# **Georgetown University**

## McDonough School of Business

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Attached is a study ("Study") that I conducted between the fall of 2014 and the spring of 2015, in which I analyzed the regulatory environment of the telecommunications sector in the New York State using a Results-Based Regulation (RBR) framework. The study provides both an historical perspective and a prospective lens through which the New York Public Service Commission can fashion clear and sound policymaking for the state's twenty-first century telecommunications sector. I have subsequently reviewed the "Staff Assessment of Telecommunications Services" from the New York Department of Public Service Office of Telecommunications<sup>1</sup> (the "Staff Report"). My reading of the Staff Report suggests that the the studies are highly complementary.

The Staff Report and mine both provide a rich array of data and analysis for readers. Both studies document the profound changes that have occurred in the industry. A few decades ago, telecommunications services meant voice calls between fixed locations over copper wires. Today most New Yorkers carry miniature computers in their pockets, with which they communicate via video, voice and text, get directions, call a taxi, shop, check the weather, track how much they've exercised, watch movies, work, or search for information available on the Internet, from virtually anywhere. This dramatic change reflects both the robust consumer demand for *anywhere, anytime, any means communications* and the corresponding massive investment in the telecommunications

<sup>&</sup>lt;sup>1</sup> Case 14-C-0370 - In the Matter of a Study on the State of Telecommunications in New York State, Staff Assessment of Telecommunications Services, Department of Public Service Office of Telecommunications, June 23, 2015.

industry by firms seeking New York consumers' patronage. Companies in all corners of the market, from chip manufacturers to cable companies to wireless carriers, have spent the last decade improving their technology, laying fiber optic cables, and installing the latest wireless data transmitting equipment in a competitive race to provide increasingly high-quality service. The largest winners in this competition have been consumers, who now enjoy advanced services at affordable prices.

As seen in both studies, much of the recent evolution in the telecommunications industry has happened in wireless and broadband, two areas where regulation has generally followed a light-touch approach. Yet much of the current, largely residual regulatory framework in wireline telecommunications was put in place in an era where the industry was dominated by local monopolies and competition from wireless communications or broadband did not exist. Both the Staff Report and my Study show that there has been a loosening in wireline regulation in New York State, which parallels the growth of competition in the industry. For example, as the Staff Report indicates, as a result of the 2006 Competition III Order, most non-basic voice services were detariffed, allowing for competitive pricing. I observe in my Study, however, that in light of the tremendous changes in the marketplace since that Order, it seems that much unnecessary regulation remains.

Looking forward, my Study offers the RBR framework, which is built upon a set of economic principles derived from the best of 20<sup>th</sup>-century regulatory and deregulatory efforts. The RBR framework moves beyond the traditional public-utility model of regulation to a set of principles that can guide regulators in a dynamic and fluid industry. In my Study, I offer an application of these principles for New York.

Sincerely,

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### THE EVOLUTION OF NEW YORK TELECOMMUNCIATIONS:

### A RESULTS-BASED REGULATORY PERSPECTIVE

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### ABSTRACT

Over the past 25 years, while there have been massive shifts in the telecommunications industry, regulatory change in New York State has been more measured. In this paper, I assess the current state of New York telecommunications regulatory oversight using a Results-Based Regulation (or RBR) framework. RBR is rooted in core economic principles and offers regulators general guideposts for assessing the merits of alternative governance choices for dynamic industries. Here, I take a closer look at each of the five principles of RBR and focus on what specific implications and observations emerge from these principles in light of the evolution of the New York State telecommunications industry. The analysis indicates that the steps New York has taken to reform regulatory constraints on local exchange telecommunications providers have been met with a host of beneficial results for consumers. It also indicates that New York can both confidently move forward with a more relaxed regulatory posture toward the industry and, armed with the RBR principles, can adapt in the future to the evolving market.

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### I. Executive Summary

1. In the last 20 years, the telecommunications landscape in New York, as in the rest of the U.S., has changed dramatically. What was once a voice-centered industry, where most New Yorkers communicated via their household's residential local exchange telephone service provided by their incumbent local exchange telephone provider, has quickly given way to one in which consumers seamlessly toggle among voice, video and data communications, and increasingly on their own portable mobile smartphones and tablets. Against this background, it is especially important for New York policymakers — regulators and legislators — to identify and embrace an economically sound framework that can smartly guide the evolution of policy oversight for the telecommunications industry in New York.

2. New York was an early leader in the recognition of the emergence of competition in telecommunications markets. The New York PSC's 2006 Competition III Order found that the telecommunications industry in New York was sufficiently competitive to rely on market-based outcomes rather than public utility regulation. Yet, in spite of the findings of the 2006 Order, regulatory changes in New York State have subsequently been modest and have trailed behind that of most other states. New York's reliance on regulatory governance in the local wireline sector also is in contrast to that of the regulatory framework that has been successfully applied to the wireless and broadband sectors.

3. This paper uses a framework, known as Results-Based Regulation (or RBR), to analyze the appropriateness of the regulatory oversight in the New York communications industry. Importantly, the RBR framework is rooted in core economic principles and offers regulators general guideposts for assessing the merits of alternative governance choices for dynamic industries, such as the evolving communications sector.

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4. RBR is grounded in five guiding principles for 21<sup>st</sup>-century regulators. I have applied each of them here:

- *Principle 1: Recognize the inevitability of imperfection.* No market is textbook-pure, and no regulatory solution is perfect, so the relevant question for policy design is whether market-based or regulation-controlled resource allocation is better (rather than perfect). The increasing reliance in New York, and to a larger degree in other states, on market-based policies has created numerous net benefits.
- *Principle 2: Smartly evolve policy with technology and other institutions.* As technology and institutions evolve, regulators must be alert to the possibility that different regulatory or deregulatory designs would better oversee the telecommunications sector. This evolution points clearly toward the need for the regulatory structure in New York to continue to evolve away from 20<sup>th</sup>-century public utility-style regulatory infrastructure.
- *Principle 3: Benchmark and experiment relentlessly.* This principle calls for regulators to engage in empirical counterfactual scrutiny of alternative market governance mechanisms. While the deregulatory push across the U.S. is fairly recent, marketplace evidence that has emerged so far has generally provided support for deregulatory steps.
- *Principle 4: Use empirical analysis, not abstract theory.* This principle indicates that the New York PSC should focus on granular empirical evidence collected from actual markets as a core task in any regulatory process.
- *Principle 5: Focus on end-state economic measures.* This principle calls for a focus on tangible end-state (or retail) metrics such as output, innovation, prices, and investment

when considering alternative governance structures. My analysis indicates that the overall relaxation of communications sector regulation – particularly due to the growing importance of wireless and broadband, markets that are much more lightly regulated than fixed telephony – has coincided with a marked improvement in these measures.

5. My analysis finds that New Yorkers have benefited from the relatively relaxed oversight in wireless and broadband and the relaxing of regulation in wireline. In addition, analysis of the behavior of the poor, elderly and elderly poor, segments that regulators are concerned with protecting, shows these "vulnerable customers" also have benefited from regulatory relaxation.

6. In summary, my analysis indicates that the steps that New York has taken so far to refashion regulatory constraints on local exchange telecommunications providers have been met with a host of beneficial results for consumers. Therefore, further movement in the same direction is warranted.

#### II. Introduction

7. A mere twenty years ago, in 1995, the telecommunications landscape in New York was very different than it is today. In that year, roughly 7.5 million New Yorkers subscribed to residential local exchange telephone service offered by incumbent local exchange telephone providers,<sup>1</sup> cellular telephones were still a luxury enjoyed by relatively few, and a five-minute, daytime telephone call from New York to San Francisco cost \$1.40.<sup>2</sup> Today the number of New York households purchasing landline telephone service from incumbent local exchange

<sup>&</sup>lt;sup>1</sup> Federal Communications Commission, "Statistics of Common Carriers," 1995/1996 Edition, Table 2.5, p. 31.

<sup>&</sup>lt;sup>2</sup> *Id.* Table 7.1, p. 280.

carriers (ILECs) has plummeted to 2.6 million out of 7.2 million occupied housing units (36%),<sup>3</sup> subscription to and use of wireless and VoIP services have dramatically eclipsed the use of traditional wireline services, and a five-minute telephone call from New York to San Francisco is virtually free.

8. Dramatic as these changes are, they are only a small part of a larger evolution brought about by massive technological improvements in computing and networking capacity that have enabled massive expansions in the versatility of communications technology and consumer choices over the past twenty years. What was once an exclusively voice-centered technology and industry has quickly given way to one in which consumers seamlessly toggle among voice, video and data communications, and increasingly on mobile smartphones and tablets.<sup>4</sup>

9. These changes, which are not unique to New York (but profoundly evident here), have motivated policy responses in a number of states. For example, as seen in Figure 1, legislation to update the regulatory structure to more closely match the evolving industry structure has occurred in a number of states in recent years.<sup>5</sup> And as recently as February 26, 2015, the Pennsylvania Public Utility Commission determined that services in the more densely populated areas of that state can be classified as competitive and also approved a waiver of

<sup>&</sup>lt;sup>3</sup> Federal Communications Commission, Industry Analysis and Technology Division, Wireline Competition Bureau, "Local Telephone Competition: Status as of December 31, 2013," October 2014, Table 10, p. 21; and U.S. Census Bureau, "2013 American Community Survey 1-Year Estimates," available at:

 $http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_13_1YR_S1101\&prodType=table.$ 

<sup>&</sup>lt;sup>4</sup> U.S. smartphone adoption increased from 16% to 56% between July 2009 and July 2012. *See* Federal Communications Commission, "Significant FCC Actions and Key Developments in the Broadband Economy," p. 2, available at: https://apps.fcc.gov/edocs\_public/attachmatch/DOC-319728A1.pdf.

<sup>&</sup>lt;sup>5</sup> Sherry Lichtenberg, "Telecommunications Legislation in 2014: Completing the Process," NRRI, June 2014, p. 8, available at: http://www.nrri.org/documents/317330/b72af483-4ac3-4cc8-9d1f-1871a9284c9a.

outdated regulations in those areas.<sup>6</sup> Other state utility commissions, such as Rhode Island and Washington, also have significantly reduced their regulation of retail services in recent years, even without legislative changes.





(Figure 2 of the NRRI report: "Telecommunications Legislation 2014: Completing the Process")

10. Against this rapidly unfolding backdrop, regulatory change in New York has trailed behind most other states. Part of this more deliberate pace of policy change may be understandable. After all, regulation is, by design, deliberate. Procedures to change the regulatory dial — either up or down — are properly subject to administrative procedures that

http://www.puc.pa.gov/about\_puc/press\_releases.aspx?ShowPR=3504.

<sup>&</sup>lt;sup>6</sup> "PUC Approves Reclassification of Basic Telephone Service in Some Verizon Areas," Pennsylvania Public Utility Commission, February 26, 2015, available at:

ensure that parties affected by such changes are afforded adequate opportunities to make their opinions known to regulatory decision makers.

