mobile broadband carrier can enhance performance and capacity is to add more cell towers and upgrade antennae at existing sites to improve network density and site efficiency. Mobile carriers already spend billions of dollars each year to upgrade and expand their core infrastructure. They would spend even more--if only local zoning authorities would let them.

The law doesn't come close to solving the spectrum crunch--not by a long shot.

They won't. Despite a 2009 FCC rule requiring local authorities to decide on cell tower modification and construction requests within 90 and 150 days respectively, thousands of applications are languishing in political limbo [http://www.cnet.com/8301-1035_3-20102911-94/does-your-iphone-service-suck-blame-city-hall/] . A U.S. Court of Appeals in Texas recently upheld the FCC rule, but it has rarely been enforced.

Areas with some of the most vocal complaints about existing network quality, not surprisingly, also have the worst record for approving applications, even to add equipment to existing towers. A 2009 study from wireless industry group CTIA [http://reviews.cnet.com/CTIA/] published just before the FCC's "shot clock" was imposed found that cell tower applications in the San Francisco Bay Area were regularly stonewalled for 28 to 36 months. Nationwide, according to the FCC, "of 3,300 pending zoning applications for wireless facilities, more than 760 (nearly one quarter) had been pending for more than a year and 180 had been pending for more than three years."

The new federal law authorizing incentive auctions took some modest steps toward curbing these abuses. [http://www.commlawblog.com/2012/02/articles/cellular/congress-requires-statelocal-rubber-stamp-approval-of-some-wireless-tower-modifications/] That's a good starting point. But coordinated state and federal action will be needed to collapse the black hole of infrastructure zoning delays.

Improving spectral efficiency will also require clear-cutting generations of other encrusted and obsolete rules at all levels of government. In 2010, for example, the FCC cleared the use of the "white spaces" [http://www.cnet.com/8301-30686_3-20017435-266.html] between television channels for unlicensed wireless technologies. The agency didn't approve the first new device to use white space until late last year, however [http://www.engadget.com/2011/12/22/fcc-approves-first-white-space-device-and-database-for-wilmingto/] . Quick approval of spectrum transfers, more flexible licensing, and relief from onerous wireline regulations that limit the use of fixed networks as both support for and competition with mobile services also need to happen, and quickly.

Mobile broadband providers will also have to rely on technological solutions to improve network performance. A wide range of innovations, including smart antennae that can easily switch bands, miniature cell towers, home-based femtocels

[http://www.cnet.com/8301-30686_3-20022685-266.html], and software that allows multiple uses of the same bands without interference are all being deployed to make better use of existing allocations. Smartphones can also be programmed to switch from cellular networks to local Wi-Fi, offloading wireless traffic to high-capacity wired networks whenever possible.

Incentives for consumers, both carrots and sticks, could likewise help stave off network failure. Providers will need to offer more incentives to quickly retire older mobile technologies. Since each new generation of cellular protocol makes more efficient use of spectrum than its predecessors, getting customers off 2G and 3G networks and onto 4G (especially 4G LTE) networks will save considerable bandwidth.

LTE, for example, can handle roughly six to eight times the capacity of a 2G network [http://money.cnn.com/2012/02/24/technology/spectrum_crunch_solutions/index.htm?iid=GM]. Some of those savings would be lost to users taking advantage of video and other high-bandwidth services available on LTE, but not so much as to use up all the increased efficiencies.

Graduated or tiered bandwidth pricing, likewise, discourages excessive network use by a few extreme customers [http://www.cnet.com/8301-30686_3-57368590-266/at-t-gives-heavy-data-users-a-not-so-subtle-hint-to-ditch-the-unlimited-plan/], especially at peak times.

Coordinated efforts are key

This is only the start of a much longer list of important initiatives. Short- and medium-solutions to the spectrum crisis are possible, but won't come easily. Avoiding disaster in the mobile ecosystem requires a combination of smart technology investments, innovative business practices, and policy reforms likely to offend vested interests.

Each is valuable on its own, but coordination will be crucial if we are to improve spectral efficiency enough to keep mobile users going while we wait for the incentive auctions to run their course.

Even if we get through the next few years, it's clear that staving off future crises will require radical changes to spectrum management. The patchwork quilt woven by 85 years of quixotic and often political decision-making has left U.S. airwaves dangerously inflexible and unnecessarily fractured. The accelerating pace of technological innovation is on a collision course with command-and-control assignment of spectrum. Something has to give.

For the long term, we need to rethink the entire spectrum map. Given current and future advances in radio technologies and software, in fact, we may soon find we won't even need a map--or a regulator that believes it can do a better job allocating spectrum in fits and starts than a market that runs on Internet time.

That assumes we survive the current, largely self-inflicted crisis. First things first: regulators have much more work to do to clean up the current mess.

[http://www.cnet.com/profile/LOD3/]

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Larry Downes [http://larrydownes.com] is a consultant and author. His books include "Unleashing the Killer App [http://www.amazon.com/Unleashing-Killer-App-Strategies-Dominance/dp/087584801X]" and, most recently, "The Laws of Disruption: Harnessing the New Forces that Govern Life and Business in the Digital Age [http://www.amazon.com/Laws-Disruption-Harnessing-Business-Digital/dp/0465018645]."

Forbes

Larry Downes, Contributor
I cover the Internet industry

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A Strategic Plan for the FCC: The Future Ain't What it Used to Be

The Stovepipe Syndrome

Since Republicans retook the House in 2010, the overreach of regulatory agencies has been a central theme of the new Congress. But no agency has taken as much heat as the FCC, whose Chairman continues to be one of the most frequent guests of President Obama at the White House.

The clumsy and unprecedented release last week of the FCC staff's draft analysis of the AT&T/T-Mobile merger was just the latest in a recent series of bizarre actions by the agency. Over the last few years, the FCC has become increasingly untethered, drawing unwelcome scrutiny of its legal obligations as an independent regulatory agency, immune to political pressure from the White House or interest groups.

While FCC Chairman Julius Genachowski deserves praise for last year's visionary National Broadband Plan and the initiation of long overdue reforms of key agency programs and processes, critics have ample reasons to doubt the agency's independence and in some cases its professionalism.

Last year's net neutrality debacle, for example, distracted much of the agency staff from more urgent matters for over a year. Other examples include implausible conclusions drawn in recent agency reports that consumers were not adopting broadband Internet and that the mobile services industry was not "competitive." The agency also raised eyebrows about the handling of its recent order reforming the bloated and antiquated Universal Service Fund, which doubled in length in the few days before its release.

These incidents have led many to the obvious question: is the FCC's expert staff of engineers, economics, and legal experts being manipulated or overruled to support a political agenda?

Unfortunately, that appears to be the inescapable explanation for at least some of the agency's strange behavior.

But something deeper and more disturbing is happening. The the agency has many opportunities to stray, largely because, when it comes to broadband and the Internet revolution more generally, the FCC has no playbook to work from. The Commission, quite simply, has lost the ability to keep up with the remarkable pace of innovation in communications technology – the same technology whose deployment the FCC was created to facilitate.

Congress is partly to blame. It last made significant changes to the agency's charter in 1996, well before the Internet revolution reshaped the landscape of telephone, radio, television, and mobile communications. Those innovations, which have spawned an almost magical new world of information interactions for U.S. consumers, also render obsolete much of the agency's governing law.

The failure of communications law to keep up—perhaps inevitably, given the high-speed pace of technological innovation–has undermined the agency's ability to pursue its prime directive to "make available…rapid, efficient, Nation-wide, and world-wide wire and radio communication services with adequate facilities at reasonable charges." Everything from the FCC's organization chart to its management paradigm for allocating radio spectrum has mutated into perilous anachronisms.

The release of the draft report (not to mention its dubious analysis), which the agency's five Commissioners had never reviewed or voted on, is yet another sign that the FCC has lost its way. The agency, lacking clear direction from Congress, is simply improvising, and dangerously so.

While FCC reform efforts moving through Congress now are an admirable start, the inescapable reality is that something more—much more—is needed. The FCC, as presently configured, can't catch up to the reality of the Internet, let alone keep pace with it. Its approach to today's vibrant and expanding communications industries is more stone age than information age.

What's needed is a bold new strategy. And the one piece of good news is that for the most part, a sensible, straight-forward strategic plan for a 21st century FCC has already been written. Indeed, as we'll see, it has been sitting on the Chairman's shelf since 1999.

Ready for Reform Yet?

Last week on CNET, I noted that the timing of the AT&T/T-Mobile report's release was the opposite of fortuitous is, in that it comes just as Congress is moving forward with legislation that would modestly reign in the agency's free-wheeling ways.

Also last week, House Energy and Commerce Committee subcommittee Chairman Greg Walden (R-OR.), one of the agency's closest overseers in Congress, introduced spectrum reform legislation, paralleling legislation already passed out of committee in the Senate from Sen. Rockefeller (D-WV) and Sen. Hutchison (R-TX.).

Rep. Marsha Blackburn (R-TN.) is to be commended for her successful amendment to the spectrum bill, by the way, prohibiting the FCC from attaching net neutrality or mandatory wholesaling conditions to future auctions that come out of the voluntary system envisioned by Walden's bill.

This is no mere spite for the agency's poorly-managed net neutrality

rulemaking last year. As I've written before, an important study from Prof. Gerald Faulhaber and Prof. David Farber, the FCC's former chief economist and chief technologist, respectively, found that the addition of such conditions to the C block of the 700 Mhz. auction in 2008 (the last major auction the agency conducted) reduced the winning bid by 60%–a few billion dollars that would otherwise have gone into the Treasury. (Those conditions were only added late in the design of the auction, largely at the request of Google, who in the end didn't win any licenses.)

Beyond the money, the "open access" conditions have opened Verizon, the winning bidder, to frivolous threats and FCC complaints. Advocacy groups have charged that curated app stores violate open access. If so, Verizon could not offer an iPhone on its LTE network. (Apple's exclusive control of the iPhone app store, it is argued, denies users the right to install applications of their "choosing.") Regardless of the merits of such complaints (there are none), by the time the FCC got around to codifying the net neutrality rules two years later, it built in an explicit exception for app stores.

The later regulations don't solve Verizon's headaches, however. Like the agency's wide-ranging merger conditions (such as those imposed on the Comcast-NBC Universal merger), conditions attached to spectrum auctions act as a kind of one-off regulation. For lawyers, they are gifts that keep on giving, even when they differ from later, more considered agency rulemaking applied industry-wide.

The unrestrained tendency of the agency to pile on unrelated requirements and personalized regulation to individual transactions creates a hodge-podge of inconsistent rules applied to different providers at different times. Blackburn's amendment, if it becomes law, would limit the agency's "flexibility" to add some kinds of conditions to future spectrum auctions.

Reading the AT&T/T-Mobile Report: A Steampunk View of the Mobile Ecosystem

The substance as well as the process of the draft report on AT&T/T-Mobile provides even more evidence that the FCC has lost its way. As my colleague Geoffrey Manne has already pointed out, the agency's dogged determination to find reasons to block the merger led to a report that was more theater of the absurd than expert analysis. The report is a mess, figuratively and literally—the PDF is just an image scan, which can't be searched or easily quoted.

Seeming to start with the conclusion that the transaction was not in the public interest, the staff report needed some way to show that the merger would inflict serious harm to consumers without providing any positive benefits whatsoever.

To do so, the agency adopted a crabbed and dismal view of the mobile marketplace, more 19th century than 21st century. The report evaluates the transaction as if mobile technology were stagnant, demand was flat, and the only competitive pressure on AT&T came from the three other "national carriers." There are no local or regional carriers, no pay-as-you-go plans, no iPhone, no Android, no Angry Birds—in short, nothing that the rest of us know actually drives consumer behavior in this most dynamic and uncontrollable market.

This Dickensian picture the report paints of a few national carriers carving up the market among themselves, with consumers helpless to find even a second

provider to switch to, is almost a steampunk version of the real mobile ecosystem. It projects a frozen version of today's technology into a past that never existed.

The anachronistic view of the mobile ecosystem is a necessary fiction, one that allows the agency to exaggerate competitive harm by relying exclusively on a few outdated and largely discredited mathematical models. These include the Herfindahl–Hirschman Index, a 1940's era calculation that estimates the level of concentration in a given industry by mechanistically summing the squares of market share and assuming certain results predict "concentrated" or "highly concentrated" conditions that would result from a merger.

The staff also employ a "spectrum screen" that adds up the amount of spectrum the merged entity would control. But the screen ignores the fact that different bands of spectrum have different technical properties that determine how it can be used. It is inherently an apples and oranges comparison.

Assuming that only Verizon, AT&T, Sprint and T-Mobile exert any influence on mobile consumers allows the agency to fudge the HHI and spectrum numbers, leading to the patently ridiculous conclusion that the market power of a combined AT&T/T-Mobile would be so overwhelming that harm to consumers can simply be assumed. This directly violates the antitrust principles the FCC claims to be following. And there is no basis for the agency's rationale for cooking the numbers to begin with.

Why rely on proxies, in any case, when there's plenty of real-world data on mobile competition available? Using abstract estimates when actual data is available, of course, makes sense only if you're desperate to reach a particular outcome. Which is what happened here. As Nobel prizewinning economist Ronald Coase famously said, "If you torture the data long enough, nature will always confess."

But as every consumer knows, the untortured data tells a very different story. A world of four national providers who call all the shots is not the mobile universe in which we live or have ever lived. Competition in mobile is much more complex and sophisticated, affected in critical ways by a wide range of inputs besides the customer base or spectrum holdings of "national" carriers.

Consider some of the competitive factors the draft report simply ignores:

1. Regional and local competitors – Most consumers choose their carrier based on local alternatives; we don't buy based on the strength of nationwide coverage. At the local level, 90 percent of U.S. consumers can choose from five or more carriers for voice; 80 percent have three or more choices for mobile broadband. The potential absence of fourth-place (and falling) T-Mobile would hardly leave its customers with no option but to pay whatever price AT&T decides to charge.
2. Device manufacturers – The availability of particular tablets and smartphones on a network plays a significant role in which carrier a consumer chooses. From 2008-2009, for example, 38 percent of those who switched carriers did so because it was the only way to obtain the particular handset that they wanted.
3. Operating system developers – Availability of a particular operating system (iOS, Android) also plays a significant role in customer decision-making. Android captured 20% of the mobile O/S market in the first six months of its availability, giving Google considerable leverage in the market overall.
4. Apps – Consumers also make choices based on the availability of preferred apps, including music, video, geolocation, and social networking services. The most

popular activity by far for today's smartphone users are games. Angry Birds, Tetris, Farmville et. al. rule, not the networks that provide them.

5. Enhanced spectrum – Technology has continued to make more bands of spectrum usable for more types of communications. Clearwire, recently rescued by Sprint, offers mobile broadband using higher bands and the WiMax protocol; LightSquared and now Dish Networks will use satellite spectrum to offer 4G service. The LTE protocol is also a game-changer. As a more efficient user of spectrum, carriers are eager to make it available to their customers.
6. Available spectrum and cell tower infrastructure – Carriers continue to invest billions every year in enhanced infrastructure. But customer satisfaction is still highly constrained by government mismanagement of spectrum (more on this in a moment). At the local level, high degrees of incompetence and even corruption in approving applications to add towers or antennae also makes it difficult for network operators to make the best use of the spectrum they have. At the end of 2009, over 3,000 applications to add or modify cell towers and antennae had been pending for over a year; many for over three years.
7. Off-the-charts demand for capacity – Carriers are also pressured by incredible increases in demand for mobile broadband. Since the introduction of the iPhone, AT&T has seen over 8000% increases in data traffic. The push to merge with T-Mobile comes not from monopolistic goals but to solve the problem of satisfying insatiable demand without more spectrum and more towers to build an LTE network to compete with Verizon. The staff report, on the other hand, begins and ends with current usage levels.
8. No-contract carriers – As capacity constraints push contract carriers to curtail unlimited data plans, competition from no contract or "pre-paid" providers including MetroPCS and Leap has intensified. The distinction between pre- and post-paid networks is increasingly meaningless, but the staff report ignores all the no contract carriers.
9. Inter-modal competition from wired carriers – By 2010, 25% of all U.S. households relied exclusively on mobile connections for home voice service ("cutting the cord."). As high-speed, high-capacity LTE networks (and whatever comes after LTE) are deployed, mobile carriers will increasingly compete for with wired carriers for the same customers, including traditional phone and cable companies. The pool of competitors is expanding, not contracting.