11. Yet, this slower pace of regulatory change in New York, particularly when set against an industry that has undergone radical transformation, is creating significant discontinuities that threaten to hobble the industry and interfere with the growing benefits that consumers are realizing. Indeed, despite the substantial evolution of technology and consumer choices, much of the traditional and now outdated public-utility-style regulatory infrastructure remains in place. Under New York State's Public Service Law, "telephone corporations" are potentially subject to a wide variety of restrictions from which competing communications services are exempt. For instance, unlike many other telecommunications providers — and unlike typical businesses — incumbent local exchange carriers cannot transfer or sell any one of a wide variety of assets deemed to constitute part of the carriers' "works or system" without notice to and, in many cases, the "written consent of", the Public Service Commission.<sup>7</sup> Similarly, while consumers of untariffed wireless and cable telephony greatly outnumber those subscribing to wireline local exchange service, detailed regulatory tariffs for basic wireline services remain a requirement in New York.<sup>8</sup>

12. In light of the growing discontinuity between the 20<sup>th</sup>-century policies that govern the telecommunications industry in New York and the rapidly-unfolding 21<sup>st</sup>-century industry, the purpose of this paper is to offer a framework for evolving policy to meet the fast-paced evolution of the industry. Importantly, the framework is built on firm economic foundations, and, while drawing on the lessons from the best of regulatory policymaking of the 20<sup>th</sup> century, is

<sup>&</sup>lt;sup>7</sup> See N.Y. Publ. Serv. L., § 99(2).

<sup>&</sup>lt;sup>8</sup> See id. § 92.

forward looking. By offering principles rather than dicta, it also seeks to provide the flexibility that will surely be needed to accommodate and encourage the continuation of the technological juggernaut in this industry that is rapidly redefining the way that human beings communicate with each other. Finally, the framework eschews an embrace of ideologically-driven regulatory solutions. Instead, it is strictly focused on the policy measures that may best advance important "retail metrics" that are central to consumers of telecommunications services.

13. The remainder of the paper proceeds as follows. In Section II, I briefly identify the historical drivers of regulation and provide a thumbnail sketch of a set of principles upon which 21<sup>st</sup>-century regulatory policy may be established in New York. Next, in Section III, I take a closer look at each of the principles in the context of regulatory oversight in New York and focus on what specific implications and observations emerge from these principles in light of the evolution of the industry. This analysis indicates that the steps that New York has taken to refashion regulatory constraints on local exchange telecommunications providers have been met with a host of beneficial results for consumers and further movement in the same direction is warranted. Nonetheless, concerns about the ability of historically vulnerable consumers naturally arise with any such additional transition. Accordingly, Section IV provides an examination of these consumers with an eye toward better understanding how they are adapting to the modern telecommunications environment. Section V concludes.

### **III.** The Evolution of Regulation and the Introduction of the RBR Principles

14. The balance between market-determined and governmentally-controlled resource allocation is a fundamental societal decision. It can, and should, evolve as these two mechanisms evolve and their relative effectiveness shifts. In the sphere of regulation, unfortunately all too often, this evolution is slowed, or stymied all together. While a number of factors contribute to

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this phenomenon, three stand out. First, entrenched ideologies tend to drive policy. The result is that policies are often made to conform to ideological predispositions to either regulate or deregulate. But ideology is a particularly poor foundation for policymaking. As noted by President Clinton:

> This is a practical country. We have ideals. We have philosophies. But the problem with any ideology is that it gives the answer before you look at the evidence. So you have to mold the evidence to get the answer that you've already decided you've got to have. It doesn't work that way. Building an economy; rebuilding an economy is hard, practical nuts and bolts work.<sup>9</sup>

15. Second, regulation is prone toward incremental change. With rare but noticeable exceptions, regulatory debates are typically focused on specific battles — for example, over the design of particular tariffs — rather than taking heed of larger potentially game-changing alterations in the economic ecosystem that governs the industry. For example, throughout much of the 20<sup>th</sup> century, residential local exchange service was supported by revenues from business services, customers in urban areas, and toll and access services pursuant to rate polices explicitly designed to foster increased penetration of landline local exchange service. Yet the importance of household-level wireline connectivity has been rapidly marginalized by over 335 million mobile subscriptions in the United States.<sup>10</sup> Today, in contrast, under what has been described as light-touch regulation, mobile technology provides virtually all "of age" members of nearly every household access to communications capabilities on a 24 hour-a-day basis regardless of location.

<sup>&</sup>lt;sup>9</sup> "The Daily Show with John Stewart," September 20, 2012, at 6:50, available at:

http://thedailyshow.cc.com/videos/7hmmdl/bill-clinton-pt--1. Emphasis added.

<sup>&</sup>lt;sup>10</sup> CTIA The Wireless Association, "Annual Wireless Industry Survey," available at: http://www.ctia.org/yourwireless-life/how-wireless-works/annual-wireless-industry-survey.

Connectivity is substantially greater today than even a decade ago.<sup>11</sup> But while rapid cycles of innovation have led to widespread deployment of Voice-over-Internet-Protocol (VoIP) services and mobile devices with increasing versatility, regulatory reform has only progressed incrementally in New York.

16. Third, political forces also contribute to regulatory inertia. By its very nature, regulation institutionalizes a distribution of benefits among economic actors that is different than would occur under a *laissez-faire* regime.<sup>12</sup> These benefits give rise to vested interests to either maintain or eliminate regulation.<sup>13</sup> While political positions of parties championing more, or less, regulation *may* align with sound regulation, quite often advocates will embrace what has been referred to as a "please regulate my rival" strategy as a substitute for in-market competition.<sup>14</sup> In the face of conflicting and vocal demands by industry players and interest groups, inertia and a "give everybody a little something" approach to regulation can result.<sup>15</sup>

17. Another political source of regulatory inertia that has been well-documented stems not from the pressures brought by interest groups but rather from regulators themselves. Indeed, history has shown that it is quite difficult for regulators not to regulate even when it is in the public interest to eliminate unnecessary regulation. As Michael Greenstone, an Economics

<sup>&</sup>lt;sup>11</sup> For a discussion of the enhanced connectivity enjoyed by individuals in the United States, *see* Jeffrey T. Macher, John W. Mayo, Olga Ukhaneva and Glenn Woroch, "Universal Service: Now It's Getting Personal," Georgetown University working paper.

<sup>&</sup>lt;sup>12</sup> T. Randolph Beard, David L. Kaserman, and John W. Mayo, "A Graphical Exposition of Economic Theory of Regulation," Economic Inquiry, Volume 41, 2003, pp. 593- 594.

<sup>&</sup>lt;sup>13</sup> *Id*.

<sup>&</sup>lt;sup>14</sup> *See* Hon. Robert M. McDowell, Commissioner, Federal Communications Commission, "The Siren Call of 'Please Regulate My Rival': A Recipe for Regulatory Failure," June 28, 2012, p. 5, available at:

http://www.fcc.gov/document/commr-mcdowells-speech-possible-itu-regulation-internet.

<sup>&</sup>lt;sup>15</sup> See generally Hon. Robert M. McDowell, Commissioner, Federal Communications Commission, "The Siren Call of 'Please Regulate My Rival': A Recipe for Regulatory Failure," June 28, 2012, p. 5, available at: http://www.fcc.gov/document/commr-mcdowells-speech-possible-itu-regulation-internet.

Professor at the University of Chicago and former Chair of President Obama's Council of Economic Advisors — observed:

It is very difficult for people and organizations to conclude that despite their best efforts their policies or programs are ineffective. ... [T]hose who are deeply involved in a particular regulation are likely to see the benefits of such a project far more clearly than the costs.<sup>16</sup>

18. Against this background, it is especially important for New York policymakers — regulators and legislators — to identify and embrace an economically sound framework that can smartly guide the evolution of policy oversight for the telecommunications industry in New York. Toward this end, a careful study of the evolution of regulation in the 20<sup>th</sup> century reveals a set of principles that have guided the very best regulatory decisions of the past century and which may confidently be brought forward to guide policy oversight for the telecommunications industry in the 21<sup>st</sup> century.

19. This framework, known as Results-Based Regulation (or RBR), is rooted in core economic principles and offers regulators general guideposts for assessing the merits of alternative governance choices for dynamic industries.<sup>17</sup> It is particularly apt for the evolving communications sector.<sup>18</sup>

<sup>&</sup>lt;sup>16</sup> Michael Greenstone, "Toward a Culture of Persistent Regulatory Experimentation and Evaluation," in New Perspectives on Regulation, David Moss and John Cisternino, eds., 2009, p. 119.

<sup>&</sup>lt;sup>17</sup> John W. Mayo, "The Evolution of Regulation: Twentieth Century Lessons and Twenty-First Century Opportunities," Federal Communications Law Journal, Volume 65, 2013, pp. 119-121 (introducing this framework for the first time.); Larry Downes & John W. Mayo, "The Evolution of Innovation and the Evolution of Regulation: Emerging Tensions and Emerging Opportunities in Communications," CommLaw Conspectus, Volume 23, Issue 1, 2014, available at: http://scholarship.law.edu/commlaw/vol23/iss1/3; and "Regulating the Digital Economy", democracy: A Journal of Ideas, Issue 34, Fall 2014, available at: http://www.democracyjournal.org/34/regulatingthe-digital-economy.php.

<sup>&</sup>lt;sup>18</sup> For an extended discussion on this point, *see* John W. Mayo, "The Evolution of Regulation: Twentieth Century Lessons and Twenty-First Century Opportunities," Federal Communications Law Journal, Volume 65, 2013, pp. 119, 131-132 (introducing this framework for the first time).

20. RBR is grounded in five guiding principles for 21<sup>st</sup> century regulators.<sup>19</sup>

### Principles of the Results-Based Regulation Framework

### **Principle 1: RECOGNIZE THE INEVITABILITY OF IMPERFECTION**

All market governance mechanisms are, in practice, imperfect.

## Principle 2: SMARTLY EVOLVE POLICY WITH TECHNOLOGY AND OTHER INSTITUTIONS

In the presence of disruptive technological innovation, changing consumer preferences and the evolution of complementary and/or competing regulatory structures, regulators must be vigilant to the increased likelihood of a corresponding imperative to reform existing regulatory or deregulatory policies and practices.

### Principle 3: BENCHMARK AND EXPERIMENT RELENTLESSLY

Wherever possible, regulators should engage in empirical counterfactual scrutiny of, and experimentation with, alternative market governance mechanisms.

### Principle 4: USE EMPIRICAL ANALYSIS, NOT ABSTRACT THEORY

In assessing the merits of alternative market governance mechanisms, regulators should heavily weight granular empirical evidence collected from actual markets over abstract and formulaic tests and theoretical models.

### **Principle 5: FOCUS ON END-STATE ECONOMIC MEASURES**

In choosing among alternative governance structures for a market, regulators should focus on tangible, end-state measures of economic value.

<sup>&</sup>lt;sup>19</sup> See generally John W. Mayo, "The Evolution of Regulation: Twentieth Century Lessons and Twenty-First Century Opportunities," Federal Communications Law Journal, Volume 65, 2013, pp. 137-145.

### **IV.** NY State Regulation of Telecommunications from an RBR perspective

### A. Introduction: An Overview of the Evolution of New York Telecommunications Regulation

21. To gauge the alignment of New York's regulatory policy evolution with the RBR principles, it is first necessary to review the progression of telecommunications policy in New York.