Mobile Competition is Driven by Technology, not Other Mobile Network Operators

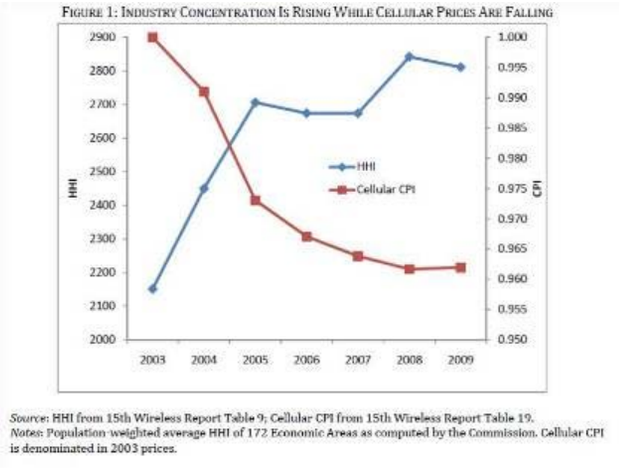
These and other competitive dynamics left out of the staff report can be easily summed up: Disruptive technological change, not three other arbitrarily-selected carriers, is what really disciplines mobile prices and service offerings. Consumers hold considerable leverage in this upside-down market, with carriers not at the top but rather near the bottom of the food chain. Legacy providers including Verizon and AT&T are scrambling to reduce their losses in legacy business even as competitive pressure and next-generation technology in the mobile ecosystem keeps prices across the board (voice, text, data) falling, falling, falling.

Even without the AT&T/T-Mobile merger, HHI and spectrum concentrations are already high, and have been rising for years. Despite that rise, fueled in part by nearly a dozen wireless mergers in the last five years, prices keep falling. But for the FCC that's just a detail, or at best a footnote. All this and so much more is simply wished away in the staff report, which clearly began with the conclusion and worked backwards, throwing out inconvenient truths when necessary, which was frequently.

Which is especially strange given that all of the facts just cited came

from the very same FCC staff who wrote the draft report that ignored them. As I wrote at length when the report was released over the summer, the FCC's 15th Mobile Competition Report provided comprehensive, sober analysis that demonstrated just how competitive and dynamic the mobile ecosystem is and will continue to be.

For simplicity sake, let's boil the real-world data down to one chart, taken from the superb analysis of the Mobile Competition Report from Faulhaber, Hahn and Singer:



There you have it. Measured simply by HHIs, the mobile industry has been "highly concentrated" since 2005, at rates (greater than 2500) the draft staff report now says triggers a "presumption" of "harm to competition." (Willfully misquoting, by the way, the Department of Justice's Horizontal Merger Guidelines, which in any case say that such levels trigger only a likelihood of enhanced market power, not necessarily harm).

Yet despite those levels of concentration, prices for voice, text, and data have continued to plummet. (The tailing off at 2009 is illusory—the 15th Mobile Competition Report intentionally avoided available 2010 data, which showed the trend continuing down.)

Even a mobile ecosystem that is "highly concentrated," at least as measured by HHIs, doesn't seem to have harmed consumers. That's because there are plenty of other sources of competition in the market beyond direct competitors, sources well documented by the FCC itself. Put more simply, concentration measured by HHIs has become a worthless tool in evaluating mobile competition.

So why does the same agency, just a few months after issuing its mobile competition report, rely so heavily on the finding of high HHI numbers to support its conclusion that the merger will do untold damage? And why does it ignore all of its own findings of the actual conditions of the market? The conclusion of a fixed fight is inescapable.

It's almost as if there are two different FCCs existing in the same universe.

One sensibly and professionally crunched the numbers for the 15th Mobile Competition Report. The other, its dark and dangerous doppelganger, willfully ignored, fudged, or mishandled the data from the real bureau. The former represents the independent FCC, a shadow of its former self. The

latter, it seems, represents the future—results-oriented, political, operating from an agenda nowhere to be found in its governing law.

The Stovepipe Syndrome

Let's tie these threads together: Crazy merger and spectrum auction conditions; schizoid dismissal of its own data in favor of ancient mathematical proxies; the botched and unprofessional net neutrality rulemaking; irregularities in the USF order; and the unprecedented release of the AT&T/T-Mobile draft staff report.

Why are the agency's infidelities getting more frequent and more brazen?

Part of the problem, as noted, is an growing tendency for the FCC to stray from its Constitutional duty to remain independent of the White House. Increased regulation of broadband provisioning (net neutrality, et. al.) and aggressive enforcement of antitrust laws (Comcast-NBC Universal, AT&T-T-Mobile) are clearly priorities for President Obama—priorities which the independent FCC Chairman seems unduly willing to buttress.

When the agency strays, we can guess the direction it will take. But it's too easy just to stop there. The more essential question to ask is why has it become so easy—so tempting–for the FCC to pursue someone else's mission?

The answer is that the agency's actual charter has become hopelessly anachronistic, leaving them with little to ground their decisions and priorities. As a function of its very structure, the FCC still views the world of communications in stovepipes—it has a bureau for broadcast TV and radio, a bureau for wired communications, a bureau for mobile (still called "wireless," as if it were a fad).

The stovepipes are organized for communications technologies in which distinct providers operated at particular frequencies to offer specific forms of communications—voice, television and radio programming, data, cellular service. Technologies, in other words, that pre-date the move to send everything digitally, using the open standards of the Internet.

The more blurred the lines, the more helpless the agency is to respond rationally. And the lines have blurred beyond all recognition. The FCC's organization makes it difficult if not impossible for the agency to see what the rest of us see – networks converging at breakneck pace onto the open, global IP standard.

Given its structure, the FCC treats every digital innovation as a special case requiring special rules. First there were special rules for Voice over IP, then for television over IP, and now for radio over IP. But these aren't exceptions. They represent the new normal. As FCC Commissioner Kathleen Abernathy presciently observed in 2004, the FCC needed to stop making exceptions and reorganize itself for a future version of communications technology and applications based on "everything over IP."

We've long-since arrived at that future. Digital convergence has erased distinctions between voice and data, between broadcast and telephone, between television, radio, and "other," between wired and wireless, between modes of transit whether copper, cable, satellite, radio, fiber, power line, between carriers private or public, single mode or intermodal. We use

computers to watch television and make phone calls; we use phones and televisions to process data. It's a brave new world, populated by wondrous creatures.

But compare that world—call it the world of consumers—to the FCC's 2011 organization chart, with separate bureaus for separate technologies and local offices to handle local requirements. The bureaus and offices reflect, in structure and law, the pre-IP world, where these differences mattered, where consumers had single-purposes devices that worked with particular content over particular communications technologies, where available content differed dramatically in different parts of the country, and where industries were separate and companies offered only one mode of communications, either of infrastructure or content.

In the FCC's world, Walter Cronkite is still delivering the nightly news, black rotary phones are still the only choice for phone services, where you rely on a pay phone to make a call when you're away from home, and pagers are the latest techie gadget.

That's all been washed away—gone with the wind. But not according to the Communications Act, which hasn't been updated significantly since 1996—just before the digital revolution got going in earnest. The law hasn't changed, and neither has the office layout at FCC headquarters.

The mismatch between the real world and the agency's official view of it is the real problem here. Every time a new problem (in Silicon Valley, we call it an "innovation") comes up—Voice over IP, cable Internet, mobile broadband–the Communications Act and the structure it imposes on the FCC offers the agency's staff no guidance. Political forces want the FCC to take partisan positions. Entrenched players want the agency to stop the upstarts, or force them to abide by the same obsolete regulations that constrain legacy providers. With little else to fall back on, the FCC is left, more and more frequently, to improvise.

And as soon as it does, the agency becomes untethered from it engineering, economic, and expert staff, leaving nothing but the shifting winds of political and interest-group change to blow it around, like a plastic bag, from one tree to another.

The President promises net neutrality on the campaign trail, and the independent agency delivers, hiding behind its vague "public interest" standard. Democrats call for more aggressive antitrust enforcement, and the agency is suddenly tough on the kinds of mergers that it knows have been productive and helpful to consumers. Advocates decry the lightning-paced changes in the structure of the content creation and delivery industries, and the agency tries to hold back the flood.

The Real Spectrum Crisis

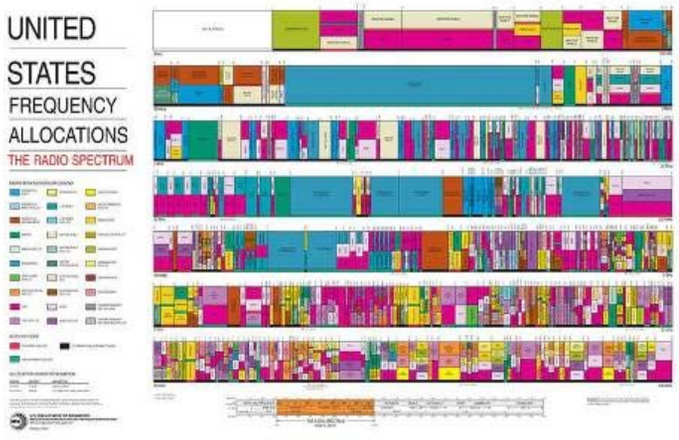
The ugliest and most visible scar left when problems fall through the gaps of the agency's stovepipes is what it's done to the nation's precious and limited resource of radio spectrum. Since the 1930's, the FCC has carved up the radio waves on the assumption that televisions, telephones, and everything else would operate in completely different ways by completely different companies, indeed, different even on a local level. Radio spectrum is not television spectrum, which is not mobile communications spectrum or satellite spectrum. Private spectrum is not government spectrum, and so on.

That philosophy has precipitated a crisis. Last year's National Broadband Plan warned of an imminent spectrum "crunch." If broadband deployment was to reach its full economic potential, U.S. consumers would need an additional 300 Mhz. of new frequency in the next five years to keep up with demand. But there isn't 300Mhz. available.

After decades of abundant frequencies to choose from, usable spectrum has all been allocated. It's now a scarce resource, a rare element. Inevitably, fingers are pointed between licensees and those who want licenses themselves over whose use would best serve the public interest. With no new fields to plow, the agency must look to see which land is lying fallow, or growing unwanted crops.

There are, everyone knows, huge swaths of underutilized bands licensed to government agencies that simply warehouse it (the justification, if one is given, is inevitably national defense). Over-the-air television broadcasters are another obvious target, since they use spectrum to transmit programs to a rapidly disappearing audience who rely almost exclusively on cable, satellite, and fiber for the same content. According to the Consumer Electronics Association, fewer than 10% of American homes now rely on over-the-air broadcast for television, down from 100% only a few decades ago.

We have a spectrum crisis, the FCC says, every chance it gets. And, looking at it from the agency's stovepipe paradigm, we do. Again, we can see the problem clearly in one chart, a simplified map of how today's spectrum is allocated:



(For a full-sized version of the chart, visit the Department of Commerce's National Telecommunications and Information Administration, which manages the spectrum allocated to government.)

The chart is the graphical representation of the agency's stovepipe paradigm and what it's done to the allocation of spectrum. There are thirty categories of allocations, including "unlicensed" spectrum that can be used for anything (your portable telephone at home, Britney Spears' wireless microphone). There are separate allocations for space research, for aviation, for broadcast television, and for maritime radionavigation. Locally and nationally, there are over 50,000 separate licenses. Between the FCC and the NTIA, there isn't even a usable inventory, let alone any kind of master plan to simplify or reform the system.

Since the 1930's, the agency has literally encoded its paradigm onto the airwaves. Every tiny band of color represents a decision, a policy choice, and a

set of assumptions that, once tattooed onto the chart, is nearly impossible to change.

The chart also makes clear the challenge. Nearly 100 years of stovepiped decision-making has been totally upended—at least in theory—by the IP revolution. Increasingly, communications traffic over every band is just digital packets, no longer distinct as to either sending or receiving technology.

At the same time, technology companies have greatly expanded the range of usable frequencies, and invented ways to compress, condense, spectrum hop, and overlay. More frequencies are now usable and interchangeable, and for a wider range of applications. Limits that required separation and specific frequencies are disappearing.

Consider what that means. If it was somehow possible to start over, today we would allocate the same frequencies to multiple uses, and rely on engineering solutions to eliminate conflicts and interference. All spectrum, in some sense, would operate as if it were unlicensed. We would get orders of magnitude more efficiency than we can from the current model. We'd let licensees adapt to changing technologies and changing applications, and allow them easy ways to leave or transfer their licenses to new users and new uses as old ones became obsolete.

Of course we can't start over. Most devices in use today are engineered to operate on fixed frequencies, and even if we could introduce smart antennas that seamlessly shift frequencies as demand and availability changed, the battery requirements of such devices would make portable devices anything but. (These limits, of course, can change.)

Today's licenses, more to the point, have been granted with essentially unlimited terms, making them valuable assets of the private and public parties who hold them. Government agencies won't give up their allocations, claiming that even unused bands are essential for national defense. Private parties expect to be compensated and should be given the investments they've made in improving their networks.

For better or worse, we need to work within this crazy quilt of allocations, at least for now. We're stuck with some version of a spectrum map, even if its existence in large part discourages the invention of technologies that would make it unnecessary.

But there's still plenty we can do to avoid spectrum exhaustion. The FCC, if Congress lets it, could unlock underutilized frequencies, perhaps by letting current licensees auction off some or all of their holdings, sharing the proceeds with the government (so-called "voluntary incentive auctions").

Licenses could also be made more flexible, allowing different modes of transport to adapt to whatever applications evolve to IP protocols. Secondary markets could be made more robust by simplifying license transfers. An inventory of existing licenses and a master plan for compressing the map (as you do when the hard drive on your computer becomes fragmented) could all be developed.

On Friday, Verizon agreed to acquire spectrum from Comcast, Time Warner and others, and also to begin joint marketing of their combined services in new packages, a further sign of both the convergence of communications and the business gymnastics required by the FCC's stovepiped model of spectrum

management. Analyst Craig Moffett called the deals part of the "complete reordering of the competitive universe as we know it today." But that reordering is only necessary because of regulatory constraints that serve no interest beyond history.

Which brings us back to the FCC's draft report on AT&T/T-Mobile. The longer the crisis goes unsolved–the longer Congress and the FCC wrangle over new authority even to begin the multi-year process of hosting "voluntary incentive auctions"–the greater the pressure on network operators to merge. That is the only rational way to increase capacity on any kind of scale.

AT&T wants to get to 4G LTE quickly, in part to compete with Verizon and in part to satisfy its customers' insatiable demand for mobile video. LTE is also a more efficient user of spectrum than the current 3G protocols, which in turn are more efficient than 2G and 1G. Getting customers to move, therefore, offers multiplied value. But it can't be done without more spectrum, and the FCC has none to offer.