22. To begin, consider the 1980s, which witnessed both numerous and substantive changes in the telecommunications industry. Most prominent among these was the 1984 divestiture by AT&T of the Bell Operating Companies, which separated AT&T's long-distance operations from the monopoly local exchange operations controlled by the Regional Bell Operating Companies. This structural shift set in motion a competitive dynamic in the long-distance industry that led to the emergence and growth of numerous competitive long-distance providers.<sup>20</sup> The results, predictably, were greater consumer choice and, where permitted by regulation, declining long-distance prices. In short, this structural change launched the transition from a regulatory-controlled to a more market-determined industry.

23. Commensurate with this shift, in May 1989, the New York Public Service Commission ("NY PSC") issued its "Competition I" order, which reviewed its regulatory policies in light of emerging competition in the telecommunications industry.<sup>21</sup> The Order conceptually recognized the emergence of growing competition and the commensurate need to transition to a less heavily regulated telecommunications industry. While recognizing this, the NY PSC simultaneously eschewed an ideological embrace of complete deregulation, noting the

<sup>&</sup>lt;sup>20</sup> See David L. Kaserman and John W. Mayo, "Competition in the Long Distance Market," in Handbook of Telecommunications Economics, Volume 1, Cave et al, eds., 2002, pp. 526-528.

<sup>&</sup>lt;sup>21</sup> State of New York Public Service Commission, "Opinion and Order Concerning Regulatory Response to Competition," Case 29469, May 16, 1989, p. 1.

need to assure that "[d]eregulation is not to be the first step toward unregulated monopoly or near monopoly" and "[t]he ability to reregulate if any of the [principles] are not met must be maintained."<sup>22</sup> In a cautionary manner, the Competition I order retained the existing regulatory infrastructure. It did, however, include a provision for relaxing reporting regulations for carriers with "little market power."<sup>23</sup>

24. In May 1996, the NY PSC issued its "Competition II" order, which outlined a regulatory framework for an "orderly transition to a competitive local exchange market structure."<sup>24</sup> The NY PSC hoped to build on the progress already made in a 1995 order<sup>25</sup> and the then-recently passed federal Telecommunications Act of 1996. In the Competition II order, the NY PSC stated that the market was more inclined to produce better outcomes for consumers than traditional regulation because the latter was more prone to shortcomings and inefficiencies.<sup>26</sup> As a step to further enable the functioning of telecommunications markets to deliver consumer benefits, the PSC focused its policy efforts on "remov[ing] barriers to competitive entry … and … establish[ing] a 'level playing field'" for companies attempting to compete with ILECS.<sup>27</sup> To achieve this objective, the NY PSC outlined a regulatory framework designed to "balance the interests of new and incumbent local exchange companies and ensure requisite customer

<sup>&</sup>lt;sup>22</sup> *Id.* p. 6.

<sup>&</sup>lt;sup>23</sup> The report states that companies like MCI and Sprint should be considered as carriers that exert little market power. It based this on data that showed the two companies had 11% of the revenues and 14% of subscribers in the inter-LATA market in 1986. *See Id.* pp. 16-17.

<sup>&</sup>lt;sup>24</sup> State of New York Public Service Commission, "Opinion and Order Adopting Regulatory Framework," Case 94-C-0095, May 22, 1996, p. 2.

<sup>&</sup>lt;sup>25</sup> In 1995, the NY PSC ordered incumbent local exchange companies (ILECs) to publish the telephone listings of customers subscribed to new entrant local exchange companies in the ILEC directories as a way to promote new entrants into the local exchange market. Furthermore, the ILECs also had to publish statements in the directories' informational pages notifying customers that alternative service providers existed. *See Id.* pp. 17-18.

<sup>&</sup>lt;sup>26</sup> State of New York Public Service Commission, "Statement of Policy on Further Steps Toward Competition in the Intermodal Telecommunications Market and Order Allowing Rate Filings," Case 05-C-0616, April 11, 2006, p. 42.
<sup>27</sup> State of New York Public Service Commission, "Opinion and Order Adopting Regulatory Framework," Case 94-

C-0095, May 22, 1996, p. 15.

protections during the transition to a fully competitive telecommunications marketplace."<sup>28</sup> Despite its significant inter-carrier initiatives, the order failed to institute comparably significant and far-reaching regulatory reforms for the ILECs' retail operations. The Order did, however, initiate a discussion of numerous potential deregulatory policies such as fewer reporting requirements for incumbent carriers<sup>29</sup> and the end of differential treatment between incumbent and new-entrant carriers.<sup>30</sup>

25. In April 2006, the NY PSC issued its most comprehensive assessment of the state of telecommunications in New York in its "Competition III" order.<sup>31</sup> In this order, the NY PSC took a decidedly RBR approach by both focusing on observed marketplace results and — to some extent — by adjusting regulation accordingly. For instance, pointing to a staff White Paper,<sup>32</sup> the order noted that the combination of pro-competitive regulatory decisions and advances in technology "have resulted in New York State being one of the most competitive markets for telecommunications in the nation."<sup>33</sup> And with these results in mind, the NY PSC sought to maintain this leadership "by eliminating unnecessary, bureaucratic and anachronistic requirements that hamstring investment and the expansion of competition."<sup>34</sup> The PSC observed that "the existence of three platforms, one traditional landline plus wireless and broadband, in

<sup>&</sup>lt;sup>28</sup> *Id.* pp. 38-39.

<sup>&</sup>lt;sup>29</sup> *Id.* p. 28.

<sup>&</sup>lt;sup>30</sup> *Id.* p. 17.

 <sup>&</sup>lt;sup>31</sup> State of New York Public Service Commission, "Statement of Policy on Further Steps Toward Competition in the Intermodal Telecommunications Market and Order Allowing Rate Filings," Case 05-C-0616, April 11, 2006.
 <sup>32</sup> State of New York Department of Public Service, "Telecommunications in New York: Competition and

Consumer Protection, A White Paper Prepared by the State of New York Department of Public Service Staff," Case 05-C-0616, September 21, 2005, p. 28.

 <sup>&</sup>lt;sup>33</sup> State of New York Public Service Commission, "Statement of Policy on Further Steps Toward Competition in the Intermodal Telecommunications Market and Order Allowing Rate Filings," Case 05-C-0616, April 11, 2006, p. 22.
 <sup>34</sup> Id. p. 3.

any market would indicate that the market is sufficiently competitive to constrain anticompetitive behavior of the market participants."<sup>35</sup>

26. Since 2006, changes in both the technological and competitive landscapes for telecommunications in New York have continued and accelerated dramatically. As seen below, New Yorkers now enjoy a greater level of choice for satisfying their telecommunications needs than ever before, and are availing themselves by the millions of these opportunities. Yet, subsequent to its Competition III Order, the Commission's trajectory toward greater reliance on the market has been slowed. Indeed, in some instances, the Commission has simply halted its movement to rely more on market-based solutions despite the overwhelming proliferation of competitive alternatives to traditional phone service, including wireless.<sup>36</sup>

27. This, of course, does not mean that there has been no progress toward a governance mechanism that is congruent with the emergence of competition. In June 2010, the NY PSC adopted a "Service Quality Improvement Plan" (SQIP) for Verizon NY. The plan was based on a strategy of streamlining service quality reporting obligations and prioritizing repair service for "core" customers who either have special needs or who live in the few remaining areas of the State where there are no wireline competitive alternatives available. The regulatory modifications embodied in the SQIP align with the multidimensional evolution of the marketplace, including the growth of competition, the increased availability and adoption of alternatives to traditional wireline telephone service, and the asymmetry of the prevailing

<sup>&</sup>lt;sup>35</sup> See Id. p. 24.

<sup>&</sup>lt;sup>36</sup> "[W]ireless [service] is not yet directly and seamlessly substitutable for all wireline service." *See* State of New York Public Service Commission, "Order Adopting Verizon New York Inc.'s Revised Service Quality Improvement Plan with Modifications," Case 10-C-0202, December 17, 2010, p. 15.

regulatory framework for service quality. It advanced the Commission's forward-looking policy of "allow[ing] competition to set the level of service quality wherever possible."<sup>37</sup>

28. In December 2013, the Commission also approved regulatory revisions that reduced the amount of information required on the annual report forms filed by ILECs, helping to "lessen the burden" of these companies,<sup>38</sup> although extensive reporting obligations remain in place for ILECs, however. In that same year, the New York State Legislature enacted de-tariffing legislation for non-basic retail services, codified in Public Service Law Section 92-g.<sup>39</sup> The legislation became effective in January 2014.<sup>40</sup>

29. Thus, although some incremental progress has been made, to a significant extent, traditional regulation remains in force. The Commission continues to scrutinize proposed sales of assets — including office buildings,<sup>41</sup> a degree of regulatory control that is incongruent with both policy requirements of other businesses in the state, and the competitive environment that governs the telecommunications marketplace.

<sup>&</sup>lt;sup>37</sup> State of New York Public Service Commission, "Order Directing Verizon New York Inc. to File a Revised Service Quality Improvement Plan," Case 10-C-0202, June 22, 2010.

<sup>&</sup>lt;sup>38</sup> State of New York Public Service Commission, "Order Revising Annual Reports," Case 13-C-0349, December 26, 2013, p. 2. Although the order did make some changes in the reporting requirements, the bulk of the requirements were unchanged.

<sup>&</sup>lt;sup>39</sup> The key provision of the legislation stated that: "Notwithstanding any other provision of this chapter, or any regulation or order issued by the commission pursuant to this chapter, and excluding 'regulated basic services' as defined in paragraph (a) of subdivision two of section ninety-two of this article[,] on and after the effective date of this section, a telephone corporation furnishing any services that would otherwise be subject to the rate schedule requirements in section ninety-two of this article may post on its website the rates, terms and conditions of any retail service it offers, renders or furnishes within the state. Section ninety-two of this article shall not apply to any service so posted, and such telephone corporation shall not be required to file with the commission or obtain approval of any tariff or schedule for such service. Nothing in this section shall be construed to affect the authority of the commission under section ninety-seven of this article." *See* N.Y. Publ. Serv. L., § 92-g.

<sup>&</sup>lt;sup>40</sup> See State of New York Public Service Commission, "Detariffing Non-Basic Retail Telecommunications Services," May 12, 2014, available at:

http://www3.dps.ny.gov/W/PSCWeb.nsf/All/49C70372D3F0C00285257C5500586A23?OpenDocument.Note that the Commission retained its authority under Public Service Law § 97 to prospectively mandate changes in the terms and conditions for non-basic services offered through the Product Guide.

<sup>&</sup>lt;sup>41</sup> Publ. Serv. L. § 99(2).

30. Another example of the persistence of traditional regulation can be seen in the Commission's recent order in case 14-C-0248, which concerned the City of New York reimbursing Verizon for an over-payment in taxes. Consistent with its latest precedent, the Commission "approve[d] the Company's proposed accounting" for the refund, and thus authorized the company to retain it. At the same time, however, it also "order[ed] that Verizon make a compliance filing, within 180 days of the close of this transaction, providing a detailed description of how the intrastate property tax refund that results from this transaction impacts the company's operations, including increased spending in its capital and expense budget." This level of regulatory micromanagement regarding how Verizon would use the proceeds of the tax refund is inconsistent with the fact, recognized elsewhere by the Commission, that Verizon's rates are now governed by the dynamics of a competitive market. The imposition of such regulatory burdens without a clear and well defined corresponding set of benefits points toward the need for regulatory reform.

31. The extent of the reliance on regulatory (as opposed to market) governance in the local wireline sector in New York State also is in contrast to that of the wireless and broadband sectors. Historically, the U.S. wireless industry has largely been left lightly regulated, which has inured to the benefit of consumers across the nation.<sup>42</sup> When wireless was first introduced, Congress and the FCC chose to design policy to ease governmentally-induced constraints stemming from wireless firms' inability to secure spectrum for entry and investment in this

<sup>&</sup>lt;sup>42</sup> Although this has been true to date, recent changes may suggest a shifting approach to wireless regulation, which could moderate or reverse these gains. *See* Federal Communications Commission, "FCC Adopts Strong, Sustainable Rules to Protect the Open Internet," February 26, 2015, available at: https://apps.fcc.gov/edocs\_public/attachmatch/DOC-332260A1.pdf.

market, instead of attempting to constrain perceived market power.<sup>43</sup> The federal government's choice to pre-empt state price regulation was based in part on the decision by New York and other states to regulate wireless prices. Studies at the time found that state-level regulation of cellular service led to increase in prices of between five and fifteen percent, after controlling for other factors.<sup>44</sup> For these and other reasons, the FCC denied petitions by the states to retain their authority to regulate wireless prices after Congress and President Clinton preempted state regulation of wireless rates and market entry in the Omnibus Budget Reconciliation Act of 1993.<sup>45</sup>

32. For the purposes of this paper, the evolution of state-level telecommunications regulation reveals several characteristics worth noting. First, New York was an early leader in the recognition of the emergence of competition in telecommunications markets. The PSC embraced this transition and enabled the emergence of competition.<sup>46</sup> Yet, in spite of the New York PSC's finding in 2006 that the telecommunications industry in New York was sufficiently competitive to rely on market-based outcomes rather than public utility regulation,<sup>47</sup> regulatory

<sup>&</sup>lt;sup>43</sup> John W. Mayo, "Evolution of Regulation: Twentieth Century Lessons and Twenty-First Century Opportunities," Federal Communications Law Journal, Volume 65, 2013, pp. 145-146.

<sup>&</sup>lt;sup>44</sup> Affidavit of Jerry Hausman," Petition of the People of the State of Cal. & the Public Utilities Commission of the State of California to Retain Regulatory Authority Over Intrastate Cellular Service Rates, FCC PR Docket No. 94-105, Sept. 19, 1994, pp. 3, 8, available at: http://fjallfoss.fcc.gov/ecfs/document/view?id=1354110003.

<sup>&</sup>lt;sup>45</sup> John W. Mayo, "The Evolution of Regulation: Twentieth Century Lessons and Twenty-First Century Opportunities," Federal Communications Law Journal, Volume 65, 2013, p. 146.

<sup>&</sup>lt;sup>46</sup> As early as 1989, Eli Noam, Professor of Economics at Columbia University's School of Business (and then a New York PSC Commissioner), implicitly embraced the core elements of the RBR approach outlined here. At that time, he observed that upgrades to the network are "of major importance to the economic efficiency and growth of information intensive industries. ISDN, broadband networks, fiber in the loop, and intelligence in the network are building blocks in this upgrade. We should encourage experimentation, innovation, infrastructure investments and a more rapid pace of planning." Today, it is apparent that Professor Noam's call for this focus on experimentation, innovation, investment and the more rapid evolution of regulation is essential if New York is to remain on the cutting edge of policy and support continued investment by the industry.

<sup>&</sup>lt;sup>47</sup> "[T]he existence of three platforms, one traditional landline plus wireless and broadband, in any market would indicate that the market is sufficiently competitive to constrain anti-competitive behavior of the market participants... FCC-based zip code data [was used] to determine broadband availability and FCC wireless antenna databases to determine wireless availability." *See* State of New York Public Service Commission, "Statement of

changes in New York State have subsequently been modest. Of note, this slowdown has occurred over the same period in which the marketplace, particularly in the less-regulated wireless and broadband sectors, has produced astounding technological gains, choices, investments and prices that have all benefitted consumers.<sup>48</sup> Nevertheless, some observers have even gone so far as to argue that movement toward a lighter touch regulatory environment should be reversed. To best gauge the merits of the alternative regulatory or de-regulatory options looking ahead, it is especially useful to flesh out the RBR principles identified above.

### B. Results-Based Regulation: A closer look

## 1. Principle 1 – RECOGNIZE THE INEVITABILITY OF IMPERFECTION

33. Principle 1 states that in practice both markets and regulation are imperfect. Regulation simply cannot costlessly cure every market failure. Indeed, history has revealed that regulation imposes not only direct costs but may also create costly market distortions and resource misallocations. On the other hand, history has also shown that ubiquitous reliance on *laissez faire* market-based allocations of resources can lead to situations in which consumers are ill-served. The recognition of this seemingly obvious point is the first step in the analysis and crafting of an effective policy environment in any industry.

34. Specifically, in telecommunications as with virtually all markets, we simply are unlikely to ever see a classic textbook market of perfect competition in which the industry is populated with numerous small, homogeneous price-taking firms. In light of Principle 1, this

Policy on Further Steps Toward Competition in the Intermodal Telecommunications Market and Order Allowing Rate Filings," Case 05-C-0616, April 11, 2006, p. 24.

<sup>&</sup>lt;sup>48</sup> See Anna-Maria Kovacs, "Telecommunications competition: the infrastructure-investment race," October 8, 2013, available at: http://internetinnovation.org/images/misc\_content/study-telecommunications-competition-09072013.pdf.

absence of textbook-pure markets, however, cannot be taken as a reflexive need to install or maintain traditional public-utility style regulation. Indeed, as the New York PSC has recognized: "Perfect competition, which is the ideal, is not needed; the market need only be adequately competitive. Given the inefficiencies inherent in economic regulation, a market need not be perfect, or even near-perfect, to produce better outcomes for consumers than traditional regulation, given the well-documented inefficiencies of the latter, and its shortcomings in an increasingly competitive market."<sup>49</sup> And, as noted by the U.S. Department of Justice, which oversees federal antitrust policies, "[t]he 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."<sup>50</sup>

35. In the absence of textbook-pure markets, the relevant question for policy design becomes whether market-based, rather than regulation-controlled, resource allocation is better (rather than perfect). This inquiry (which is detailed in the discussion of Principles 2-5 below) reveals that the increasing reliance in New York and to a larger degree in other states, on marketbased policies have created numerous net benefits. Not only have the costs of public utility regulation risen as markets have become more dynamic, but a number of market-driven benefits have arisen, including expanded output, enhanced innovation, beneficial pricing, and expanded investment. This correlation of more market-based policies with consumer benefits in telecommunications markets in New York and around the country do not necessarily prove that the movement toward relaxing regulation in telecommunications markets is better than more

 <sup>&</sup>lt;sup>49</sup> State of New York Public Service Commission, "Statement of Policy on Further Steps Toward Competition in the Intermodal Telecommunications Market and Order Allowing Rate Filings," Case 05-C-0616, April 11, 2006, p. 42.
 <sup>50</sup> Department of Justice, "Comments of the U.S. Department of Justice, A National Broadband Plan for Our Future," FCC GN Docket No. 09-51, January 4, 2010, p. 11.

heavy-handed regulation. It does, however, unequivocally place a high burden on those that would claim that economic welfare would improve with greater reliance on regulation in these markets.

### 2. Principle 2 – SMARTLY EVOLVE POLICY WITH TECHNOLOGY AND OTHER INSTITUTIONS

36. Principle 2 warns generally against regulatory ossification in the presence of changing fundamentals in technology, markets and policy institutions. Specifically, in the presence of advancing technology and evolving institutions, regulators must be alert to the possibility that different regulatory or deregulatory designs would better oversee the telecommunications sector.

37. Initially, public utility regulation of telecommunication in New York (and around the country) was predicated on the presence of particular market and institutional conditions. Specifically, PSC oversight of the industry rested on the assumption that a single provider of all telecommunications service throughout a market territory would constitute the cost-minimizing industry structure. In such a world of natural monopoly, it was thought that while the single provider could minimize supply costs, subsequent monopoly distortions that would result could be corrected by public utility-style regulation of prices and quality.

38. Importantly, this utility-style regulation is most effective and least costly to implement in an environment in which market conditions are stable. That is, when demand is stable and predictable, as are costs, regulation can more confidently establish prices in a

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monopolistic environment to emulate those that would exist in competitive markets.<sup>51</sup> In the past two decades, however, telecommunications markets have been decidedly unstable, with pronounced demand shifts, emerging competitors, evolving quality and dramatic changes in technology.<sup>52</sup> These changes make it more challenging (and costly) to use regulation to emulate competitive market outcomes.

39. Among the most pronounced changes, the emergence of cable-based telephony and the growth of wireless alternatives to traditional landline service have dramatically increased the range of choices by which consumers may satisfy their telecommunications needs today. Rather than a single, monopoly provider of telecommunications services, New Yorkers enjoy a number of options with which to satisfy their communications needs. These include not only a range of providers of voice communications but also alternatives such as texting, Apple's FaceTime, Microsoft's Skype, instant messaging, Facebook, Twitter, email and various other social networking services. Moreover, not only have choices arisen, but the technological attributes of these choices are expanding at a dizzying pace. For instance, in just the past four years, virtually all of the major wireless carriers operating in New York have upgraded their wireless services to a 4G/LTE platform. The consequence is that consumers are now able to enjoy not only a choice of voice providers, but also now can attain broadband speeds for data and

<sup>&</sup>lt;sup>51</sup> For a rich discussion of exactly how this might come about, *see* The Economics of Regulation: Principles and Institutions, Alfred E. Kahn, MIT Press, 1970; and Government and Business: The Economics of Antitrust and Regulation, David L. Kaserman and John W. Mayo, Dryden Press, 1995.

<sup>&</sup>lt;sup>52</sup> In light of these changes, it is widely recognized that local exchange telephone service is no longer a natural monopoly. *See*, e.g., State of New York Department of Public Service, "Telecommunications in New York: Competition and Consumer Protection, A White Paper Prepared by the State of New York Department of Public Service Staff," Case 05-C-0616, September 21, 2005, p. 40, stating that "The provision of telecommunications services is no longer a natural monopoly."

video transmissions from their wireless providers.<sup>53</sup> With the presence of such pronounced technological change, Principle 2 warns regulators against clinging to traditional public utility constructs.

40. While technological change is directly expanding New Yorkers' choices for their telecommunications needs and the quality of the services they consume, it is also empowering consumers in indirect ways, enhancing their power to secure high quality services at attractive prices. Specifically, discontent consumers in the past have most prominently had two choices: remain discontent but continue as a customer of the firm they have used in the past or switch providers when that alternative was present. Most recently, however, with the emergence of internet-based communications media, including social media, the ability of discontent consumers to effectively have their voices heard and receive redress has grown dramatically.<sup>54</sup>

41. Consider for instance, that in September 2011, when Netflix announced that it was splitting its video-streaming services and DVD-by-mail services into two separate businesses, customers objected so strongly that the move was quickly abandoned.<sup>55</sup> The company had planned on turning its DVD-by-mail service into a separate business called Qwikster, which would require customers who wanted both DVDs and online streaming to hold two separate accounts for the two different services. Customers responded by "howl[ing] about

<sup>54</sup> This framework for assessing consumer behavior was initially developed in Albert O. Hirschman, "Exit, Voice and Loyalty: Responses to Decline in Firms, Organizations, and States," Harvard University Press, 1970. For a systematic treatment within the context of the opening of local exchange telephone markets to competition, *see* T. Randolph Beard, Jeffrey T. Macher and John W. Mayo, "Can You Hear Me Now? Exit, Voice and Loyalty under Increasing Competition," Georgetown University working paper, February 2015.