Dusting off the Plan

What a mess! Too bad we never saw it coming. What a shame there was no one who, looking at the FCC at the dawn of the Internet age, could see that its stovepipes would increasingly interfere with rather than facilitate the public interest. If only there had been some hint, before 2011, that the world of communications was changing in strange and, for consumers, wondrous ways. If only there had been a plan to change the agency's orientation away from artificial technological stovepipe.

If only someone had written, in 1999:

> "The FCC is currently structured along the traditional technology lines of wire, wireless, satellite, broadcast, and cable communications. As the lines between these industries merge and blur as a result of technological convergence and the removal of artificial barriers to entry, the FCC needs to reorganize itself in a way that recognizes these changes and prepares for the future. A reorganization of the agency along functional rather than technology lines will put the FCC in a better position to carry out its core responsibilities more productively and efficiently.

But wait, someone did! That someone, remarkably enough, was the FCC, under the direction of then-Chairman William Kennard, appointed by President Bill Clinton in 1997 and who served until 2001. The quote comes from the agency's 1999 draft strategic plan, a visionary document that anticipated everything that has happened and developed detailed strategies and tactics that would have positioned the FCC to be responsive to precisely the challenges the agency now faces.

Kennard's plan came in response to a widely-acknowledged view that the Internet revolution was rendering the Communications Act obsolete. The strategic plan was written only three years after the Communications Act of 1996 passed (after years of negotiation)–the last major rewrite to date of the FCC's governing statute. But 1996 was still early days for the World Wide Web. The idea of commercial IP telephony was openly mocked, and the prospect of network operators offering "triple play" services over cable, copper, or fiber an embryonic dream. The iPhone would have been science fiction, like cloning. (Also invented while Clinton was President.)

The 1996 Act did lay some ground toward useful reform, however. It took control of the telephone industry out of the chambers of federal judge Harold Greene, where it had been stuck since the forced breakup of the former AT&T in 1984. It broke down the barrier between local and long distance (remember those?), and freed-up phone companies to offer data communications—still largely a corporate purchase.

But it didn't anticipate "everything over IP," let alone the speed with which that transformation would occur. By 1999, the future had become much clearer.

Kennard, the last FCC Chairman to be appointed by a Democratic president until Genachowski, saw it all. It was Kennard's foresight that kept monopoly-era telephone regulations away from broadband Internet, without which there simply wouldn't have been a broadband revolution to talk about today. (Last year, Chairman Genachowski flirted dangerously with undoing that decision, but a bi-partisan majority of Congress convinced him not to.)

Back to the plan. Here, in the simplest terms imaginable, is how the FCC in 1999 saw the future, a future where disruptive technology, and not artificial regulatory barriers, drove the market for communications:

> In five years, we expect U.S communications markets to be characterized predominately by vigorous competition that will greatly reduce the need for direct regulation. The advent of Internet-based and other new technology-driven communications services will continue to erode the traditional regulatory distinctions between different sectors of the communications industry. As a result, over the next five years, the FCC must wisely manage the transition from an industry regulator to a market facilitator.

That's not some wild-eyed Tea Party activist talking, but again, an FCC Chairman appointed by a Democratic President. And here he was, calmly and methodically, talking about increased competition, the breakdown of structural barriers, and the need for the FCC to facilitate rather than regulate a market that was poised to take off. If only the FCC got out of the way.

Kennard even had a plan for solving the spectrum mess. In just a few pages of the report, the strategic plan lays it all out, from flexible allocations that didn't require FCC permission to change uses, market-based mechanisms to ensure allocations moved easily to better and higher uses (no lingering conditions), even the creation of a spectrum inventory (still waiting). The plan called for incentive systems for spectrum reallocation, an interoperable public safety network, and expanded use of unlicensed spectrum. All reforms that we're still violently agreeing need to be made.

Had the plan been implemented, maybe AT&T wouldn't have to merge with T-Mobile. Maybe it wouldn't require an act of Congress (or something higher) to start a round of unconditioned spectrum auctions. Maybe fears about media consolidation, network neutrality, threats to free speech by government censors (the FCC still does that), the digital divide, consumer privacy and the rest would be allayed not by a fitful federal agency but by a wide-open, competitive market, where any provider could offer any service on dynamically-leased spectrum.

Instead of stovepipes and artificial capacity constraints, we'd have a regulation-free communications infrastructure built on a single, non-proprietary digital standard. Capacity constraints and spectrum exhaustion would be alleviated by technological innovation rather than governmental

band-aids.

It's not too late to find out. Almost nothing in the strategic plan was ever implemented. Change a few dates and names, and Chairman Genachowski could reissue Kennard's plan tomorrow, declare himself the greatest Chairman in FCC history, and retire in glory back to the private sector.

After what's happened the last few years, is there anyone who doesn't think it's worth a try?

If you've gotten this far, let me know if you think the FCC is ready for serious reform. Follow me on Twitter @LarryDownes for more.

TECH FREEDOM

"THE SPECTRUM MUST FLOW!": THE NEED FOR RULE OF REASON ANALYSIS OF SPECTRUM TRANSFERS AT THE FCC

Comments of

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TechFreedom

Geoffrey A. Manne, Senior Fellow
TechFreedom

&

Berin Szoka, President
TechFreedom

In the Matter of

Policies Regarding Mobile Spectrum Holdings

WT Docket No. 12-269

November 28, 2012

"The Spectrum Must Flow!": The Need for Rule of Reason Analysis of Spectrum Transfers at the FCC

Matthew Starr, Geoffrey A. Manne & Berin Szoka | TechFreedom[1]

Introduction

The FCC's current policies and rules regarding mobile spectrum holdings are in desperate need of an upgrade. The landscape of the wireless market has changed dramatically over the last several years, and consumers' demand for mobile broadband services is skyrocketing with little new supply [of spectrum?] coming online [available?] in the near future. If consumers' demands are to be met, spectrum must be allowed to "rise to its highest valued use." This means there must be a functional market by which spectrum can be transferred from those who currently hold it to those who value it more. In other words, to paraphrase Frank Herbert's classic novel *Dune*, "the spectrum must flow!"

But for that to happen the FCC can't sit as an impediment to consumer-welfare enhancing transactions that re-allocate spectrum to these highest valued uses. The Commission's current spectrum transfer review process is not up to the task, and some of the proposed reforms would only exacerbate the problem. Heeding Commissioner's McDowell's urging that "interested parties [] comment on the potential for negative market effects should the Commission inch down the road toward spectrum caps or other new mandates," we submit this comment to suggest that the FCC must adopt a more economically-rigorous approach to license transfer reviews — one that does not trade away effectiveness for the sake of mere administrability nor dynamic, forward-looking efficiency for the sake of the Commission's flawed vision of an optimal, static market structure.

Rather, the FCC should follow the lead of its antitrust agency counterparts and employ a "rule of reason" analysis in its review of spectrum transfers. Moreover, the FCC should defer to the comparative advantage of its antitrust agency counterparts in the review of transactions that come before both the FCC and the DOJ or FTC, and forebear from such analysis entirely except to inform and advise the DOJ's or FTC's comprehensive antitrust review. Under no circumstances should the FCC re-impose spectrum caps or other new mandates that would only serve to thwart, not encourage, the progress of our wireless markets: While the current review process is flawed, a spectrum cap would be even worse.

The Wireless Market Today

The wireless industry is thriving and growing at an unprecedented rate. As of June 2010, there were 293 million wireless subscribers in the U.S., up from just 38 million in June of 2006, and those numbers are continuing to grow.[2] Data traffic has become the driver of the wireless industry as more consumers rely on their phones for broadband with each passing day. And demand will only continue to grow as more of the population moves to smartphones and more content and applications become available via wireless broadband. Following the introduction of the iPhone

[1] TechFreedom is a non-profit, non-partisan technology policy think tank. Starr, Manne & Szoka have written and commented extensively on these issues. They can be reached at contact@techfreedom.org.

[2] These Comments draw on the Comments we filed in March 2012 on the FCC's review of the Verizon/SpectrumCo transaction, *available at* http://techfreedom.org/sites/default/files/VZ_SpectrumCo_filing_0.pdf.

2007, AT&T reported that "data volumes had increased by 8,000 percent by 2010."[3] Industry-wide, there was a 100% increase in data traffic from 2009 to 2010.[4] Looking forward, AT&T projects that data traffic will, by 2015, grow to eight to ten times its 2010 level.[5] Of particular note, as Commissioner McDowell points out, "the number of subscribers has increased from 128.4 million to 285.6 million through 2009 since the Commission sunset the spectrum cap in 2001."[6]

If data service demand projections hold, in a few short years wireless companies won't have enough spectrum to handle the traffic on their networks. As a result, we are bound to see a degradation of service, lower thresholds (in megabytes, minutes, texts, etc.) between service tiers (if not outright caps), and data prices going through the roof. Innovation will suffer on the sides of both the wireless providers and the content developers, and investment in the industry will inevitably decline. Consumers will find themselves paying more and more, yet receiving less and less for their money—the inevitable result of demand outstripping supply. The growth of the wireless industry and the development of LTE networks has been one of the great American success stories in the last four years despite the broader economic climate. And even now analysts expect that future investment will be substantial, estimating that, between from 2012 and 2016, another $25-$53 billion will be invested in the wireless industry.[7] But if industry flounders against an artificial, government-imposed shortage of spectrum, it is consumers that will suffer.

The FCC and other government entities have repeatedly acknowledged the looming "spectrum crunch." The National Broadband Plan estimated that mobile broadband will need 500 MHz of additional spectrum in the next ten years.[8] The Commission's Fifteenth Wireless Competition Report ("Fifteenth Report") predicted that "mobile broadband growth is likely to outpace the ability of technology and network improvements to keep up by an estimated factor of three, leading to a spectrum deficit that is likely to approach 300 megahertz within the next five years."[9] The obvious solution to the spectrum gap is to make more spectrum available.

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[3] Larry Downes, *Averting a Spectrum Disaster: Now for the Hard Part*, CNET NEWS, Feb. 25, 2012, *available at* http://news.cnet.com/8301-1035_3-57385202-94/averting-a-spectrum-disasternow-for-the-hard-part/.

[4] Executive Office of the President, Council of Economic Advisers, THE ECONOMIC BENEFITS OF NEW SPECTRUM FOR WIRELESS BROADBAND, (Feb. 2012).

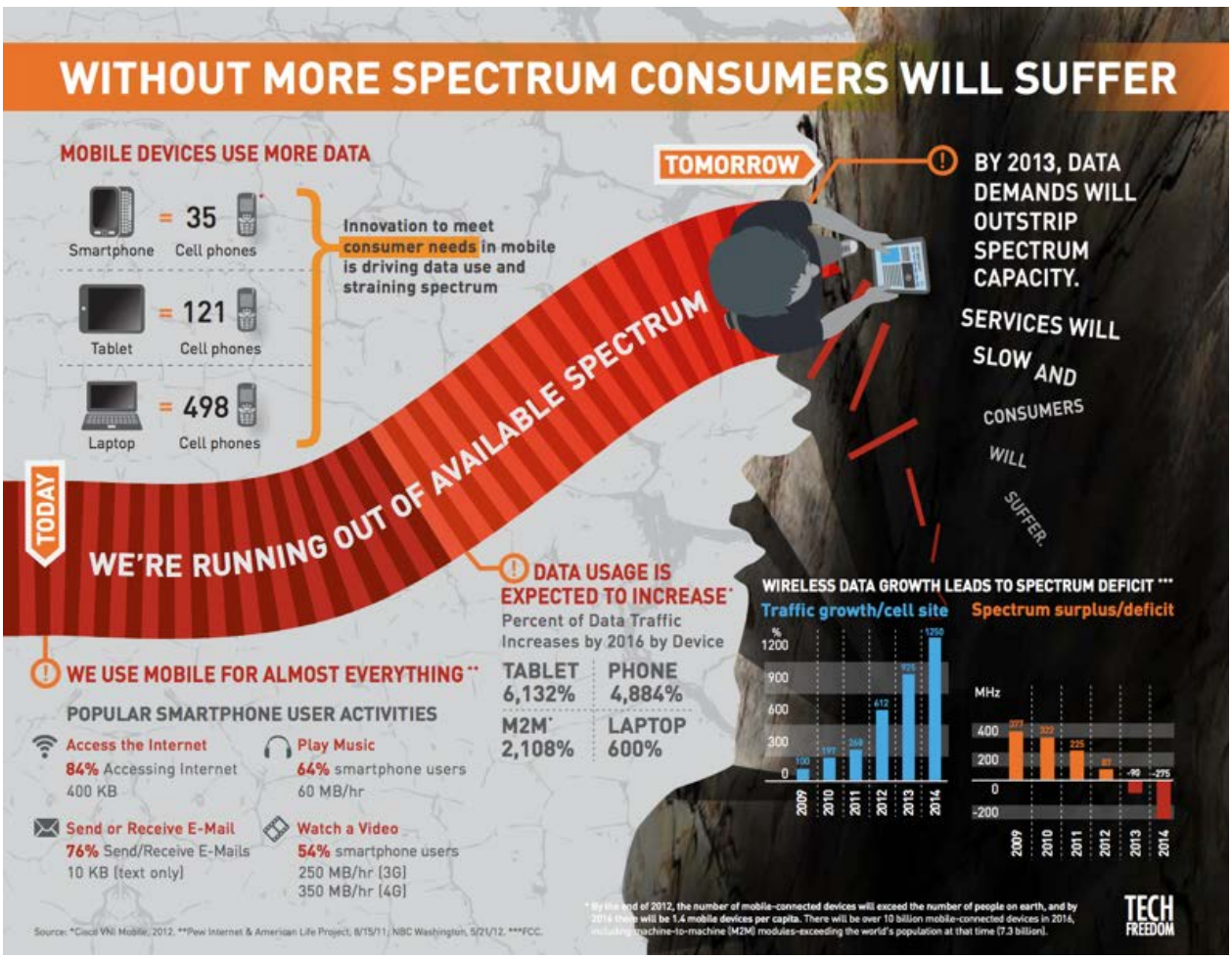
[5] Marguerite Reardon, *Is AT&T Considering Throttling Heavy Data Users?*, CNET NEWS, July 28, 2011, *available at* http://news.cnet.com/8301-30686_3-20085179-266/is-at-t-consideringthrottling-heavy-data-users/.

[6] *IN RE* POLICIES REGARDING MOBILE SPECTRUM HOLDINGS, WT Docket No. 12-269, Notice of Proposed Rulemaking, Statement of Commissioner Robert M. McDowell (2012), *available at* http://transition.fcc.gov/Daily_Releases/Daily_Business/2012/db0928/FCC-12-119A1.pdf. (*citing* 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, Fifteenth Report, 26 FCC RCD 9664, 9760 (2011) ("Fifteenth Report")).

[7] Deloitte, THE IMPACT OF 4G TECHNOLOGY ON COMMERCIAL INTERACTIONS, ECONOMIC GROWTH, AND U.S. COMPETITIVENESS, (Aug. 2011), *available at* http://www.deloitte.com/us/impactof4g.

[8] *See* FCC, CONNECTING AMERICA: THE NATIONAL BROADBAND PLAN 75 (2010), *available at* http://www.broadband.gov/plan/.

[9] Fifteenth Report, 26 FCC RCD at 9821 ¶ 267.