<sup>&</sup>lt;sup>53</sup> See "America's Largest and Most Reliable 4G LTE Network," Verizon Wireless, available at: http://www.verizonwireless.com/wcms/consumer/4g-lte.html. 4G LTE network providers typically offer average download speeds of 5 to 12 Mbps, which makes them comparable to or faster than most wireline DSL services, although generally slower than wireline services using fiber or advanced cable company technologies.

<sup>&</sup>lt;sup>55</sup> Chris Taylor, "As Consumer Power Goes Viral, Company Branding Quakes," Thomson Reuters, January 6, 2012, available at: http://in.reuters.com/article/2012/01/06/us-usa-companies-backlash-idUSTRE80424T20120106.

the plan, which promised to heap inconvenience on top of a previously announced 60% price increase." <sup>56</sup> Users took to the internet and social media to express their anger and thousands cancelled their subscriptions in protest, forcing Netflix to cancel the spinoff no less than three weeks after the plan was first announced.<sup>57</sup> A Netflix spokesperson, said at the time, "The Internet is the great equalizer, and that's a beautiful thing — even if it's not positive for us... We made mistakes that hurt our brand, consumers let us know about it, and now we're rebuilding step by step." <sup>58</sup>

42. Similarly, in November 2011, Bank of America proposed imposing a monthly five-dollar fee on customers for using their debit cards. Bank of America's CEO Brian Moynihan defended the proposed charge by saying that, "We have the right to make a profit."<sup>59</sup> Moynihan's statement outraged customers who took to Twitter and Facebook, mocking him with statements like, "I have the right to bank elsewhere."<sup>60</sup> In addition, an online petition was created on Change.org protesting the debit usage fee, which garnered 300,000 signatures.<sup>61</sup> This rapid, Internet-enabled ability to galvanize and voice consumer sentiments led Bank of America to quickly cancel its proposed fee.<sup>62</sup> Bank of America co-COO David Darnell issued a statement saying, "Our customers' voices are most important to us.... As a result, we are not currently

<sup>&</sup>lt;sup>56</sup> Stu Woo, "Under Fire, Netflix Rewinds DVD Plan," The Wall Street Journal, October 11, 2011.

<sup>&</sup>lt;sup>57</sup> Phil Rosenthal, "In Scrapping Fee, BofA Hears Social Media's Voice #loudandclear," The Chicago Tribune, November 2, 2011, available at: http://articles.chicagotribune.com/2011-11-02/business/ct-biz-1102-phil-20111102 1 debit-card-fees-bofa-suntrust-banks.

 <sup>&</sup>lt;sup>58</sup> Chris Taylor, "As Consumer Power Goes Viral, Company Branding Quakes," Thomson Reuters, January 6, 2012, available at: http://in.reuters.com/article/2012/01/06/us-usa-companies-backlash-idUSTRE80424T20120106.
 <sup>59</sup> Phil Rosenthal, "In Scrapping Fee, BofA Hears Social Media's Voice #loudandclear," The Chicago Tribune,

November 2, 2011, available at: http://articles.chicagotribune.com/2011-11-02/business/ct-biz-1102-phil-20111102\_1\_debit-card-fees-bofa-suntrust-banks.

<sup>&</sup>lt;sup>60</sup> Id.

 <sup>&</sup>lt;sup>61</sup> Chris Taylor, "As Consumer Power Goes Viral, Company Branding Quakes," Thomson Reuters, January 6, 2012, available at: http://in.reuters.com/article/2012/01/06/us-usa-companies-backlash-idUSTRE80424T20120106.
 <sup>62</sup> In Retreat, Bank of America Cancels Debit Card Fee, Tara Siegel Bernard, The New York Times, November 1, 2011, available at: http://www.nytimes.com/2011/11/02/business/bank-of-america-drops-plan-for-debit-card-fee.html.

charging the fee and will not be moving forward with any additional plans to do so.<sup>363</sup> In addition to Bank of America, other banks including Wells Fargo, JPMorgan Chase, and SunTrust, Regions Financial also announced they would cancel their debit usage fees after seeing the public backlash.<sup>64</sup>

43. And specifically within the telecommunications industry, in December 2011, Verizon Wireless planned on instituting a two-dollar "convenience" charge for customers who wanted to pay their bills online or by phone.<sup>65</sup> In response, a Change.org petition protesting the move was created. It had 165,000 signatures within hours and reflected the consumer outrage that went viral after Verizon announced its plan.<sup>66</sup> Verizon Wireless reversed its plan within a day.<sup>67</sup>

44. In sum, the dissemination of Internet-based communications tools has quickly created a powerful tool for consumers to discipline firms directly. In the New York metropolitan area alone, in 2013 consumers made more than fifty-six thousand complaints to the Better Business Bureau for a range of goods and services they purchased.<sup>68</sup> The ability for individual consumer complaints to be made public — in addition to the ability of the consumer to choose a competitor for a good or service — provides powerful incentives for firms to supply high quality services at reasonable prices.

<sup>&</sup>lt;sup>63</sup> Chris Taylor, "As Consumer Power Goes Viral, Company Branding Quakes," Thomson Reuters, January 6, 2012, available at: http://in.reuters.com/article/2012/01/06/us-usa-companies-backlash-idUSTRE80424T20120106.

<sup>&</sup>lt;sup>64</sup> Tara Siegel Bernard, "In Retreat, Bank of America Cancels Debit Card Fee," The New York Times, November 1, 2011, available at: http://www.nytimes.com/2011/11/02/business/bank-of-america-drops-plan-for-debit-card-fee.html.

<sup>&</sup>lt;sup>65</sup> Chris Taylor, "As Consumer Power Goes Viral, Company Branding Quakes," Thomson Reuters, January 6, 2012, available at: http://in.reuters.com/article/2012/01/06/us-usa-companies-backlash-idUSTRE80424T20120106.
<sup>66</sup>Id.

<sup>&</sup>lt;sup>67</sup> Ron Lieber, "After Outcry, Verizon Abandons \$2 Fee," The New York Times, December 30, 2011, available at: http://www.nytimes.com/2011/12/31/business/media/verizon-wireless-abandons-2-fee-after-consumer-outcry.html. <sup>68</sup> Better Business Bureau Serving Metro NY, "2013 Annual Report," 2013, p. 3, available at:

http://www.bbb.org/globalassets/local-bbbs/new-york-ny-24/media/documents/annual-report-2014-final.pdf. These complaints were for all companies.

45. This disciplinary voice of consumers compels a rethinking of the merits of traditional restrictions on telecommunications firms' quality. Specifically, both the presence of competition for Verizon in New York and the enhanced direct power of consumers to discipline firms by exercising their "voice" suggest that traditional regulatory procedures to promote quality assurance requirements are likely to be both costly and counterproductive going forward.

46. Beyond these technologically-based changes, Principle 2 also guides regulators to consider the "right-sizing" of regulation that arises due to changes in other governmental oversight organizations. In this regard, institutions that have historically played a complementary role to the activities of the PSC through "consumer protection" have grown in stature and maturity over the years. In particular, at the federal level, the Federal Trade Commission (FTC) is now celebrating a century of proscribing "unfair methods of competition,"<sup>69</sup> while a rich body of antitrust law and enforcement activities are now carried out by both the Antitrust Division of the Department of Justice and the FTC. The FCC has also been increasingly involved in enforcement activities involving telecommunication companies, for example, in investigations involving cramming.<sup>70</sup>

47. In fact, the FTC exerts broad power to protect consumers from abuse, should it occur, in the telecommunications market. In total, the FTC has filed more than 30 anti-cramming cases against landline phone bills in the last twenty years and has now shifted its focus to mobile cramming as wireless usage has grown in the country.<sup>71</sup> This active and growing oversight by the FTC provides important consumer protection for the telecommunications industry. It also

<sup>&</sup>lt;sup>69</sup> 15 U.S.C. § 57(a)(2).

<sup>&</sup>lt;sup>70</sup> Edward Wyatt, "AT&T Mobility to Pay \$105 Million to Settle Wireless Cramming and Truth-in-Billing Investigation," October 8, 2014, available at: http://www.fcc.gov/document/att-pay-105-million-resolve-wireless-cramming-investigation-0.

<sup>&</sup>lt;sup>71</sup> Federal Trade Commission, "FTC Testifies Before Congress on Mobile Cramming Issues," July 30, 2014, available at: http://www.ftc.gov/news-events/press-releases/2014/07/ftc-testifies-congress-mobile-cramming-issues.

compels a renewed consideration of whether the full panoply of state-level regulatory activities continues to be necessary.

48. State-level consumer protection institutions have also grown in prominence. According to the National Association of Attorneys General, "the state and territorial attorneys general are a leading force in protecting the rights of consumers. [...] Through civil and criminal litigation, mediation, public and business education, local and federal legislative initiatives and cooperative enforcement actions, the attorneys general play a key role in protecting the rights of their citizens."<sup>72</sup> As argued in an academic article that reviewed the role of state attorneys general across the United States from a constitutional perspective, the "[1]egislative mandates in broad policy areas such as antitrust, consumer protection [...] and the general growth of state government have enlarged the attorney general's role in state law and policy."<sup>73</sup> Another article emphasized the increasing role of state attorneys general in enforcing agency regulations in telecommunications.<sup>74</sup>

49. Consistent with this expanding role, the New York Attorney General's office has also grown into a formidable institution with over 1,700 employees and 650 Assistant Attorneys General.<sup>75</sup> The office has established dedicated bureaus in several "economic justice" areas including antitrust, Internet<sup>76</sup> and consumer fraud. The New York Attorney General's oversight

<sup>&</sup>lt;sup>72</sup> National Association of Attorneys General, "Consumer Protection," available at: http://www.naag.org/consumer\_protection.php.

<sup>&</sup>lt;sup>73</sup> Scott M. Matheson, "Constitutional Status and Role of the State Attorney General," University of Florida Journal of Law & Public Policy, Fall 1993, p. 2.

<sup>&</sup>lt;sup>74</sup> Amy Widman, "Advancing Federalism Concerns in Administrative Law Through a Revitalization of State Enforcement Powers: A Case Study of the Consumer Product Safety and Improvement Act of 2008," Yale Law & Policy Review, 2010, pp. 165-215.

<sup>&</sup>lt;sup>75</sup> See The New York State Office of the Attorney General, "Our Office," available at: http://www.ag.ny.gov/our-office.