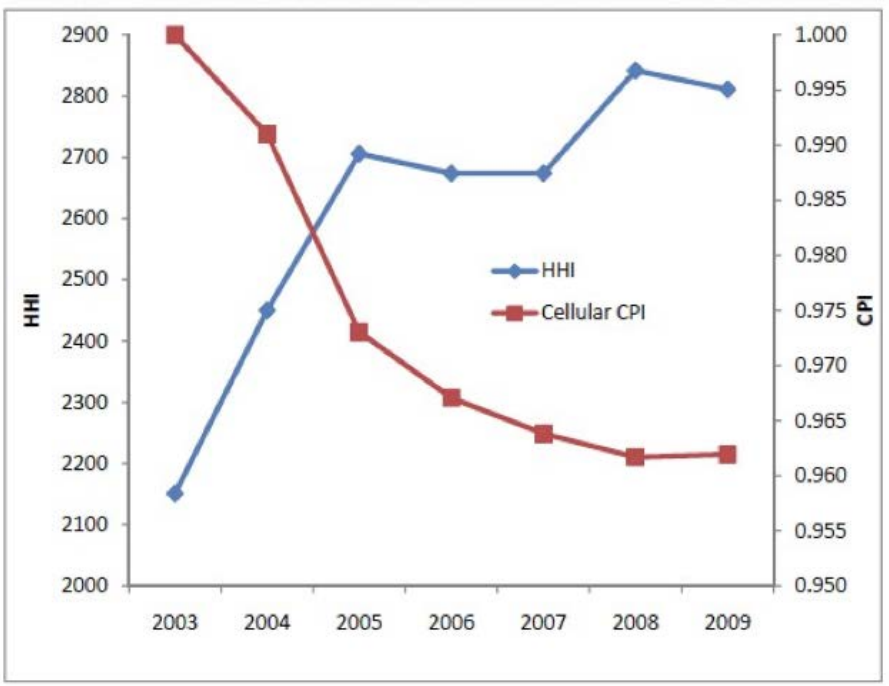
While efforts are obviously being made to get spectrum into the hands of wireless providers, the process isn't moving fast enough. There hasn't been a major wireless spectrum auction since 2008, and the FCC has no more large swaths of spectrum to auction off anyway. Congress should be applauded for passing legislation that allows the FCC to conduct incentive auctions for broadcast television spectrum, but there is no guarantee that such auctions (still several years away) will yield the amount of spectrum hoped for by the FCC demanded by wireless providers and their customers. Much has been made of convincing federal agencies to share or divest some of their spectrum, but no clear consensus has been reached on how to accomplish that effectively. Thus, the two primary means for wireless companies to obtain additional spectrum today are (1) to purchase it from other companies and (2) simply to purchase those companies.

The FCC's Current Spectrum Holding Rules Rely on Faulty Economic Principles and Presumptions

Despite these dire predictions and the manifest need for spectrum transfers on the secondary market, the FCC has stood steadfast in preserving an outdated model of evaluating mobile spectrum holdings that prevents wireless providers from expanding their networks, to the detriment of consumers. The current spectrum screen rests on the rickety premise that concentration in markets inherently leads to anticompetitive behavior, a premise that has been shown not to apply to dynamic markets such as the wireless industry.

Simply having more competitors in a market does not necessarily result in lower prices and better service for consumers, particularly in an industry like wireless that requires a massive investment in infrastructure and the acquisition of viable bands of spectrum just to get off of the ground. In fact, as the market has grown more concentrated in recent years, investment in the industry has increased and prices for consumers have decreased. The Fifteenth Report documents that since 1997, prices have been decreasing,[10] and coverage and technology have been increasing steadily in the wireless industry.[11]

FIGURE 1: INDUSTRY CONCENTRATION IS RISING WHILE CELLULAR PRICES ARE FALLING



Source: HHI from 15th Wireless Report Table 9; Cellular CPI from 15th Wireless Report Table 19.
Notes: Population-weighted average HHI of 172 Economic Areas as computed by the Commission. Cellular CPI is denominated in 2003 prices.

From Gerald R. Faulhaber, Robert W. Hahn & Hal J. Singer, *Assessing Competition in U.S. Wireless Markets: Review of the FCC's Competition Reports* (2011), *available at* http://ssrn.com/abstract=1880964.

[10] ID. at 9675 ¶ 2.
[11] ID. at 9696-97 ¶ 31.

Moreover, merely possessing spectrum licenses is only a small fraction of what it takes to succeed in the wireless industry. Making effective use of that spectrum requires towers, switches, routers, security, maintenance, customer service, innovation and risky investment in all of these. These are the factors that set AT&T and Verizon apart from the competition—not merely, as their critics would have it, their spectrum share or market capitalization. They may be the two largest holders of wireless spectrum, but they have also invested substantially more in their network infrastructure than other carriers, built out faster and more geographically-broad service, worked with device manufacturers to ensure compatibility, invested in quality control and maintenance capacity to minimize network outages, developed and employed advanced network management tools, and a whole host of other ancillary services all of which are necessary to delivering effective mobile broadband services.

A Revamped Case-by-Case Analysis Is Necessary

Rather than limiting concentration in the wireless market based on the outdated equation of market power with consumer harm, the Commission ought to enable companies to meet consumers' clamoring for more spectrum—because this is a better means of serving what should be the ultimate goal of competition policy: promoting consumer welfare. The FCC's process for evaluating spectrum holdings should reflect that shift. The process should strike a balance between getting spectrum into the market for the needs of consumers and protecting consumers from anticompetitive behavior by companies. To do so, the FCC should follow the lead of antitrust law, which has largely abandoned *per se* prohibitions in favor of empirically meaningful, economically driven merger analysis and other "rules of reason" that incorporate dynamic efficiency concerns far better than do more static, structural presumptions.[12]

A return to the *per se* (or "bright-line limit") approach to spectrum holding analysis that the Commission abandoned in 2003 makes no sense in today's competitive wireless market. As Commissioner McDowell noted in his Statement, the Commission eliminated the hard cap "after determining that spectrum aggregation limits were no longer necessary due to meaningful competition among providers of telecommunications services."[13] The impressive growth in not only the size of the wireless market over the last nine years but also its quality, affordability and geographic reach — to say nothing of the enormous amount of investment by alleged monopolists in these markets — is powerful evidence of robust competition.[14]

A hard cap on spectrum holdings would needlessly allow for zero balancing of the procompetitive, consumers benefits that future transactions could provide. Customers of the nation's two largest wireless companies, Verizon and AT&T — that is, most of us — would suffer greatly under a hard cap, as the cap would likely result in preventing these companies from adding spectrum to improve

[12] *See* Douglas H. Ginsburg and Joshua D. Wright, *Dynamic Analysis and the Limits of Antitrust Institutions*, 78 ANTITRUST L. J. 1 (2012).

[13] *IN RE* POLICIES REGARDING MOBILE SPECTRUM HOLDINGS, WT Docket No. 12-269, Notice of Proposed Rulemaking, Statement of Commissioner Robert M. McDowell (2012), *available at* http://transition.fcc.gov/Daily_Releases/Daily_Business/2012/db0928/FCC-12-119A1.pdf.

[14] *See* Fifteenth Report at 9791-94 ¶¶ 206-11. The Report notes that "Between 1999 and 2009, industry-wide capital investment by wireless providers exceeded $213 billion," and that from 2004-2009, providers invested between $20.7 billion and $27.9 billion each year. Verizon and AT&T combined to invest between $10-$13 billion annually from 2005-2009.

their service to meet current — let alone future — demand. A majority of wireless customers in America would face diminished service under such a rule. The Commission should instead retain a case-by-case process for reviewing spectrum acquisitions to be able to adjust for the nuances of each particular transaction; the spectrum screen simply is not the proper vehicle for a pro-consumer case-by-case analysis.

Problems with the Current Spectrum Screen

The first part of the screen, which uses the Herfindahl-Hirschman Index (HHI) to assess the change in market concentration as a result of a proposed transaction, no longer makes sense. Modern economic analysis has shown that HHIs (and other concentration measures) are not reliable tools for measuring competitive effects in dynamic markets with rapidly developing technologies.[15] The economic theory supporting the use of HHIs suffers from the same analytical problem underlying the FCC's analysis of spectrum transactions as a whole: They both rest on the outdated "structural presumption" that high levels of concentration in a market leads to anticompetitive prices and harm to consumers. This is particularly problematic in wireless markets, as former FCC economists Michelle Connolly and James Prieger have argued: "[t]raditional market definition analysis, based on whether a firm's price is constrained by existing competitors, can give a seriously misleading picture of competitive relations in dynamic markets with rapidly developing technology."[16]

In fact, there is ample evidence that concentration in today's wireless markets have yielded considerable benefits for consumers. As the market has grown more concentrated, prices have fallen, networks have been expanded, and there has been massive investment in the industry. And this isn't surprising: Operation of wireless broadband isn't cheap. Verizon alone has spent $65 billion building its networks[17], and there are likely considerable economies of scale driving the industry's growth. These trends run precisely contrary to the presumption that concentration harms competition and consumers.

In truth, it is impossible to know exactly what degree of concentration in this (or any) market is ideal. As the DOJ stated in its comments to the National Broadband Plan, "We do not find it especially helpful to define some abstract notion of whether or not broadband markets are 'competitive.' Such a dichotomy makes little sense in the presence of large economies of scale, which preclude having many small suppliers and thus often lead to oligopolistic market structures."[18] The FCC, too, acknowledged in the Fifteenth Report that the wireless markets can be both concentrated and highly competitive given market factors including "entry conditions [and]

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[15] See, e.g., Michael L. Katz & Howard A. Shelanski, *Mergers and Innovation*, 74 ANTITRUST L.J. 1, 22 (2007) ("[T]he literature addressing how market structure affects innovation (and vice versa) in the end reveals an ambiguous relationship in which factors unrelated to competition play an important role."); J. Gregory Sidak & David F. Teece, *Dynamic Competition in Antitrust Law*, 5 J. COMPETITION L. & ECON. 581, 588 (2009) ("[D]espite 50 years of research, economists do not appear to have found much evidence that market concentration has a statistically significant impact on innovation.").

[16] Michelle Connolly & James Prieger, *Economics at the FCC, 2008-2009: Broadband and Merger Review*, 35 REV. INDUS. ORG. 387, 404 (2009).

[17] *See* VERIZON INDUSTRY OVERVIEW, Chapter 4, *available at* http://www22.verizon.com/investor/industryoverview.htm.

[18] *Ex Parte Submission of the Department of Justice* on ECONOMIC ISSUES IN BROADBAND COMPETITION: A NATIONAL BROADBAND PLAN FOR OUR FUTURE at 11, GN Docket No. 09-51 (2009), *available at* http://www.justice.gov/atr/public/comments/253393.pdf.

degree of price and non-price rivalry."[19] And this is supported by basic economics. As Harold Demsetz has pointed out,

> Once perfect knowledge of technology and price is abandoned, [competitive intensity] may increase, decrease, or remain unchanged as the number of firms in the market is increased . . . . [I]t is presumptuous to conclude . . . that markets populated by fewer firms perform less well or offer competition that is less intense.[20]

Simply put, the wireless market, by the nature of the industry, *will* be heavily concentrated in a small number of large companies, so an analysis that starts with the presumption that market concentration is inherently bad for competition is essentially useless for ensuring its competitiveness. Nevertheless, even with barriers to entry, additional competition is continually appearing: Dish Network plans to build a 4G network in the near future (perhaps with a significant investment from Google); MetroPCS and T-Mobile are planning to merge to become a more formidable competitor; Sprint is expecting an enormous cash infusion from Japan-based telecommunications company Softbank; and, although since scuttled, LightSquared made an innovative play to offer satellite-based wireless broadband.

Further, the market today is not even as concentrated as it is often made out to be. While nationally, four carriers may comprise the bulk of wireless subscribers, on the local level — the level where customers actually make their wireless network choices — 90% of the population can choose from by five or more wireless voice providers[21] and 68% is covered by four or more mobile broadband providers.[22]

Against this backdrop the FCC imbues its HHI analysis with unwarranted power. As the Commission has stated,

> Generally, we find that, in any market in which the transaction would reduce the number of genuine competitors to three or fewer, the proposed transaction may result in a significant likelihood of successful unilateral effects and/or coordinated interaction."[23]

By contrast, the DOJ and FTC's Merger Guidelines evidence a much more informed perspective on HHI thresholds as an analytical tool, noting that "they provide one way to identify some mergers unlikely to raise competitive concerns and some others for which it is particularly important to examine whether other competitive factors confirm, reinforce, or counteract the potentially harmful effects of increased concentration," and that they help determine only "the likelihood that

[19] Fifteenth Report at 9702 ¶ 40.
[20] Harold Demsetz, *The Intensity and Dimensionality of Competition*, in THE ECONOMICS OF THE BUSINESS FIRM: SEVEN CRITICAL COMMENTARIES 137, 140-41 (1995).
[21] Fifteenth Report at 9705 ¶ 45.
[22] Id. at 9706 ¶ 46.
[23] *IN RE* APPLICATIONS OF CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS AND ATLANTIS HOLDINGS LLC FOR CONSENT TO TRANSFER CONTROL OF LICENSES, AUTHORIZATIONS, AND SPECTRUM MANAGER AND *DE FACTO* TRANSFER LEASING ARRANGEMENTS AND PETITION FOR DECLARATORY RULING THAT THE TRANSACTION IS CONSISTENT WITH SECTION 310(B)(4) OF THE COMMUNICATIONS ACT, WT Docket No. 08-95, Memorandum Opinion and Order and Declaratory Ruling, 23 FCC RCD 17444, 17491 ¶ 101 (2008).

the Agencies will request additional information"[24] — not conclusions about a transaction's competitive effects.

A "likelihood that the Agencies will request for additional information" is a far cry from a "significant likelihood of" anticompetitive effects. Even where the Merger Guidelines do begin to draw inferences from certain (extremely high) degrees of concentration and/or increases in concentration, they infer only "the enhance[ment] of market power"[25] — not anticompetitive outcomes.

The reason for the FCC's stronger inference of harm is clear: Devout adherence to the structural presumption. For this one need look no further than the agency's alleged "market-by-market" analysis of competitive effects in its transaction reviews where the screen is triggered. Despite paying lip service to consideration of factors other than market shares and concentration to determine these effects, the Commission cites as the relevant variables for assessing competitive effects:

> The total number of rival service providers; the number of rival firms that can offer competitive nationwide service plans; the coverage of the firms' respective networks; the rival firms' market shares; the merged entity's post-transaction market share and how that share changes as a result of the transaction; the amount of spectrum suitable for the provision of mobile telephony/broadband services controlled by the combined entity; and the spectrum holdings of each of the rival service providers.[26]

Not a single one of these factors investigates an aspect of competition other than market or spectrum concentration; they simply restate in more detail precisely the structural analysis implied by the HHI test and spectrum screen.

The contrast between the conclusions drawn by the FCC and the antitrust agencies from their respective use of HHIs is stark: The antitrust agencies use HHIs as just one of many tools to inform the depth of their analysis of a transaction, while the FCC employs them essentially as an easy, but analytically lazy, analytical endpoint. If the FCC insists on relying on concentration metrics at all, it should defer to the approach taken by the FTC and DOJ as expert competition agencies — using HHIs as a trigger for further scrutiny, rather than a de facto trigger for a per se presumption.