<sup>&</sup>lt;sup>76</sup> The Internet Bureau acts to protect consumers and families from new and developing online threats. *See* The New York State Office of the Attorney General, "Internet Bureau," available at: http://www.ag.ny.gov/bureau/internet-bureau.

is not restricted to industries that do not have an established regulator; the Attorney General also oversees industries, such as telecommunications, that have historically been in the domain of the New York PSC. Indeed, in comments regarding pending regulatory changes in New York's telecommunications industry, then New York Attorney General, Elliot Spitzer, explained the reasons for his interest in the changes, stating: "The Attorney General is charged with enforcing state and federal antitrust and consumer protection laws. The Attorney General advocates in Commission proceedings primarily on behalf of New York State, consumer and small business interests, and the public interest generally."<sup>77</sup>

50. With this reach, the Attorney General's office has increasingly taken a role in telecommunications matters. For example, in March 2011, the office launched a review of AT&T's acquisition of T-Mobile for potential anti-competitive impacts on the telecommunications market in New York.<sup>78</sup> Similarly, in August 2012, the Department of Justice and the New York State Attorney General's office filed a civil antitrust lawsuit to prevent Verizon Wireless, Comcast, Time Warner Cable, Bright House Networks, and Cox Communications from enforcing a series of commercial agreements that they believed would reduce the level of competition in the telecom market, increase prices, and reduce quality for consumers.<sup>79</sup> The agencies filed a proposed settlement, which was later approved, and which imposed certain limitations and restrictions on the transaction.<sup>80</sup>

 <sup>&</sup>lt;sup>77</sup> "Comments of Eliot Spitzer, Attorney General of the State of New York," Case 05-C-0616, August 15, 2005, p. 2.
 <sup>78</sup> New York State Office of the Attorney General, "A.G. Schneiderman To Undertake Thorough Review Of AT&T,

T-Mobile Merger," March 29, 2011, available at: http://www.ag.ny.gov/press-release/ag-schneiderman-undertake-thorough-review-att-t-mobile-merger.

<sup>&</sup>lt;sup>79</sup> Department of Justice, Office of Public Affairs, "Justice Department Requires Changes to Verizon-Cable Company Transactions to Protect Consumers, Allows Procompetitive Spectrum Acquisitions to Go Forward," August 16, 2012, available at: http://www.justice.gov/opa/pr/justice-department-requires-changes-verizon-cablecompany-transactions-protect-consumers.

51. In sum, both the growth of alternative institutions designed to protect consumers and the changing nature of communications technology point clearly toward the need for the regulatory structure in New York to evolve. While consumer protections generally applicable to companies doing business in New York State are important, these same protections, which are enforced by an increasingly robust set of state and federal institutions, bring into question the ongoing need for 20<sup>th</sup> century public utility regulation of telecommunications in New York. Beginning decades ago, the industry moved away from the natural monopoly construct that motivated the emergence of granular regulatory controls for telecommunications. Principle 2 points to technological and institutional changes as a trigger for adjustments in regulation. In the case at hand, changes in technology and the growth of complementary institutions indicate that New York is ripe for further revision of its 20<sup>th</sup> century public utility-style regulatory infrastructure as it applies to the communications industry of today.

### 3. Principle 3 – BENCHMARK AND EXPERIMENT RELENTLESSLY

52. Principle 3 calls for regulators to engage in empirical counterfactual scrutiny of alternative market governance mechanisms. In other words, are there lessons to be learned from benchmarking against other states, federal regulatory policies, or other countries? Also, are there lessons to be learned from how other industry sectors and services, such as wireless and broadband, have been treated from a policy perspective? What might we make of experiments being conducted in New York with alternative regulatory constructs?

53. In this regard, it is interesting to note that the PSC has historically shown tendencies to both benchmark and experiment. For example, as early as the 1989 Competition I Order, the PSC relied upon observations from other states as well as the "experience" in New York to conclude that only the most minimal oversight of the cellular industry was warranted in

the state.<sup>81</sup> In Commissioner Gail Garfield Schwartz's concurring opinion to that order, she suggests that the New York PSC should use "market tests" to determine the industry's "potential for durable competition," especially for intra-LATA services.<sup>82</sup> She also encouraged the PSC to design trials for other segments of the industry, reasoning that the "volatile" nature of the telecom industry makes it particularly fitting for these types of market tests.<sup>83</sup>

54. Lessons from experimentation and benchmarking are readily available both from within New York and from other states. One such example, albeit one necessitated by the exigencies of Superstorm Sandy, was the PSC's decision to conditionally allow Verizon to replace its copper-based, voice telephone service on western Fire Island with Verizon Voice Link, a wireless service designed for home use for voice service. Because of Superstorm Sandy, a large percentage of Verizon's copper facilities on the western portion of the island had been damaged beyond repair.<sup>84</sup> The PSC recognized that the proposed Verizon Voice Link service would be similar in some respects and would differ in some respects from the services that existed prior to Sandy.<sup>85</sup> Recognizing, however, the urgency of restoring telephone service in the area and the risk that new wireline facilities would be vulnerable to future storms, the PSC approved Verizon's request, "subject to further review, monitoring and public comment."<sup>86</sup>

55. The value of such experimentation is that it provides results, which inform both suppliers and regulators on the best path forward. In the case of this particular experiment, the

<sup>&</sup>lt;sup>81</sup> State of New York Public Service Commission, "Opinion and Order Concerning Regulatory Response to Competition," Case 29469, May 16, 1989, p. 9.

 <sup>&</sup>lt;sup>82</sup> State of New York Public Service Commission, "Concurring Opinion of Gail Garfield Schwartz," p. 4, in Opinion and Order Concerning Regulatory Response to Competition, Case 29469, May 16, 1989, p. 46.
 <sup>83</sup> Id.

<sup>&</sup>lt;sup>84</sup> State of New York Public Service Commission, "Order Conditionally Approving Tariff Amendments in Part, Revising in Part, and Directing Further Comments," Case 13-C-0197, May 16, 2013, p. 2.
<sup>85</sup> Id. p. 6.

<sup>&</sup>lt;sup>86</sup> *Id.* pp. 1-2.

provision of Verizon Voice Link was proven to provide an efficient technological means for consumers to rapidly regain their communication capabilities. The results also revealed certain concerns with the exclusive use of Verizon Voice Link and other wireless services for data on western Fire Island in view of the unique circumstances of that area. Principle 3 indicates that this sort of experimentation and adjustment approach is likely to reap significant consumer benefits over time.

56. Another example of the PSC's use of experimentation is the proceeding regarding Broadband Over Power Line (BPL) technologies. BPL is a technology that uses regulated electric utility's power lines, poles, and ducts in providing broadband services.<sup>87</sup> In January 2006, the PSC initiated a proceeding to investigate the technology and potential policies for its deployment.<sup>88</sup> After receiving comments from interested parties over the next two years, the PSC issued a Statement of Policy regarding BPL in 2008.<sup>89</sup> In that statement, the PSC determined that although BPL technology was still young, "there [was] potential for a number of technology and marketing trials" and "encourage[d] electric utilities, BPL equipment manufacturers, and third party BPL operators to participate in such trials."<sup>90</sup> Furthermore, the PSC acknowledged the need to be flexible regarding regulations surrounding BPL, recognizing that it would need to "revisit [its] determinations when and if BPL technology becomes commercially viable."<sup>91</sup> After worldwide trials to deploy the technology, power companies and internet service providers have all but concluded that BPL is not suitable for delivering broadband Internet access due to the

<sup>&</sup>lt;sup>87</sup> State of New York Public Service Commission, "Order Initiating Proceeding and Inviting Comments," Case 06-M-0043, January 25, 2006, p. 2.

<sup>&</sup>lt;sup>88</sup> *Id.* p. 2-4.

<sup>&</sup>lt;sup>89</sup> See State of New York Public Service Commission, "Statement of Policy on Deployment of Broadband Over Powerline Technologies," Case 06-M-0043, October 18, 2006.

<sup>&</sup>lt;sup>90</sup> *Id.* p. 3.

<sup>&</sup>lt;sup>91</sup> *Id.* p. 6.
technology's limited reach and low bandwidth.<sup>92</sup> Despite this outcome, the NY PSC's choice to explore BPL technology and allow for market trials is an example of the Commission's use of benchmarking and experimentation.

57. In the spirit of Principle 3, it is also possible that New York can draw lessons on regulatory reform from other states. While New York State has taken some strides toward landline liberalization, its actions have lagged those of most other states, several of which have passed regulatory reforms to limit their public utility commission's jurisdiction over local wireline services. Indeed, the earliest experience of state-level deregulation in the telecommunications industry happened almost 30 years ago. In 1986, the Nebraska Legislature approved what was then considered a bold measure to deregulate several aspects of local telephone services, including rates.<sup>93</sup> The Legislature aimed to provide an environment where companies would take advantage of technological improvements in the telecommunications industry to increase competition in the state.<sup>94</sup> Significantly, unlike most other states that subsequently considered deregulation, Nebraska didn't require the market to be competitive prior to deregulation of prices.<sup>95</sup> Although there was much concern at the time that prices would

<sup>&</sup>lt;sup>92</sup> Martin Courtney, "Whatever Happened to Broadband over Power Line," Engineering and Technology Magazine, Vol. 8, Issue 10, October 15, 2013, available at: http://eandt.theiet.org/magazine/2013/10/broadband-over-power-line.cfm.

<sup>&</sup>lt;sup>93</sup> Rates for all services were almost completely deregulated, with the exception of basic local exchange service. Basic local exchange service was no longer subject to traditional rate base, but was restrained by certain provisions which: (1) required companies to give customers 120-day notice and hold a public informational meeting in each commission district before changing rates; (2) allowed consumers to petition the PSC to review a rate increase; and (3) allowed the PSC to review rate increases of 10% per year or more. *See* Milton L. Mueller, "Telephone companies in paradise: A case study in telecommunications deregulation," 1992, Chapter 3, pp. 31-32.

<sup>&</sup>lt;sup>94</sup> T. R. Reid, "Nebraska takes phone deregulation all the way," May 27, 1986, The Bulletin and The Washington Post, available at:

http://news.google.com/newspapers?nid=1243&dat=19860527&id=2WgPAAAAIBAJ&sjid=uIYDAAAAIBAJ&pg =6538,2278904.

<sup>&</sup>lt;sup>95</sup> Milton L. Mueller, "Telephone companies in paradise: A case study in telecommunications deregulation," 1993, Chapter 8.

increase substantially, especially for the large rural population of the state,<sup>96</sup> those price increases did not materialize.<sup>97</sup> In particular, a 1992 study comparing the prices of basic telecom services in Nebraska and regulated states before and after deregulation found that "[t]he pattern of rate levels and trends in Nebraska is hardly distinguishable from what it was in regulated states."<sup>98</sup>

58. By 2006, an increasing amount of state-level limitations on telecommunications regulation began to take effect<sup>99</sup> and the result has been a reduction in many state commissions' oversight in areas such as IP-based services, quality of service, and the ability of state regulators to address consumer complaints. Deregulation also has eliminated carrier of last resort (COLR) obligations and the requirement that carriers provide tariffed basic local services in various states.<sup>100</sup> According to an analysis by the National Regulatory Research Institute ("NRRI"), by the end of 2013, 31 states had reduced telecommunications oversight.<sup>101</sup>

59. While the deregulatory push is fairly recent, marketplace evidence that has emerged so far has generally provided support for these deregulatory steps. As summarized by NRRI in 2013:

It is too early to judge accurately the long-term effects of deregulation on carriers and consumers, but the early experience from the states that deregulated between 2006 and 2012 shows that, with some exceptions, the dire impacts on pricing and service availability forecasted by opponents of the legislation have not yet

<sup>&</sup>lt;sup>96</sup> T.R. Reid, "Nebraska takes phone deregulation all the way," The Bulletin and The Washington Post, May 27, 1986, available at:

http://news.google.com/newspapers?nid=1243&dat=19860527&id=2WgPAAAAIBAJ&sjid=uIYDAAAAIBAJ&pg =6538,2278904.