Just as problematic is the second part of the spectrum screen, which examines the amount of spectrum that is suitable and available for mobile service on a market-by-market basis and determines whether a transaction would result in ownership of "too large" a fraction of spectrum, thus facilitating anticompetitive conduct. This approach not only suffers from the same structural presumption as the HHI analysis, but also creates enormous regulatory uncertainty. Because the "amount of usable spectrum" piece of the equation is in constant flux, it is impossible to predict whether any particular transaction will trigger the screen. Further, an ever-changing screen masks

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[24] DOJ/FTC JOINT HORIZONTAL MERGER GUIDELINES at 19 (2010), available at http://www.ftc.gov/os/2010/04/100420hmg.pdf.
[25] ID.
[26] *IN RE* APPLICATIONS OF CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS AND ATLANTIS HOLDINGS LLC FOR CONSENT TO TRANSFER CONTROL OF LICENSES, AUTHORIZATIONS, AND SPECTRUM MANAGER AND *DE FACTO* TRANSFER LEASING ARRANGEMENTS AND PETITION FOR DECLARATORY RULING THAT THE TRANSACTION IS CONSISTENT WITH SECTION 310(B)(4) OF THE COMMUNICATIONS ACT, WT Docket No. 08-95, Memorandum Opinion and Order and Declaratory Ruling, 23 FCC RCD 17444, 17487 ¶ 91 (2008).

possible manipulation by the FCC on a transaction-by-transaction basis to justify whatever conclusion it deems appropriate.

The Commission's review of the AT&T/T-Mobile merger illustrated how the current spectrum screen can be manipulated. There, it appears that the FCC may have considered altering the spectrum screen — and released a draft report on the merger incorporating this alteration — specifically to make the transaction appear as negative as possible to the public, as the proposed change would have caused the deal to trigger the spectrum screen in 50% more markets than would the screen prior to the change. Once the deal was abandoned, the proposed change never manifested.[27]

If the FCC insists on retaining the current spectrum screen, it should be reviewed — transparently — at regular intervals. Today, by contrast, it is adjusted in an ad hoc, secretive process susceptible to the kind of manipulation we saw in the AT&T case. If it continues to be employed, the spectrum screen needs to remain flexible in order to account for changes in technology and in the marketplace (the advantages of following a rule of reason in general), but the FCC should not be able to adjust the screen within the course of a particular transaction; whatever adjustments the FCC makes, transactions should be guided by predictable, economically-sensible standards.

Thus, if it keeps the screen, the FCC should issue an order that lays out what spectrum will and will not be included in the screen on an annual, bi-annual or even quarterly basis. All applications for the transfer of spectrum licenses would subsequently be reviewed under the screen in place at the time the application is filed, regardless of whether the screen is adjusted before a decision is rendered. This approach would increase regulatory certainty by allowing companies to actually know what spectrum screen will be applied to their transaction before filing an application with the FCC.

Replacing the Spectrum Screen with a Rule of Reason Analysis

While minor tweaks to the spectrum screen and HHI analysis will improve the process of analyzing spectrum holdings, the FCC would be better served by eliminating the spectrum screen and starting from scratch. Particularly in a dynamic, innovative industry like wireless, the FCC's approach represents a costly adherence to outdated, static competition analysis. As former Assistant Attorney General Tom Barnett has stressed:

> While static efficiency is important, the greater share of welfare gains—sometimes the much greater share—comes from technical change and the forces of dynamic efficiency. . . . [A]ntitrust enforcers must be careful not to pursue immediate, static efficiency gains at the expense of long-term, dynamic efficiency improvements, since the latter are likely to create more consumer welfare than the former. Accordingly, U.S. enforcers approach practices that bear on innovation incentives with something close to the medical principle of 'first, do no harm.'[28]

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[27] *See* Larry Downes & Geoffrey A. Manne, *The FCC's Unstructured Role in Transaction Reviews*, CPI ANTITRUST CHRONICLE at 6-7, (Oct. 2012) *available at* https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2163169.

[28] Thomas Barnett, Presentation to the George Mason University Law Review, "Maximizing Welfare Through Technological Innovation" (31 October 2007), *available at* http://www.usdoj.gov/atr/public/speeches/227291.htm.

There is no reliable evidence that a carrier's control of more than a third of the usable spectrum in a market has, *ipso facto*, the power to harm consumers — and still less evidence that prohibiting spectrum transfers that exceed this threshold serves "the forces of dynamic efficiency." Using HHIs and this arbitrary threshold doesn't further what should be the FCC's overriding objective: ensuring that sufficient spectrum and the investment necessary to deploy it are available for consumer use. Instead of merely citing market concentration as the basis for rejecting a transaction, we need an analysis of why a proposed transaction would actually make consumers worse off — the lodestar of antitrust law.

Following the lead of its antitrust agency counterparts, the FCC must take seriously the risks of static, concentration-based analysis. It should replace its spectrum screen with a rule of reason analysis and use a consumer harm standard when evaluating spectrum transfers. The analysis would operate in a manner similar to the rule of reason in antitrust law (and embodied in the Merger Guidelines), whereby transactions are rigorously evaluated to determine if their possible anticompetitive effects outweigh their likely procompetitive benefits. While the FCC already purports to conduct a similar type of analysis in markets where the spectrum screen is triggered, that analysis in practice, as noted above, is still based on an evaluation of concentration in wireless markets; it is merely a more detailed version of the screen.

Instead, the FCC should abandon its focus on the percentage of spectrum held by a company and replace it with a system that evaluates how increased spectrum holdings actually affect consumers and weighs those likely effects against any efficiencies or procompetitive justifications supporting a transfer. Competition from other wireless providers is certainly part of the analysis, but there are a number of other factors that should be considered including, among other things, how and when spectrum would be deployed with and without a transfer, how efficiently it would be used with and without a transfer, and whether its deployment is better supported by the requisite technological, physical and organizational apparatus to deliver quality service to consumers before or after a transfer.

Perhaps most important, this competitive analysis simply can't generate reliable conclusions if spectrum is analyzed independently from broader competitive conditions. Thus, a proper competitive analysis would also include assessment of competition from imperfect substitutes (e.g., fixed wireless and fixed terrestrial broadband), technological developments that may or will alter spectrum efficiency and entry, product (and quality) differentiation among competitors, historical price and quality changes in the market, the likelihood of coordinated effects, the presence of buyer power, constraints arising from other layers of the network (e.g., device makers and content providers), the presence and extent of switching costs, and possible intellectual property-based constraints on competition — among others.

Perhaps the most important factor to consider in such an analysis is the benefit to consumers from *expanded* rather than contracted network holdings. The ability of a wireless provider to meet its customers' future data demands (and to deploy the resources necessary to capitalize on spectrum holdings sufficient to do so) is crucial to a sensible analysis, and yet it plays little or no role in the current system. With a spectrum crunch on the horizon, it is essential that sustained viability and capacity in the face of rapidly expanding demand becomes the focus of FCC transaction analysis. Consumers should not suffer from inferior service — today or tomorrow — just because a transaction might increase concentration on paper.

We have noted elsewhere that this sort of competition analysis is the proper province of the expert antitrust agencies, not the FCC.[29] We continue to have qualms about competition review at the FCC. And when, as in the case of a telecom merger notified under Hart-Scott-Rodino to the antitrust agencies, the DOJ or FTC engages in a competition analysis, we continue to maintain that the FCC's review should focus narrowly on telecom-specific issues (e.g., compliance with FCC rules and fitness to hold a license) and the FCC should act to advise and inform the antitrust agency's determination; its own competition review should not have dispositive effect.

But when, as in the case of a simple spectrum license transfer that does not meet HSR notification thresholds nor merit review by the FTC or DOJ, the FCC is the sole arbiter of a transaction's regulatory approval, it must engage in meaningful, rigorous review. It is a losing proposition to substitute the easy administrability and economic inaccuracy of spectrum concentration analysis for the complexity and economic rigor of a thorough competition review. Moreover, as the antitrust agencies and courts develop expertise, guidelines and doctrine in analyzing mergers and corporate acquisitions involving spectrum, the FCC — properly guided by the same standards and principles — will be able to draw on this body of law and economics to inform its own reviews of spectrum transfers arising outside of mergers.

There is nothing about telecommunications generally nor spectrum in particular that demands the development of a *sui generis* body of spectrum competition law. Although necessitating technical expertise to evaluate evidence and its implications, the analysis of the competitive consequences of spectrum transactions is a subset of antitrust law, and it should be applied as such by the FCC.

[29] *See* Comments of Geoffrey A. Manne & Berin Szoka, *IN RE* APPLICATION OF CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS AND SPECTRUMCO LLC FOR CONSENT TO ASSIGN LICENSES & APPLICATION OF CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS AND COX TMI WIRELESS, LLC FOR CONSENT TO ASSIGN LICENSES, WT Docket No. 12-4 (2012), *available at* http://techfreedom.org/sites/default/files/VZ_SpectrumCo_filing_0.pdf.

TECH FREEDOM

How the FCC Can Lead the Way to Internet Everywhere by Enabling the IP Transition

Reply Comments of

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In the Matter of the Technological Transition
of the Nation's Communications Infrastructure

GN Docket No. 12-353

February 25, 2013

How the FCC Can Lead the Way to Internet Everywhere by Enabling the IP Transition

Geoffrey A. Manne, Matthew Starr, Berin Szoka & Larry Downes

Introduction

AT&T's petition presents the FCC with a stark choice: Bootstrap the regulations of a dying 20th century technology platform onto the networks of the future, to ever-diminishing consumer benefits, or take the lead in coordinating the transition to "Internet Everywhere"—Internet analyst Larry Downes' term for a single IP-based networking standard built into all next-generation infrastructure and equipment.

A wide range of disparate, private wired and wireless networks using a variety of different hardware and software protocols are now converging on native IP technologies—sometimes by accident but increasingly by design. Once doubted, IP has now been embraced by traditional wireline, mobile, cable and satellite providers, as well as incumbent and next-generation content providers. Data, voice, and video are all converging onto a single standard, available wherever and whenever consumers want it.

Internet Everywhere in the near future is within our grasp—if only the Commission does what is necessary to allow and encourage it.

While we believe the FCC has a crucial, long-term role to play in shepherding the IP Transition, as outlined in TechFreedom's Comment,[1] this Reply Comment argues that the FCC should resist the urging of many commenters in this docket to erect regulatory barriers, however well-meaning, to protect consumers from harms that have not materialized and are unlikely ever to do so.

Instead, the Commission should adopt a clear program to facilitate the successful transition to an all-IP network by ensuring that it is unencumbered by inappropriate, legacy regulations. To start, the FCC should approve AT&T's petition. While the resulting trials are carried out, the agency should move to identify a date certain for concluding the IP Transition. And at the same time, the agency should make clear its intention to refrain from applying interconnection mandates and the apparatus of Title II to the IP network, thereby preempting conflicting state regulations that would otherwise derail the agency's efforts.

The IP Transition's Opportunity: Enabling Big Bang Disruption

In *Big Bang Disruption*, authors Larry Downes and Paul F. Nunes describe the emerging model of technology-based innovation, which is dramatically remaking every sector of the global economy.[2] This new ecosystem is emerging organically from the deployment of robust, global broadband IP

[1] Comments of TechFreedom, *In re* AT&T Petition to Launch a Proceeding Concerning the TDM-to-IP Transition and Petition of National Telecommunication Cooperatives Association for a Rulemaking to Promote and Sustain the Ongoing TDM-to-IP Evolution ("*In re* AT&T Petition"), GN Docket No. 12-353 ("TechFreedom Comments"), *available at* http://apps.fcc.gov/ecfs/document/view?id=7022113680

[2] Larry Downes & Paul F. Nunes, *Big Bang Disruption*, HARVARD BUSINESS REVIEW, March, 2013, at 44, *available at* http://hbr.org/2013/03/big-bang-disruption/ar/1.

networks, a dividend from over $1 trillion invested in IP-based technologies in the first decade of the commercial Internet.[3]

The IP-based ecosystem reduces economic friction to dramatic effect. In information industries more than anywhere else, entrepreneurs now develop new products and services in real-time. Indeed, early users are increasingly co-developers, participating in product design, financing, marketing and even customer service. The result is a new kind of technology disruptor, the "big bang disruptor": one that enters the market as a cheaper, higher-quality, and more customizable substitute for existing products offered by incumbent providers.

In many cases, incumbents fail to adapt, unable to accept the death of the generation of core technologies on which their companies were built. Photography pioneer Kodak, for example, was simply unable (or unwilling) to make the leap to all-digital imaging in time, and went bankrupt. Adding insult to injury, the company's only remaining assets of any value proved to be a rapidly-declining portfolio of patents, which was sold for $500 million.[4]

Challenging much of the conventional wisdom of strategy and competition, the authors argue that incumbents, if they are to survive, must learn to see disruption coming much sooner and react decisively and quickly.

Big bang disruption is nowhere more visible than it is in the communications industry. Yet many commenters in this docket assume—or simply wish—the future will look much like the past. They grossly underestimate—or at least pretend to, when it serves their interests—the magnitude of the shift taking place in our technology infrastructure.

They also fail to see the challenges faced by ILECs determined to avoid the fate of Kodak and other former industry giants who waited too long to retire obsolete technologies—TDM networks, in this case. Worst of all, these commenters downplay the potential benefits to consumers and the economy more broadly that a swift transition to an all-IP network presents.[5]

We see things differently. This is the moment of truth. The IP Transition is inevitable, but even the inevitable advance of technological progress can be delayed significantly by over-regulation, denying consumers the full benefits of living in the Internet Everywhere world. The FCC should immediately grant AT&T's petition. And, while the trials are underway, the FCC should use that time to begin planning a pro-transition agenda that can be enacted swiftly upon successful completion of the trials—or modified as necessary to adjust for any lessons learned.

Specifically, the Commission should:

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[3] *See* Reed Hundt & Blair Levin, THE POLITICS OF ABUNDANCE: HOW TECHNOLOGY CAN FIX THE BUDGET, REVIVE THE AMERICAN DREAM, AND ESTABLISH OBAMA'S LEGACY 9 (2012).

[4] Downes and Nunes at 54.

[5] *See Connecting America: The National Broadband Plan*, § 4.5 at p. 59 (2010) ("National Broadband Plan"), *available at* http://download.broadband.gov/plan/national-broadband-plan.pdf. *See also* Larry Downes, *Creating a "Politics of Abundance" to Match Technology Innovation*, Forbes (Jan. 3, 2013), http://www.forbes.com/sites/larrydownes/2013/01/03/creating-a-politics-of-abundance-to-match-technology-innovation/; Larry Downes, *Telcos Race Toward an all-IP Future*, CNET News (Jan. 8, 2013), http://ces.cnet.com/8301-34435_1-57562644/telcos-race-toward-an-all-ip-future/.

1. Clearly define the IP Transition as a central Federal policy objective and make clear its intentions that VoIP be left unregulated. By doing so, the FCC would preempt state regulators' short-sighted efforts to preserve TDM networks beyond their useful lives to the long-term detriment of ratepayers.
2. Plan, and set a date certain for, complete IP Transition and TDM retirement, based on lessons learned in the successful transition from analog to digital television.
3. Rapidly retire legacy federal regulations that are unintentionally slowing the transition to all-IP networks and retarding the adoption of broadband, especially among rural and low-income populations.
4. Make clear that Title II regulations will never apply to IP networks, because the Communications Act as written does not allow this and such regulations are counter-productive in a competitive communications market.
5. Refrain from asserting Title I ancillary authority to impose mandated interconnection requirements on any IP networks, and instead leave interconnection in the hands of market competition and antitrust law.

The FCC has already started down the right path: The National Broadband Plan showed vision in urging the Commission to move immediately to accelerate the transition away from circuit-switched networks to native IP.[6] As the Plan noted, "[r]egulations require certain carriers to maintain [legacy TDM networks]—a requirement that is not sustainable—and lead to investments in assets that could be stranded."[7]

In creating the Technology Transitions Policy Task Force, the FCC took another important step to encourage the rapid transition "from special purpose to general purpose, from circuit-switched to packet-switched, and from copper to fiber and wireless-based networks."[8] Chairman Genachowski noted at the time:

> Technological transitions don't change the basic mission of the FCC. But technology changes can drive changes in markets and competition. And many of the Commission's existing rules draw technology-based distinctions. So the ongoing changes in our nation's communications networks require a hard look at many rules that were written for a different technological and market landscape.[9]

The point of these farsighted statements is both clear and accurate: Regulators should not pick winners and losers in the broadband ecosystem. But that truism does not mean the Commission should take no action to advance new technologies that are clearly superior.[10] It is absurd to argue,

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[6] *See* National Broadband Plan, 59.

[7] Id.

[8] FCC, *FCC Chairman Announces Formation of "Technology Transitions Policy Task Force"*, (Dec. 10, 2012), http://www.fcc.gov/document/fcc-chairman-announces-technology-transitions-policy-task-force.

[9] Id.

[10] In nearly every government provision of spectrum in the last hundred years, Congress has clearly picked what it felt were "better" technologies and used policy levers to promote their adoption. Similarly, by excluding broadband Internet access from Title II regulations in the 1996 Communications Act, Congress affirmatively and wisely promoted an

as AARP has, that the FCC should ignore the unchallenged reality that IP networks, in design and implementation, are in every relevant measure exponentially better than TDM.[11] Rather, the Commission should continue to hasten their adoption, focus on making the transition as smooth as possible for all consumers (including the elderly) and refrain from placing regulatory impediments in the way of their success.

In general, the Commission fulfills its mission to promote "rapid, efficient, Nation-wide, and world-wide wire and radio communication service"[12] by encouraging—not delaying—rapid adoption of better technologies. Given the remarkable, on-going evolution in computing and communications, that mission requires that the agency continually revisit existing regulations to identify and expunge those that have been rendered redundant or even counter-productive by changes in the ecosystem.

Though AT&T wisely requests only modest forbearance to conduct geographically limited trials of the TDM-to-IP Transition, the full retirement of legacy switched network technologies is inevitable; it is not a question of whether, but when. The consumer benefits from the transition will depend on how the FCC handles what will prove the greatest challenge and opportunity in the agency's long history.

Some critics of AT&T's proposal have argued for the continued application of existing regulations (particularly interconnection mandates under Sections 251 and 252 of the Communications Act), arguing that these provisions should apply in a "technology neutral" fashion.[13] According to these critics, "the policy justifications for requiring ILECs to provide interconnection and to submit to arbitration—namely, the ubiquity of ILECs' telecommunications networks and market power that these pervasive networks confer—arise regardless of the technology used by those networks to transmit and exchange telecommunications traffic."[14]

Not only are these critics' complaints irrelevant to the proposed trials at issue here (which are small steps aimed at determining precisely *whether* such constraints as Sections 251 and 252 are appropriate), but their alleged policy justification is not, in fact, "technology neutral." Instead, it would apply barnacled rules, crafted over decades specifically for the technology and business realities of the TDM-based PSTN, to a new ecosystem that shares few, if any, of the same characteristics.

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unregulated market for IP-based services, and mandated the FCC to do the same. *See*, e.g., Communications Act of 1996, 47 U.S.C. §§ 153(24), 230, 706 (1996). *See also NCTA v. Brand X Internet Services*, 545 U.S. 967 (2005).

[11] *See* AARP, Comments to FCC, *In re AT&T Petition*, GN Docket No. 12-353, 1, *available at* http://apps.fcc.gov/ecfs/document/view?id=7022113482. ("AARP Comments"). AARP essentially argues that because Americans over 65 still use wireline telephones, ILECs must continue to provide them with that option indefinitely.

[12] Communications Act of 1934, 47 USC § 151 (1934).

[13] *See, e.g.*, Comments of Competitive Carriers Association, *In re AT&T Petition*, GN Docket No. 12-353 (Filed Jan. 28, 2013), *available at* http://apps.fcc.gov/ecfs/document/view?id=7022113646. *See also* AARP Comments, *supra* note 11, at 25 ("To the extent that certain bricks in that foundation are in need of repair, need to be removed, or whether there are other bricks that are missing and need to be added, a collaborative effort between this Commission, state commissions, and other interested parties will ensure that statutory and policy objectives are fulfilled.").

[14] Comments of Competitive Carriers Association at 3.

Technology neutrality does not mean blindly implementing design principles suited for rope bridges as buildings codes for steel suspension spans. Modern structures are clearly better. They require entirely different rules, and different kinds of enforcement. Applying TDM rules to IP networks is bad business and bad public policy. It is these critics' unsupported claims—and the FCC's tentative efforts to impose interconnection mandates on IP networks[15]—that AT&T's proposal is intended to assess.[16]

Getting the transition right will not only save the ILECs from irrelevance. It will likely bolster the U.S. economy, accelerate the technological empowerment of Americans as both citizens and consumers, and sustain global competitiveness for U.S. technology companies. As the National Broadband Plan put it,

> [B]roadband is a foundation for economic growth, job creation, global competitiveness and a better way of life. It is enabling entire new industries and unlocking vast new possibilities for existing ones. It is changing how we educate children, deliver health care, manage energy, ensure public safety, engage government, and access, organize, and disseminate knowledge.[17]

In *The Politics of Abundance*, former FCC Chairman Reed Hundt and his one-time chief of staff Blair Levin make a persuasive case that the shift to "connected computing"—broadband Internet, cloud-based services, and widespread mobile devices—is essential to jumpstart the U.S. economy. Hundt and Levin urge all levels of government to take immediate steps to support what they call the "knowledge platform"—ultra high-speed broadband with high reliability and low latency, able to support high-bandwidth, video-intensive applications and cloud-based services.

We agree. An all-IP-infrastructure is clearly better for everyone. The sooner we can complete the transition, the sooner we will reap the full dividends of continuing private and public investments in this new infrastructure. The transition to all-IP networks will bring our infrastructure considerably closer to a broadband ecosystem that adheres to the better-cheaper-faster trajectory of Moore's Law, which predicts computing power will continue to double every twelve to eighteen months, even as price holds constant. As Hundt and Levin write, "[t]o increase growth, job creation, productivity gains, and exports at a faster rate, government should double down on what is already doubling in the Internet sector."[18]

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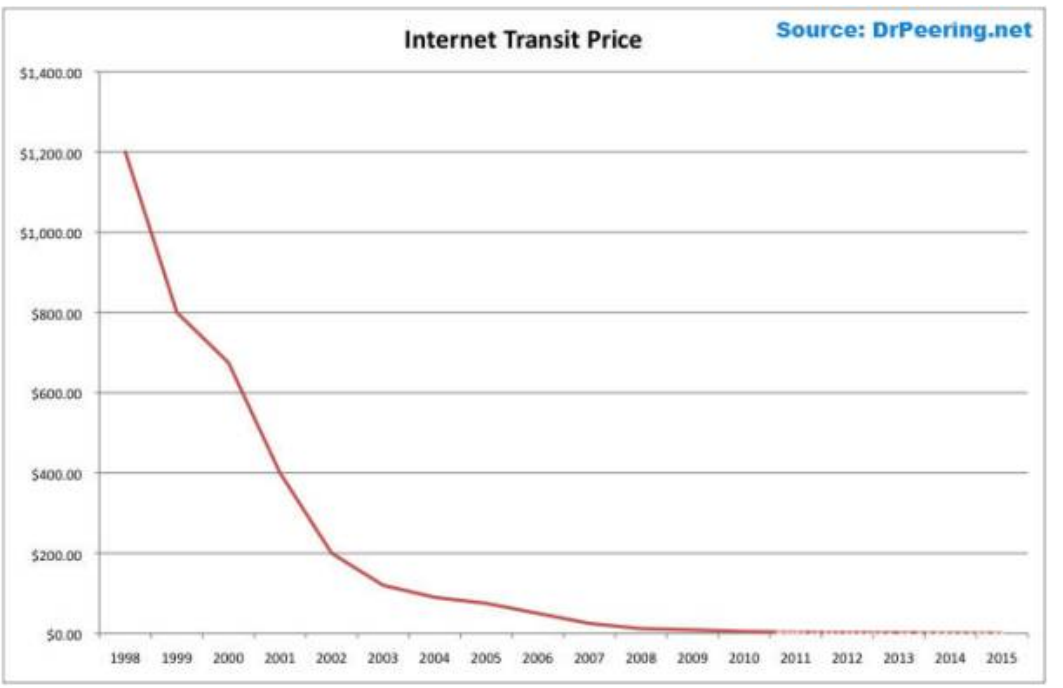
[15] *See, e.g.*, Petition of CRC Communications of Maine, Inc. and Time Warner Cable Inc. for Preemption Pursuant to Section 253 of the Communications Act, as amended, Declaratory Ruling, 26 FCC Rcd 8259 (2011).

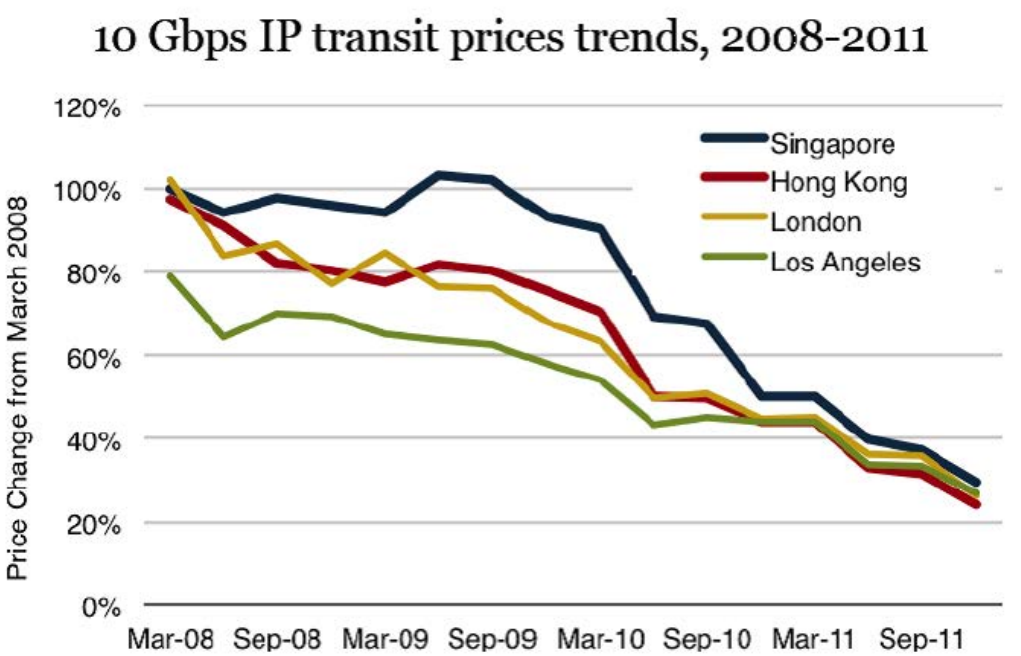
[16] Comments of TechFreedom, s*upra* note 1.

[17] National Broadband Plan, *supra* note 5, at xi. *See also* chapters 10-16. *And see* Robert E. Litan and Hal Singer, THE NEED FOR SPEED: A NEW FRAMEWORK FOR TELECOMMUNICATIONS POLICY IN THE 21ST CENTURY (Brookings Institution Press 2013).

[18] Id., at 16-17.



(Hundt & Levin, supra note 3, Figure 2.1, p. 105)



(Hundt & Levin, supra note 3, Figure 2.2, p. 106)

Deflating the Myths of IP Transition

High-speed, widely accessible and affordable broadband provides the ecosystem of development and deployment at the heart of Big Bang Disruption. All-IP networks will vastly expand the possibilities of the next generation of cloud services like Google, Facebook, Twitter and Salesforce. These services and others that will follow will be superior in ways both easily imaginable (instant, more reliable interaction with richer media like video, streaming presentations, and more robust tools) but also in ways that we cannot yet imagine. Developers will aim higher in their products and services confident that consumers will be able to make use of them.

While it is impossible to predict precisely what new applications, products and services will emerge from the primordial ooze of next generation broadband networks, we can say with confidence that investments in such networks will more than pay for themselves in the form of new economic activity.

In short, the IP Transition will accelerate the ongoing transformation of our digital experiences that could be as revolutionary as the introduction of the Internet itself.[19]

Many commenters missed this essential point. The IP Transition's discontents fall into four main—and largely predictable—camps:

1. **CLECs with vested economic interests** bent on forcing the ILECs to maintain TDM networks despite the fact that they are worse on every strategic dimension. Though they try unconvincingly to shoehorn their objections into legitimate public interest concerns, their real motivation is straightforward rent-seeking. They would rather spend their energy slowing the inevitable than adapting to a better technology that consumers already overwhelmingly, and wisely, prefer.[20]
2. **Self-styled public interest groups** who express vague and hypothetical concerns about competition in the post-transition period. These warmed-over and largely manufactured, purely theoretical problems are irrelevant to AT&T's petition for trials—indeed, those trials would help clarify which of these concerns are real and which mere phantasms.[21]

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[19] *See* Harold Feld, *Shutting Down the Phone System Gets Real: The Implications of AT&T Upgrading to an All IP Network*, Public Knowledge (November 13, 2012), *available at* http://publicknowledge.org/blog/shutting-down-phone-system-gets-real-implicat ("I believe AT&T's announcement last week about its plans to upgrade its network and replace its rural copper lines with wireless is the single most important development in telecom since passage of the Telecommunications Act of 1996. It impacts just about every aspect of wireline and wireless policy.").

[20] *See* Comments of Bandwidth.com, Inc., *In re* AT&T Petition, GN Docket No. 12-353, 4, *available at* http://apps.fcc.gov/ecfs/document/view?id=7022113709; Comments of Cbeyond, Earthlink, Integra, Level 3, and TW Telecom, *In re* AT&T Petition, GN Docket No. 12-353, 6-15, *available at* http://apps.fcc.gov/ecfs/document/view?id=7022113656; Comments of Comptel, *In re* AT&T Petition, GN Docket No. 12-353, 17-18, *available at* http://apps.fcc.gov/ecfs/document/view?id=7022113657; Comments of General Communications, Inc., *In re* AT&T Petition, GN Docket No. 12-353, 5, *available at* http://apps.fcc.gov/ecfs/document/view?id=7022113626; Comments of Granite Telecommunications LLC, *In re* AT&T Petition, GN Docket No. 12-353, 12, 20, 37-44, *available at* http://apps.fcc.gov/ecfs/document/view?id=7022113684; Comments of TelePacific Communications, *In re* AT&T Petition, GN Docket No. 12-353, 9-11, *available at* http://apps.fcc.gov/ecfs/document/view?id=7022113703.

[21] *See* AARP Comments, *supra* note 11, at 2, 23-24; Comments of Free Press, *In re* AT&T Petition, GN Docket No. 12-353, 5-7, 13-23, *available at* http://apps.fcc.gov/ecfs/document/view?id=7022113670; Comments of Public Knowledge, *In re* AT&T Petition, GN Docket No. 12-353, 17-19, *available at* http://apps.fcc.gov/ecfs/document/view?id=7022113562.