<sup>&</sup>lt;sup>97</sup> Milton L. Mueller, "Telephone companies in paradise: A case study in telecommunications deregulation," 1993, Chapter 4.

<sup>&</sup>lt;sup>98</sup> *Id.* p. 52.

<sup>&</sup>lt;sup>99</sup> Sherry Lichtenberg, "Telecommunications Deregulation: Updating the Scorecard for 2013," NRRI, May 2013, page iv, available at: http://www.nrri.org/web/guest/research-papers/-/document\_library\_display/3stN/view/0/7501. <sup>100</sup> *Id.* page iv.

<sup>&</sup>lt;sup>101</sup> Sherry Lichtenberg, "Telecommunications Legislation in 2014: Completing the Process," NRRI, June 2014, p. 5, available at: http://www.nrri.org/documents/317330/b72af483-4ac3-4cc8-9d1f-1871a9284c9a.

appeared. While there have been some reports of price increases by deregulated carriers and reductions in service quality as carriers reduce the maintenance of their embedded copper plant, the vast majority of consumers still have access to local and long-distance calling services from a variety of carriers, using multiple access technologies."<sup>102</sup>

#### The NRRI also wrote:

It has only been three years since the majority of the bills limiting commission oversight of retail telecommunications were passed, and the early results seem, if not positive, then at least 'palatable.' Carriers have not withdrawn service from their traditional markets, including their rural markets. ILECs have not raised prices significantly or eliminated traditional TDM wireline service offerings (despite AT&T's plan to 'test' such a change in the near future). Customer complaint levels appear to be holding steady, either because customers have adjusted to changes in service quality (for example, wireless dropped calls) or, more likely, because carriers simply continue to "do the right thing" in response to market needs. And commissions are adjusting to their new role in managing a (mostly) deregulated telecommunications ecosystem."<sup>103</sup>

60. Of particular interest may be the manner in which providers reacted to deregulation as it related to COLR requirements. According to the NRRI, "Although COLR requirements were withdrawn (or limited) in 13 states between 2010 and 2012, no state reported that a deregulated carrier has stopped providing wireline service in areas where it is the provider of last resort."<sup>104</sup>

61. Most states have been more aggressive than New York in taking steps to ease regulatory constraints, including Florida, Wisconsin, Virginia, and Delaware, among others.<sup>105</sup>

<sup>&</sup>lt;sup>102</sup> Sherry Lichtenberg, "Telecommunications Deregulation: Updating the Scorecard for 2013," NRRI, p. 34, available at: http://www.nrri.org/web/guest/research-papers/-/document\_library\_display/3stN/view/0/7501.

<sup>&</sup>lt;sup>103</sup> *Id.* p. 40.

<sup>&</sup>lt;sup>104</sup> *Id.* p. 39.

<sup>&</sup>lt;sup>105</sup> See also the discussion of the states that liberalized price controls from 2005 to 2010 in Jeffrey A. Eisenach and Kevin W. Caves, "The Effects of Liberalizing Price Controls on Local Telephone Service: An Empirical Analysis," February 2012, pp. 17-19.

With its Telecommunications Reform Act of 2011, Florida, the state with the largest percentage of individuals 65 years of age and older,<sup>106</sup> removed the majority of retail telecommunications services from commission oversight, including tariffs, pricing, service quality, and cramming.<sup>107</sup> In addition, the responsibility for consumer complaints in Florida was shifted to the Department of Agriculture and Consumer Affairs.<sup>108</sup>

62. Both the NRRI and the Florida PSC have reported good results from the regulatory changes. For example, according to NRRI:

The impact of the reduction of telecommunications oversight on Florida consumers appears to have been minor so far. According to Beth Salak, Director of the Office of Telecommunications, 'We have seen no significant negative impacts from the commission's changed responsibilities.' The primary ILEC in Florida, AT&T, has continued to offer basic service, although prices have increased. Prices for Lifeline service have also increased, due to reductions in the amount carriers receive from the FCC and reductions in Universal Service Funding. Carriers have not left the state or reduced service.<sup>109</sup>

63. In its 2013 Report on the Status of Competition in the Telecommunications

Industry, the Florida PSC stated that "customers are finding reasonable pricing packages and

functionality with CLECs, cable providers, and wireless providers, as well as VoIP services from

<sup>107</sup> Sherry Lichtenberg, "Telecommunications Deregulation: Updating the Scorecard for 2013," NRRI, p. 35,

<sup>&</sup>lt;sup>106</sup> Emily Brandon, "65-and-Older Population Soars," U.S. News & World Report, available at:

http://money.usnews.com/money/retirement/articles/2012/01/09/65-and-older-population-soars.

available at: http://www.nrri.org/web/guest/research-papers/-/document\_library\_display/3stN/view/0/7501. The Commission retained jurisdiction over Lifeline, carrier certification, and wholesale issues, including carrier-to-carrier complaints.

<sup>&</sup>lt;sup>108</sup> *Id.* p. 36. The Commission retained jurisdiction over Lifeline, carrier certification, and wholesale issues, including carrier-to-carrier complaints.

<sup>&</sup>lt;sup>109</sup> Sherry Lichtenberg, "Telecommunications Deregulation: Updating the Scorecard for 2013," NRRI, p. 36, available at: http://www.nrri.org/web/guest/research-papers/-/document\_library\_display/3stN/view/0/7501.

the ILEC<sup>"110</sup> and also that "[t]he number and variety of competitive choices among all types of service providers suggests that competition is having a positive impact on the telecommunications market in Florida."<sup>111</sup>

64. Wisconsin has also eliminated much retail telecommunications commission oversight, including pricing, tariff requirements, quality-of-service requirements, and the resolution of consumer complaints.<sup>112</sup> So far, results of the deregulation appear to be positive. According to the NRRI:

As in Florida, Wisconsin has seen few (if any) consumer problems caused by the deregulation of telecommunications. Commission staff continues to monitor the number and type of complaints received but has seen no increase in volumes or types of concerns. Carriers have not left the market or dropped basic landline service or required customers to purchase product bundles rather than standalone local wireline service in rural or hard-to-serve portions of the state. This may change after COLR requirements are withdrawn at the end of April 2013. The loss of service in these areas has been a concern raised in nearly all of the conversations regarding telecommunications deregulation.<sup>113</sup>

65. Virginia too has liberalized its local telephone service in multiple stages. In 2007,

the Virginia State Corporation Commission started a multi-year process to end price regulation for many telephone services, including for basic services, in urban and suburban areas of Virginia.<sup>114</sup> In 2011, Virginia made tariffs optional, removed, effective July 2013, the

<sup>&</sup>lt;sup>110</sup> Florida Public Service Commission, "Report on the Status of Competition in the Telecommunications Industry: As of December 31, 2013," p. 1, available at:

http://www.psc.state.fl.us/publications/pdf/telecomm/20140730MasterComp.pdf.

 $<sup>^{111}</sup>$  *Id*.

<sup>&</sup>lt;sup>112</sup> Sherry Lichtenberg, "Telecommunications Deregulation: Updating the Scorecard for 2013," NRRI, p. 36,

available at: http://www.nrri.org/web/guest/research-papers/-/document\_library\_display/3stN/view/0/7501. The Commission retained jurisdiction over Lifeline, carrier certification, and wholesale issues, including carrier-to-

The Commission retained jurisdiction over Lifeline, carrier certification, and wholesale issues, including carrier-tocarrier complaints.

<sup>&</sup>lt;sup>113</sup> *Id.* p. 37.

<sup>&</sup>lt;sup>114</sup> Commonwealth of Virginia State Corporation Commission, "SCC Approves Partial Deregulation of Verizon Local Telephone Services," Case PUC-2007-00008, December 14, 2007, available at:

requirement for basic local service, and required COLR service only where no alternate supplier was available.<sup>115</sup>

66. While I have not seen any detailed assessments of the impact of the recent deregulation in Virginia, the apparent absence of negative reports is informative.<sup>116</sup> In addition, as shown in Table 1, telephone adoption in Virginia actually reached a high of 98.2 percent in 2013, suggesting that providers of telephony in Virginia have continued to provide a sufficiently high level of quality and attractive pricing in the state.<sup>117</sup>

# Table 1: Virginia Telephone Penetration from 2009-2013(Percentage of Occupied Housing Units with Telephone<br/>Service)

Year							
2009	2010	2011	2012	2013			
97.6%	97.4%	97.5%	97.6%	98.2%			
Source:	Federal Communications Commission, Federal-State Joint Board on Universal Service, "Universal Service Monitoring Report," Table 6.6, 2014, p. 50.						

https://www.scc.virginia.gov/puc/comp/v\_exch/c\_verdereg\_07.aspx.; and Commonwealth of Virginia State Corporation Commission, "SCC Grants Partial Approval of Verizon Requests for Modifications to Deregulation Ruling," Case PUC-2007-00008, February 1, 2008, available at:

https://www.scc.virginia.gov/puc/comp/v\_exch/c\_verrecon\_08.aspx.

<sup>115</sup> Sherry Lichtenberg, "Telecommunications Legislation in 2014: Completing the Process," June 2014, p. 15, available at: http://www.nrri.org/documents/317330/b72af483-4ac3-4cc8-9d1f-1871a9284c9a.

http://www.ncjustice.org/sites/default/files/CPS\_vs\_ACS\_Media%20Guide\_Final.pdf; "Fact Sheet – Difference Between CPS ASEC and ACS," United State Census Bureau, available at:

https://www.census.gov/hhes/www/poverty/about/datasources/factsheet.html.

<sup>&</sup>lt;sup>116</sup> I also have not seen any detailed analysis of the impact of the recent regulatory steps taken in Delaware. <sup>117</sup> In recent years, the FCC has reported the results of two different surveys conducted by the Census Bureau to estimate telephone subscribership. Table 1 provides the results derived from the American Community Survey (ACS). The results from both surveys indicate a high level of subscription both in the United States and New York. The ACS is the largest household survey in the United States. It samples about 3 million addresses per year and is mandatory. The Current Population Survey (CPS) samples about 100,000 addresses per year and is voluntary. Because of the ACS's large sample size, it is a better source for state-level trends and state rankings, while the CPS is mainly used for providing national estimates and long-term trends at the state level. *See* "Guide to Poverty and Income Data," North Carolina Justice Center, available at:

67. The state-level experimentation with removing traditional public utility constraints provides important information for New York as it considers the prospect of taking similar steps. And while information from individual states is valuable, the variation in state-level policies also allows the prospect of more systematic empirical analysis to assess the merits of policy changes. For instance, a recent econometrically-based analysis by Jeffrey Eisenach and Kevin Caves takes advantage of the emergent cross-state variations in regulatory policies to empirically estimate and assess the merits of alternative policies.<sup>118</sup> As of the time of their study (2012), twelve states had liberalized previously existing price controls on basic wireline telephone service. Using a panel of city-level price data spanning liberalized and non-liberalized states, the authors found no evidence that the liberalization of basic service prices resulted in higher telephone rates. On the contrary, the authors found that, if anything, holding other factors constant, basic service rates are lower in states where liberalization had been implemented.