3. **Mobile and other special access customers** who are not saddled with legacy TDM networks and who seek to rely on FCC intervention to manipulate pricing for access to those networks for backhaul and other middle-mile transit. They see the IP Transition as harmful to their own interests in leveling the playing field for ILEC competitors. But their true motivation is to slow the inevitable transition to "Internet Everywhere" networks that would force them to make long-deferred investments in their own obsolete infrastructure.[22]
4. **State Public Utilities Commissions** who argue against federal preemption in a desperate attempt to maintain their own jurisdiction and who use public safety and consumer protection as human shields to defend their true—parochial and bureaucratic—self-interests.[23]

These commenters together promote a series of self-interested fallacies, hoping to confuse the agency into believing the transition to Internet Everywhere is something far more complex and controversial than it actually is. Their real hope is simply to slow down a process that is inevitable, buying more time to resist the forces requiring their own adaptation—a common symptom among weaker industry participants and regulators facing a big bang disruption. The FCC should reject each of these myths outright:

- **Myth:** Ensuring effective interconnection requires a special legal regime to mandate interconnection among competitors.
- **Reality:** Market forces and antitrust (looming behind all market transactions) work so effectively that, as the OECD has found, even without special regulations, over 99% of interconnection agreements in IP world are settlement-free and often done on a handshake basis).[24]

- **Myth:** Requiring the maintenance of, and backwards compatibility for, TDM networks is

[22] *See* Comments of Sprint Nextel, *In re* AT&T Petition, GN Docket No. 12-353, 6-7, 19-20, 29-30, *available at* http://apps.fcc.gov/ecfs/document/view?id=7022113602; Comments of T-Mobile USA, Inc., *In re* AT&T Petition, GN Docket No. 12-353, 9-11, *available at* http://apps.fcc.gov/ecfs/document/view?id=7022113702.

[23] *See* Comments of the National Association of Regulatory Utility Commissioners, *In re* AT&T Petition, GN Docket No. 12-353, 5-20 ("NARUC Comments"), *available at* http://apps.fcc.gov/ecfs/document/view?id=7022113735; Initial Comments of the National Association of State Utility Consumer Advocates, *In re* AT&T Petition, GN Docket No. 12-353, 15-19, 22-26, *available at* http://apps.fcc.gov/ecfs/document/view?id=7022113102; Comments of The Indiana Utility Regulatory Commission, *In re* AT&T Petition, GN Docket No. 12-353, *available at* http://apps.fcc.gov/ecfs/document/view?id=7022113494; Comments of The Pennsylvania Public Utility Commission, *In re* AT&T Petition, GN Docket No. 12-353, *available at* http://apps.fcc.gov/ecfs/document/view?id=7022113573; Comments of the California Public Utilities Commission and the People of the State of California, *In re* AT&T Petition, GN Docket No. 12-353, 9-11, *available at* http://apps.fcc.gov/ecfs/document/view?id=7022113717; Comments of the Massachusetts Department of Telecommunications and Cable, *In re* AT&T Petition, GN Docket No. 12-353, *available at* http://apps.fcc.gov/ecfs/document/view?id=7022113756; Reply Comments of the New Jersey Board of Public Utilities, *In re* AT&T Petition, GN Docket No. 12-353, *available at* http://apps.fcc.gov/ecfs/document/view?id=7022123788.

[24] OECD, Committee for Information, Computer and Information Policy, Internet Traffic Exchange: Market Developments and Policy Changes, 3 (June, 2011), *available at* http://search.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/ICCP/CISP(2011)2/FINAL&docLanguage=En. *See also* The Internet Society, *Proposals for New Interconnection Model Comes Up Short*, 4, *available at* http://www.internetsociety.org/sites/default/files/Internet%20Interconnections%20Proposals%20For%20New%20Interconnection%20Model%20Comes%20Up%20Short.pdf.

both valuable and inexpensive.

- **Reality:** Mandating TDM maintenance and compatibility unnecessarily limits investment in, and the potential of, technologically-superior IP networks.

- **Myth:** The FCC has the authority and the obligation to port Title II regulations over to IP networks.
- **Reality:** Congress has not granted the FCC the authority to regulate these networks, and there is no sense in imposing costly regulations intended for a completely different technology, and a completely different competitive environment, on IP networks.

- **Myth:** Technological neutrality requires imposing the identical regulations (particularly Sections 251 and 252) on all networks, regardless of the technology employed.
- **Reality:** If technological neutrality means anything, it means that the intended aims of regulation should apply to identical functions, regardless of the technology employed. But IP networks do not offer identical functions to switched networks, and different competitive conditions mean that identical rules are not required to, and will not in fact, ensure identical results.

- **Myth:** Unless the FCC has Title II jurisdiction over IP networks, the Federal government will be powerless to protect consumers.
- **Reality:** The FCC can exercise its Title I authority over IP networks to protect public safety, while the Federal Trade Commission already has authority to address concerns about market power and consumer protection under Section 5 of the FTC Act, which prohibits unfair and deceptive acts and practices and allows the FTC to enforce the antitrust laws, except against common carriers.

- **Myth:** No major regulatory changes are needed to ensure that ILECs complete the IP Transition for all customers.
- **Reality:** Faced with the needless and burdensome constraints of legacy regulation, the IP Transition will occur more slowly, less effectively and be less widespread unless the regulatory mindset borne of the now-defunct competitive environment of the last few decades is significantly shifted.

Commenters offering up these objections either don't see, or simply ignore the inconvenient reality of, the fundamental transformation in communications already in progress. This technological shift is changing the nature of strategy and competition. Consumers, for example, now enjoy what Downes and Nunes call "near perfect market information"—the ability to compare price, quality, service, specifications on any product or service and choose the best from among many competitive choices. And unlike the ILEC's once-protected legacy networks, IP network competition—as well as the competition to offer the services that run on top of it—is open to all, and competition abounds.

More to the point, consumers have demonstrated their ability to use social networks and other advanced communications technology to enforce market discipline on providers more efficiently and more effectively than regulators—particularly regulators trying to apply the only toolkit the law affords them: Title II of the Communications Act.

But Title II regulations are hard-coded for both the technology and the artificial competitive environment of a dying TDM universe. They should not, and legally may not, be applied "as is" to IP networks.[25] Nor can they simply be "adapted" to a new and more dynamic ecosystem.

While market forces may not always ensure the perfect alignment of industry conduct with the best interests of consumers, it does not follow that any particular regulatory solution—least of all regulation intended for entirely different circumstances—is preferable.[26] In the face of significant non government constraints, the case for blunt, prophylactic regulations like interconnection mandates to protect against future problems that may never arise is extremely weak.

Marketplace and reputational incentives drive interconnection and consumer protections in the market, and networks have little incentive to harm their own customers. These forces are bolstered by various multistakeholder processes that continue to evolve to regulate industry practices and to supplement direct company-to-company dispute resolution.[27] At the same time, the FCC retains authority under Title I of the Communications Act to regulate for public safety, and antitrust and consumer protection laws govern IP services precisely because they are not regulated as common carriers (which are excluded from the FTC's otherwise general jurisdiction over the economy).[28]

Finally, if significant issues do arise that escape these multiple layers of regulatory and governance constraints, Congress can of course enact legislation appropriately targeted to address clear consumer harms. But narrowly tailored legislation from Congress after the IP Transition has evolved of its own accord is the proper mechanism for addressing such issues—not broad, prophylactic regulation from the FCC adapted from previous legislation targeted at entirely different circumstances.

Recognition of these constraints does not inform the approach suggested by comments from industry participants already struggling to make the transition. Instead of adapting, they urge the FCC to protect their privileged positions in the PSTN world by bringing the dead weight of old regulatory baggage to new markets.

In every major industry transformation midwifed by disruptive technologies, those trying to slow, skew or stall the transformation always rely on the law as their weapon of final resort. This has

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[25] TechFreedom Comments, *supra* note 1, at 5-8.

[26] *See* Harold Demsetz, *Information and Efficiency: Another Viewpoint*, 12 J. L. & ECON. 1, 1–3 (1969) ("The view that now pervades much public policy economics implicitly presents the relevant choice as between an ideal norm and an existing 'imperfect' institutional arrangement. This *nirvana* approach differs considerably from a *comparative institution* approach in which the relevant choice is between alternative real institutional arrangements.").

[27] Most notable among these is the Broadband Internet Technical Advisory Group (BITAG), "a technical advisory group to discuss and opine on technical issues pertaining to the operation of the Internet, as a means of bringing transparency and clarity to network management processes as well as the interaction among networks, applications, devices and content." BITAG History, http://www.bitag.org/bitag_organization.php?action=history (last visited February 25, 2013).

[28] *See* Federal Trade Commission, Broadband Connectivity Competition Policy, 3 (2007), *available at* http://www.ftc.gov/reports/broadband/v070000report.pdf ("[FTC] jurisdiction [over broadband Internet access services] had once been regarded as limited to the extent that the FTC's general enforcement authority under the FTC Act did not extend to entities that were 'common carriers' under the Communications Act. The regulatory and judicial decisions at issue, however, confirmed that the larger categories of broadband Internet access services, as information services, are not exempt from FTC enforcement of the FTC Act.").

already happened in the entertainment industry, where incumbents have struggled to make the leap to digital distribution. It happened in the DTV transition. It has happened in proceedings to abandon little- or unused-sections of railroad.[29] It even continues to happen in the process of the most basic modernization of POTS.[30] Such efforts are as predictable as they are imprudent.

Preemption

As TechFreedom said in our initial comments in this proceeding, the FCC should eliminate legacy regulations that require ILECs to maintain their TDM networks.[31] Removing the burden of operating obsolete technology will allow consumers to enjoy the benefits of the IP Transition as soon as possible.

The FCC has undisputed authority to forbear from applying sections of the Communications Act when doing so "will promote competitive market conditions."[32] This same authority clearly gives it power to forbear from applying sections of the Act that hinder or deter the IP Transition. But the Communications Act is only one small piece of the equation. Many of the most stringent regulations requiring ILECs to continue to operate their TDM networks, even after replacement networks have been constructed, rest not on federal law but on the states' Carrier of Last Resort (COLR) requirements.

The FCC's ability to preempt these state regulations was a major topic of controversy in the first round of comments. A number of commenters (mostly state public utility commissions) claimed that the FCC has no authority to preempt COLR requirements.[33] However, a thorough examination of the Communications Act and federal-state preemption law reveals a different answer: the FCC may indeed preempt state regulations when they conflict with a federal policy.

The debate hinges on Section 2(b) of the Communications Act, which defines the limits of the FCC's jurisdiction and specifically excludes "charges, classifications, practices, services, facilities, or regulations for or in connection with intrastate communication service by wire or radio of any carrier."[34] States cite this provision in opposing preemption of COLR mandates, but COLR requirements do not affect only "intrastate communication." They also have a considerable impact on interstate communications, which is squarely within the jurisdiction of the FCC. COLR regulations prevent companies from investing as much money as they would like (and from which consumers would benefit) into deploying IP networks because they have to maintain their TDM networks. Since many of these ILECs operate in multiple states, COLR requirements in one state may prevent them from investing in IP networks in other states. Additionally, TDM facilities are

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[29] *See, e.g.*, *Redden v. ICC*, 956 F.2d 302 (D.C. Cir. 1992); SURFACE TRANSPORTATION BOARD FY 2011 ANNUAL REPORT, *available at* http://www.stb.dot.gov/stb/docs/AnnualReports/STB_FY2011_Annual_Report.pdf.

[30] Associated Press, *Woman Paid Thousands to Rent Rotary Phone*, USA Today, Sept. 14, 2006, *available at* http://usatoday30.usatoday.com/news/offbeat/2006-09-14-phone_x.htm (reporting on a woman who was still renting a rotary phone from the phone company for $10 a month until 2006, and had totaled $14,000 in rental fees over 42 years.)

[31] Comments of TechFreedom, *supra* note 1.

[32] 47 U.S.C. § 160 (2006).

[33] *See, e.g.,* Comments of Pennsylvania Public Utility Commission, Comments of NATOA, NACo, NLC, USCM, Comments of Federal-State Joint Board on Universal Service, and Comments of National Association of Regulatory Utility Commissioners, *In re AT&T Petition*, GN Docket No. 12-353.

[34] 47 U.S.C. § 253(b) (2006).

used to carry both intrastate and interstate services, so COLR requirements directly impact int*er*state services on these networks. Section 2(b) is simply a red herring.

The states' COLR requirements also impair the goals of federal universal service policy. As fewer and fewer customers subscribe to services delivered over TDM networks, it has become increasingly expensive, on a per-customer basis, to provide services over TDM networks to remote areas.[35] The capital devoted to maintaining those obsolete networks could instead be used to deploy broadband services in these very same areas. COLR requirements also require only ILECs to serve all of the customers in an area when there are now other services, such as wireless and cable, that can accomplish the same goal. This makes it difficult for ILECs to compete with new entrants and reduces their incentives to invest because ILECs' costs are artificially high—and only increasing.

All the Commission needs to justify preemption of state COLR requirements is to establish, as clear Federal policy, the goal of making the IP Transition a priority by clearing regulatory barriers. The FCC has already started down this path. The Commission's National Broadband Plan acknowledged that "requiring an incumbent to maintain two networks—one copper and one fiber—would be costly, possibly inefficient and reduce the incentive for incumbents to deploy fiber facilities."[36] Thus the Commission has conceded the key premise on which preemption must rest: state COLR requirements deter investment in IP networks.

Under the time-tested doctrine of conflict preemption, when it is impossible to comply with both state and federal laws, federal law prevails.[37] The FCC has repeatedly asserted its ability to preempt state regulations, such as in a 2010 Order, citing numerous D.C. Circuit cases, saying that, "[w]here state regulation conflicts with a federal regulatory objective, and that conflict impinges upon the Commission's exercise of its own lawful authority, the Commission may preempt."[38] Executive Order 13132 lays out guidelines for federal agencies implementing policies that may preempt state laws, and says that, "Where a Federal statute does not preempt State law . . . agencies shall construe any authorization in the statute for the issuance of regulations as authorizing preemption of State law by rulemaking only when the exercise of State authority directly conflicts with the exercise of Federal authority under the Federal statute or there is clear evidence to conclude that the Congress intended the agency to have the authority to preempt State law."[39]

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[35] National Broadband Plan, *supra* note 5, at 59 ("Consumers benefit from the options that broadband provides, such as Voice over internet Protocol. But as customers leave the PSTN, the typical cost per line for Plain Old Telephone Service (POTS) increases, given the high fixed costs of providing such service. Between 2003 and 2009, the average cost per line increased almost 20 percent."). *See also* Fourteenth Report and Order, Federal-State Joint Board on Universal Service, 16 F.C.C.R. 11244, 11326, ¶ 207 (May 23, 2001).

[36] *See* National Broadband Plan, *supra* note 5, at 49.

[37] *Gibbons v. Ogden*, 22 U.S. 1 (1824).

[38] *In re* National Association of Regulatory Utility Commissioners Petition for Clarification or Declaratory Ruling that No FCC Order or Rule Limits State Authority to Collect Broadband Data, WC Docket No. 09-193, Memorandum Opinion and Order, 25 F.C.C.R. 5051, ¶ 6 (April 26, 2010), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-10-70A1.pdf.

[39] Executive Order 13132, Fed. Reg. 43, 255, August 10, 1999, Sec. 4.

It is the FCC's duty to "preserve and advance universal service,"[40] and that duty allows the Commission to conduct a rulemaking to promote the IP Transition in the name of universal service. Such a rulemaking should build upon the findings in the National Broadband Plan by forbearing from certain sections of the Communications Act that make it difficult for ILECs to retire their TDM networks, and advocate that all such regulations should be retired to promote investment in broadband networks. If the FCC were to conduct such a rulemaking, state COLR requirements would directly conflict with the FCC's authority to promote universal service, and thus the FCC could preempt state COLR requirements.

Additionally, Sections 253(b) & (d) of the Communications Act makes it clear that "Congress intended the agency to have the authority to preempt State law" in this space—precisely as Executive Order 13132 contemplates. The statute requires that state requirements "to preserve and advance universal service"[41] must comply with Section 254 of the Act; if they don't, it allows the FCC to "preempt the enforcement of such statute, regulation, or legal requirement to the extent necessary to correct such violation or inconsistency."[42] Section 254 requires that state regulations may not be "inconsistent with the Commission's rules to preserve and advance universal service."[43] Thus, if state and federal universal service regulations conflict, the FCC may preempt state regulations.

The Eighth Circuit's holding in *Minnesota Public Utilities Commission. v. F.C.C.* further supports the FCC's preemption of state COLR obligations. The appellate court upheld the FCC's preemption of state VoIP regulations, noting that "[c]competition and deregulation are valid federal interests the FCC may protect through preemption of state regulation."[44] In the IP Transition, promoting competition and deregulation would be two of the FCC's primary goals, and eliminating state COLR requirements would help it achieve both.

The National Association of Regulatory Utility Commissioners (NARUC) also claims that the FCC does not have the authority to preempt state regulations on VoIP services,[45] but its analysis is deeply flawed. Among other things, NARUC's comments misapply the preemption analysis laid out in the FCC's 2004 Vonage Order.[46] According to NARUC's interpretation of the Order, the FCC may preempt state VoIP regulations only "(1) to the extent necessary to avoid a conflict between federal law and state law; *AND* (2) where the intrastate telecommunications service is inseverable from the interstate service component."[47] But the Order says no such thing. In fact, it makes clear that inseverability presents *an alternate basis* for preemption, regardless of the existence of another

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[40] 47 U.S.C. § 253(f) (2006).

[41] 47 U.S.C. § 253(b) (2006).

[42] 47 U.S.C. § 253(d) (2006).

[43] 47 U.S.C. § 254(f) (2006).

[44] *Minnesota Public Utilities Comm'n. v. F.C.C.*, 483 F.3d 570, 580 (8th Cir. 2007).

[45] NARUC Comments, *supra* note 23.

[46] *In re* Vonage Holdings Corporation Petition for Declaratory Ruling Concerning an Order of the Minnesota Public Utilities Commission, Memorandum Opinion and Order, WC Docket No. 03- 211, (November. 12, 2004), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-04-267A1.doc ("Vonage Order").

[47] NARUC Comments, *supra* note 23, at 17 (emphasis added).

source of federal-state conflict. As the FCC notes, citing to the Supreme Court's *Louisiana Public Service Commission* decision,[48]

> [T]he "critical question in any pre-emption analysis is always whether Congress intended that federal regulation supersede state law." . . . [F]ederal law and policy preempt state action . . . when there is outright or actual conflict between federal and state law . . . ; where the state law stands as an obstacle to the accomplishment and execution of the full objectives of Congress . . . ; [and] where there is implicit in federal law a barrier to state regulation . . . . Additionally, the Supreme Court has held that preemption may result not only from action taken by Congress but also from a federal agency action that is within the scope of the agency's congressionally delegated authority.[49]

Although inseverability was the basis for the FCC's preemption decision in the Vonage Order, nothing in the Order diminishes the independent availability of federal-state conflicts—both explicit and implicit—as a basis for preemption. Moreover, when properly understood, the Vonage test (and the Supreme Court in *Louisiana Public Service Commission*), also makes clear that the FCC *can* in fact preempt state IP network regulations, contrary to NARUC's comments, on the basis of "[a] bare allegation that a State action 'frustrates' a federal goal."[50]

The FCC has, since 2005, expressly refrained from classifying VoIP as either an information service or a telecommunications service.[51] The Commission realized that VoIP services do not need the full slate of Title II regulations to operate effectively, but has nevertheless managed to impose certain public safety obligations on VoIP providers by not actually branding them with an ill-fitting regulatory classification. The FCC's treatment of VoIP is actually an acknowledgement that services over IP networks do not manifest the same basis for regulation as switched networks, thus creating conflict with state regulations premised on the conclusion that they do. If the Commission were to come out and say that it reached this decision because such regulations are outdated, overly burdensome and unnecessary in a competitive voice market, there would be an even clearer conflict between federal and state law on VoIP regulation.

Additionally, NARUC's comments twist the FCC's language from a 2006 Order to suit its ends. Read in full, the Order actually derails NARUC's argument. Two years after the Vonage Order, the FCC said that "we recognize that some interconnected VoIP providers do not currently have the ability to identify whether customer calls are interstate,"[52] and thus, "it would be reasonable for us to treat

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[48] *Louisiana Pub. Serv. Comm'n v. FCC*, 476 U.S. 355 (1986)

[49] Vonage Order, *supra* note 48, at 11-12, n. 66 (*citing* Id. at 368-69).

[50] NARUC Comments, *supra* note 23 at 19.

[51] *In re* IP-Enabled Services, E911 Requirements for IP-Enabled Service Providers, WC Docket Nos. 04-36 & 05-196, First Report and Order and Notice of Proposed Rulemaking, 20 F.C.C.R. 10245, ¶ 22 (June 3, 2005), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-05-116A1.pdf.

[52] *See In re* Universal Service Contribution Methodology, WC Docket 06-122; CC Dockets 96-45, 98-171, 90-571, 92-237; CC Dockets 99-200, 95-116, 98-170; Docket 04-36, Report and Order and Notice of Proposed Rulemaking, 21 FCC Rcd 7518, ¶ 56 (June 27, 2006), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-06-94A1.pdf. (USC Methodology Order").

the interconnected VoIP traffic as 100% interstate for USF purposes."[53] NARUC's comments misconstrue the hypothetical language of that Order which states that, "to the extent that an interconnected VoIP provider develops the capability to track the jurisdictional confines of customer calls . . . [it] would no longer qualify for the preemptive effects of our Vonage Order and would be subject to state regulation."[54] NARUC's comments leave out the conditional first part of the requirement for state regulation, and acts as if all VoIP providers can actually separate the interstate and intrastate portions of their service, while offering no evidence to support this claim.[55] But where, as is the case with IP networks, the distinction between interstate and interstate traffic is not pre-determined, nor consistent, nor in the control of the network (as opposed to the end user), IP network providers "do not currently have the ability to identify whether [traffic] is interstate traffic."[56]

While the FCC clearly has authority to preempt state COLR and VoIP regulations, the agency likely could do so only if it were to lay out clear federal goals regarding both. The Commission needs to make the retirement of TDM networks an official priority in order to promote the deployment of nationwide IP services. It must also make it clear that VoIP should not be regulated as a telecommunications service by anyone. If the FCC takes these actions, it is difficult to see how a court would not uphold the FCC's preemption of state COLR and VoIP regulations.

Interconnection

Multiple commenters in this proceeding urged the FCC to impose legacy interconnection requirements on IP networks. Existing interconnection rules on the PSTN network were formulated when the Bell System had a true, regulated monopoly. Those regulations are the source of much of the waste, fraud and unnecessary cost associated with continuing to maintain the legacy POTS networks, as evidenced by, for example, FCC reforms of intercarrier compensation in the face of traffic pumping, phantom traffic and other abuses.[57] In the IP world, by contrast, absent any regulation network operators worldwide have had no difficulty negotiating interconnection agreements. Indeed, peering has become so commonplace that, as the OECD has pointed out, "the terms and conditions of the Internet interconnection model are so generally agreed upon that 99.5% of interconnection agreements are concluded without a written contract."[58]

Simply put, there is no evidence that anything is broken in the IP networking world, let alone something so broken that only regulated pricing or other mandates could fix it. Those asking the FCC to invent an IP interconnection regulatory scheme may talk about the public interest, but they

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[53] *Id.* at ¶ 53.

[54] *Id.* at ¶ 56.

[55] *See* NARUC Comments, *supra* note 23, at 19.

[56] USC Methodology Order, *supra* note 52.

[57] Report and Order and Further Notice of Proposed Rulemaking, *In re* Developing a Unified Intercarrier Compensation Regime, CC Docket No. 01-92 (November 18, 2011), *available at* http://www.fcc.gov/document/fcc-releases-connect-america-fund-order-reforms-usficc-broadband.

[58] OECD, Committee for Information, Computer and Information Policy, Internet Traffic Exchange: Market Developments and Policy Changes, 3 (June, 2011), *available at* http://search.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/ICCP/CISP(2011)2/FINAL&docLanguage=En.

are rent-seekers pure and simple: They are carriers seeking below-market rates for backhaul and CLECs looking to protect their subsidized business model in new networks that are already highly competitive. The FCC should avoid "prophylactic" regulations for problems that, as even these commenters admit, are speculative at this point.

The reality of the interconnection market is that, despite what some may argue, the major ISPs already have strong incentives to interconnect. If they didn't, we never would have seen the Internet video market take off as it has in the last few years. ISPs' customers demand access to streaming video content from sites like Netflix and Amazon, and they would be up in arms if access to that content were suddenly taken away from them due to an interconnection dispute. ISPs know that streaming video is the primary reason that their customers are willing to pay for high-speed broadband connections at home, so they have strong incentives to deliver what their customers want. And even where disputes have arisen (around the complexities of peering relationships and the distinction between settlement-free transit vendors and paid-peering CDNs, for example[59]), they are contract disputes between large commercial players over *the specific terms* of interconnection, not *whether* it will be available. Moreover, demand for streaming video has become so strong that Netflix, having established its own CDN, can now sidestep such disputes and pressure ISPs to accede to its peering demands by threatening to withhold new content or services. In other words, it has been *content providers*, not ISPs, that have threatened to withhold traffic.[60] The newfound market power of content providers like Netflix—as well as increasing intermodal competition—may just upend the weathered assumption that ISPs hold all of the bargaining power in interconnection negotiations.

Rare as denials of interconnection are, even rarer (and nearly non-existent) are interconnection denials actually noticed by the consumer—because even if there is a denial of a direct peering connection, content providers can generally find a way to get traffic to the public through settlement-free transit provider networks. Customers have no idea whether they are receiving content through direct or indirect connections; they care only about having access to that content. For there to be actual harm justifying government intervention, a mere denial of interconnection is not enough; there must be *substantial foreclosure*. But in a world where ISPs need interconnection with both transit networks (to preserve both the flow of traffic originating with their own customers, as well as access to content not available through direct peering arrangements) as well as CDNs to satisfy consumer demands, such substantial foreclosure is unlikely to occur, even if a particular source of traffic were refused interconnection. Were such substantial foreclosure to occur, moreover, it would likely fall squarely within the purview of antitrust laws.

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[59] *See, e.g.*, Marguerite Reardon, *Understanding the Level 3-Comcast spat (FAQ)*, C-Net (November 30, 2010), *available at* http://news.cnet.com/8301-30686_3-20024197-266.html.

[60] *See, e.g.*, Betsy Isaacson, *Netflix Says 3D and 'Super-HD' Movies Are Just Around The Corner--But Only For Some Customers*, Huffington Post (January 9, 2013), *available at* http://www.huffingtonpost.com/2013/01/09/netflix-3d-movies_n_2441394.html; Fred Campbell, *Netflix Blocking Internet Access to HD Movies*, The Technology Liberation Front (January 17, 2013), *available at* http://techliberation.com/2013/01/17/netflix-blocking-internet-access-to-hd-movies/;Fred Campbell, *What Does Netflix's Decision to Block Internet Content Tell Us About Internet Policy?*, The Technology Liberation Front (January 23, 2013), *available at* http://techliberation.com/2013/01/23/what-does-netflixs-decision-to-block-internet-content-tell-us-about-internet-policy/.

Mandating interconnection essentially means declaring any particular refusal to interconnect to be *per se* illegal. But as noted above, a refusal to interconnect does not necessarily directly harm consumers, so it makes little sense to make such a refusal illegal *per se*. Moreover, in the emerging IP world, with uncertain possibilities for congestion (and the commensurate need for last-mile network management), heightened pricing disputes between infrastructure providers (as in the Comcast/Level 3 dispute), and the need to guarantee sufficient return on infrastructure investment, procompetitive justifications for certain interconnection refusals abound. Far more sensible would be to treat refusals to interconnect as refusals to deal under Section 2 of the Sherman Act, finding liability only where such refusals could not be explained except as efforts to preserve long-term monopoly power, and procompetitive justifications didn't outweigh net foreclosure effects.

While the Supreme Court's *Trinko*[61] and *LinkLine*[62] decisions underscored that there are very few exceptions to the rule that even a monopoly has no duty to deal with competitors, a basis for antitrust liability still remains.[63] But the economics underlying these decisions does indeed—appropriately—suggest that such determinations should be rare. And the common refrain that *Trinko* and *LinkLine* render refusal to deal cases almost impossible against regulated entities would (and should) be far less likely to apply if, as we suggest, the FCC refrains from mandating interconnection or otherwise regulating the business practices of IP networks.

Despite the FCC's claims in other contexts that prophylactic rules aimed at preventing speculative harms impose little cost (as in the agency's Open Internet Order, where the FCC claimed the rules would impose little cost because "in large part . . . the rules appear to be consistent with current industry practices"[64]), here the entire point is that specific industry practices in the coming "Internet Everywhere" world are yet unknown—and thus cannot be set in regulatory stone. Moreover, the true cost to consumers, in stifling the disruptive shift to such a world, is, as discussed above, far from insignificant. As law professor Christopher Yoo has explained:

> Concerns about reducing investment incentives carry little weight when last-mile competition is infeasible, as was arguably the case when interconnection and standardization were mandated with respect to CPE, long distance, and enhanced services. They are paramount when entry by new last-mile providers is ongoing and other last-mile technologies are waiting in the wings. Under these circumstances, regulation imposed to curb market concentration can turn into the cause, rather than the consequence, of market failure.[65]

Commenters have singled out VoIP interconnection as an issue separate from IP interconnection generally, but there is no legitimate basis for the continued special treatment of voice telephony. While for many years traditional voice communication has been viewed as "special" (its status giving rise to the very regulations under Title II of the Communications Act that are at issue in this

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[61] *Verizon Communications. Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 399 (2004).

[62] *Pacific Bell Tel. Co. v. LinkLine Communications, Inc.*, 555 U.S. 438 (2009).

[63] Steven C. Salop, *Refusals to Deal and Price Squeezes By an Unregulated, Vertically Integrated Monopolist*, 76 ANTITRUST L. J. 709 (2010).

[64] *In re* Preserving the Open Internet; Broadband Industry Practices, *Report and Order*, 25 F.C.C.R. 17905, 5 (Dec. 21, 2010).

[65] Christopher S. Yoo, *Beyond Network Neutrality*, 19 HARV. J. L. & PUB. POL'Y 1, 10 (2005).

proceeding), the world of communications has long since evolved past the point when basic telephones connected by switched copper wires were the only way to connect people over long distances. Today, voice is just another app on the IP network, and it should be treated no differently than video, social networks or any other app. Today consumers connect with each in countless ways, and IP networks have no incentive or ability to impair voice communications by limiting interconnection.

Conclusion

The FCC should grant AT&T and NTCA's modest petitions and should not be swayed by cynical efforts by self-interested intervenors to derail the consumer-welfare-enhancing shift to an all-IP network. There is no legitimate reason to burden this disruptive new technology with an outdated and inapplicable regulatory framework, least of all in the context of the minimal experiments at issue in this docket.

Instead, the FCC should reaffirm the National Broadband Plan's commitment to accelerate the transition away from circuit-switched networks to native IP. Doing so requires not that the FCC and state regulators erect regulatory barriers, however well-meaning, to protect consumers from harms that have not materialized and are unlikely ever to do so, but rather that it forebear from the unthinking application of legacy regulations simply because they are there. Chairman Genachowski's remark that "the ongoing changes in our nation's communications networks require a hard look at many rules that were written for a different technological and market landscape"[66] contains the essential wisdom necessary for the FCC to ensure that the IP Transition lives up to its remarkable potential.

[66] *FCC Chairman Announces Formation of "Technology Transitions Policy Task Force"*, FCC (Dec. 10, 2012), http://www.fcc.gov/document/fcc-chairman-announces-technology-transitions-policy-task-force.