### 4. Principle 4 – USE EMPIRICAL ANALYSIS, NOT ABSTRACT THEORY

68. Principle 4 indicates that the PSC should focus on granular empirical evidence collected from actual markets as a core task in any regulatory process. The intent of this recommendation is to emphasize that in a dynamic and fluid industry such as telecommunications, which is characterized by constant innovation, the value of abstract theory is especially low relative to information gleaned from specific empirical assessments of agreed-upon performance indicators.<sup>119</sup>

<sup>&</sup>lt;sup>118</sup> Jeffrey A. Eisenach and Kevin W. Caves, "The Effects of Liberalizing Price Controls on Local Telephone Service: An Empirical Analysis," February 2012, available at: http://papers.ssrn.com/sol3/papers.cfm?abstract\_id=2006594.

<sup>&</sup>lt;sup>119</sup> John W. Mayo, "The Evolution of Regulation: Twentieth Century Lessons and Twenty-First Century Opportunities," Federal Communications Law Journal, Volume 65, 2012, p. 141.

69. While there are many potential pitfalls for regulators attempting to implement this principle, one stands out as especially worrisome at this critical juncture of the evolution of the communications industry. Specifically, the PSC has historically and appropriately embraced competition as an important "principle" that should guide regulatory policymaking.<sup>120</sup> As shown through generations of economic analysis, competition between providers of goods and services has the potential to do, via the invisible hand, what no central planning or governmental directive can: provide an incentive for firms to offer high quality services at attractive prices while continuing to innovate, thus propelling a continuous cycle of innovation and gains for consumer welfare. This virtuous cycle inures to the benefit of consumers, relieving regulators from applying their "heavy" (and neither invisible nor costless) hands to promote such salubrious effects. For this reason, the pursuit of competition in the communications industry, all agree, is a worthy public policy goal.<sup>121</sup>

70. The question, though, is how best to assess and promote competition within the rapidly evolving multimedia communications sector. Some parties have advocated that the Commission assess competition principally from a structural perspective. This structural perspective frequently calls for conclusions to be drawn regarding the state of competition (and the corollary degree of regulation) from an examination of the Herfindahl-Hirschman Index ("HHI").<sup>122</sup>

<sup>&</sup>lt;sup>120</sup> See State of New York Public Service Commission, "Statement of Policy on Further Steps Toward Competition in the Intermodal Telecommunications Market and Order Allowing Rate Filings," Case 05-C-0616, April 11, 2006, p. 15.

p. 15. <sup>121</sup> Robert Pitofsky, "Competition Policy In Communications Industries: New Antitrust Approaches," Federal Trade Commission, March 10, 1997, available at: http://www.ftc.gov/public-statements/1997/03/competition-policy-communications-industries-new-antitrust-approaches.

<sup>&</sup>lt;sup>122</sup> The Herfindahl-Hirschman Index (HHI) is a commonly used measure of industry concentration which equals the sum of the squared market shares of each firm in the industry. *See* Dennis W. Carlton and Jeffrey M. Perloff, "Modern Industrial Organization," 4th Edition, Prentice Hall, 2005.; and U.S. Department of Justice and the Federal

71. While such constructs are not without value in economic theory, Principle 3 argues that their predictive value is significantly diluted in industries characterized by rapid innovation. Indeed, while a positive relationship between industry concentration and prices can sometimes be demonstrated in a static and particularly stylized setting of competition, economic theory also recognizes the potential for robust competition in markets with significant industry concentration.<sup>123</sup> The uncoupling of concentration and competition is often pronounced in dynamic industries.

72. Thus, Principle 4 urges the PSC to elevate the role of empirical assessments over abstract economic concepts in the increasingly dynamic markets the agency oversees. An example from another industry sector illustrates this point. As shown dramatically in Figure 2, market power inferences from the application of the HHI theory-based measure of mobile telephony concentration are flatly contradicted by empirical evidence of actual industry behavior. Between 2002 and 2013, overall industry concentration increased substantially. Applying the theory behind the HHI, such concentration might raise concerns about a lack of competition and suggest a negative impact on consumer pricing.<sup>124</sup> Yet the data shows just the opposite has occurred. During the same period, retail prices for mobile services have plummeted. Real-world evidence reveals prices correlating *inversely* with industry concentration, utterly defying the HHI and underscoring the severe limits of its predictive value in this context.

Trade Commission, "Horizontal Merger Guidelines," August 19, 2010, p. 18, available at:

http://www.justice.gov/atr/public/guidelines/hmg-2010.html#5c.

<sup>&</sup>lt;sup>123</sup>*See*, e.g., Dennis W. Carlton and Jeffrey M. Perloff, "Modern Industrial Organization," 4th Edition, Prentice Hall, 2005, Chapter 6.

<sup>&</sup>lt;sup>124</sup> See Norman R. Collins and Lee E. Preston, "Concentration and Price-Cost Margins in Manufacturing Industries," University of California Press, 1970, p. 82.; and W. Kip Viscusi, John M. Vernon, and Joseph E. Harrington, "Economics of Regulation and Antitrust," MIT Press, August 19, 2005, p. 162.



Figure 2: U.S. Wireless Services CPI and Average Industry HHI

**Sources:** Bureau of Labor Statistics, "Consumer Price Index", Series ID: CUUR0000SEED03; Federal Communications Commission, "Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Commercial Mobile Services," Fifteenth Report, Sixteenth Report, and Seventeenth Report, 2011, 2013, and 2014. Note: CPI values are indexed so that values in 2003 equal 100.

73. Indeed, the Commission recognized this point in the Competition III Order,

concluding that:

in view of the dynamic nature of the telecommunications market, ... observations of market trends provide a more meaningful picture of the state of the intermodal competitive market than does the simple look at recent actual market shares that is embodied in the HHI. The HHI is a proper analytical tool, but it is just the starting point in any assessment of the competitiveness of a market.<sup>125</sup>

<sup>&</sup>lt;sup>125</sup> State of New York Public Service Commission, "Statement of Policy on Further Steps Toward Competition in the Intermodal Telecommunications Market and Order Allowing Rate Filings," Case 05-C-0616, April 11, 2006, p. 38.

## 5. Principle 5 – FOCUS ON END-STATE ECONOMIC MEASURESa. Introduction

74. Principle 5 calls for a focus on tangible end-state metrics when considering alternative governance structures. These metrics include a detailed focus on output, innovation, prices, and investment. They can be thought of as "retail" metrics that are direct indicators of the health of the evolving telecommunications ecosystem. Regulators can use these end-state metrics to gauge the state of the market and, depending on what the empirical data indicate, modify regulatory policies accordingly.

75. For example, if output, innovation, prices, and investment data provide positive indications of the ability of market-driven processes, then regulatory controls can be confidently relaxed or removed. Conversely, if marketplace realizations for the retail metrics consistently point toward marketplace dysfunctions, then more regulatory scrutiny may be warranted. This RBR analysis of retail metrics is in direct contrast to an approach that would seek to meet potential, anomalous or speculative consumer harms with a corollary set of *ex ante* regulatory controls. *Ex ante* regulations are particularly risky in a rapidly evolving market, like the telecommunications industry, because they create the profound risk of imposing unnecessary and overly constraining policies that not only involve direct costs but also can result in under or misallocated investment, and decreased economic welfare.

76. While focus on retail economic metrics provides a foundation for improved twenty-first century policymaking, care is needed if this is to serve as a foundation for policymaking inferences. For instance, consider the economic focus on price. Lower prices

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typically improve economic welfare.<sup>126</sup> However, artificially low prices imposed through regulation can be highly distorting and actually harmful. One example is the regulation of rail rates in the United States, which kept rates low and stable until they were deregulated by the Staggers Act of 1980. By artificially squeezing rates down, the profitability of investments by railroads was substantially diminished, resulting in underinvestment and consequentially a dramatic decline in the quality of the rail infrastructure.<sup>127</sup> As such, in some cases artificially low rates can also be seen as evidence of regulatory failures.<sup>128</sup> Thus, while Principle 5 calls for a focus on retail economic metrics, that focus must consider the potential for interrelationships among these metrics under alternative market governance mechanisms.

77. Given the importance of these retail metrics, the paper next turns to examine these as they have unfolded in telecommunications markets. Fortunately, this assessment provides a picture of a well-functioning marketplace.

#### b. Output

78. An examination of changing output levels provides regulators with an indication of the revealed desirability of a good or service in the marketplace and the corresponding propensity of suppliers to satisfy those desires. Holding other factors constant, observed increases in output provide an indication that consumers are finding enhanced value from additional purchases and that firms are providing attractive products or services for these

<sup>&</sup>lt;sup>126</sup> Walter Nicholson and Christopher Snyder, "Microeconomic Theory: Basic Principles and Extensions," 11<sup>th</sup> edition, 2012, pp. 170-174.

<sup>&</sup>lt;sup>127</sup> See, Robert E. Gallamore and John R. Meyer American Railroads: Decline and Renaissance in the Twentieth Century, Harvard University Press, 2014.

<sup>&</sup>lt;sup>128</sup> Some authors have pointed to the artificially low rates of local telephone services created by regulators' methods of determining rates as examples of regulatory failures. *See*, Alfred E. Kahn, "Road to More Intelligent Telephone Pricing," The Yale Journal on Regulation, Volume 1, 1983, p. 139-140; and John W. Mayo, "The Evolution of Regulation: Twentieth Century Lessons and Twenty-First Century Opportunities," Federal Communications Law Journal, Volume 65, 2013, p. 142.

consumers. Such output increases provide clear signals of a well-functioning market. Alternatively, reductions in output may be driven by either pro-competitive or anti-competitive firm behavior. For example, monopoly pricing reduces output relative to competitive output levels. On the other hand, the pro-competitive emergence of superior competitive alternatives may also cause a firm to reduce its output level of older, less desired products. Thus, reduced output, by itself, is not necessarily a cause for concern.

79. The most basic measures of output in the telecommunications industry are centered on *connectivity* (the proportion of society that is connected to the communications network) and *use* (the extent to which those consumers utilize that network). Historically, connectivity has been measured by the share of households that have a subscription to the wireline telephone service offered by an incumbent local exchange carrier. The combination of opening markets for competition and profound technological change in the industry dictate a broader assessment of output today. Specifically, beginning in 1996 (and earlier in New York) the nation began opening local exchange telephone service to competition. The subsequent entry and growth of CLECs,<sup>129</sup> wireless providers, cable telephony providers, and VoIP providers have resulted in substantial decreases in the lines provided by ILECs in New York.<sup>1</sup> For example, from 2000 to 2013, Verizon's New York regulated access line account fell from 11.9 million to 3.1 million. As recognized by the NY PSC in 2006, this steep decline is indicative of consumers finding that other telephone services are acceptable substitutes for traditional wireline service

<sup>&</sup>lt;sup>129</sup> By the end of 2013, nearly 200 non-ILEC firms operated in New York. *See* Federal Communications Commission, Industry Analysis and Technology Division, Wireline Competition Bureau, "Local Telephone Competition: Status as of December 31, 2013," October 2014, Table 17, p. 28.

provided by ILECs.<sup>130</sup> This diminution of ILEC's output, however, is not indicative of a shrinking market, but rather the beneficial effects of desirable alternative communications technologies and growth of choice for New York consumers. For instance, as noted by the FCC, "the use of VoIP technology is growing rapidly and it increasingly is used to provide local telephone service."<sup>131</sup> Similarly, the "wireless revolution" has led to the emergence of massive adoptions by New York consumers of wireless telephone service. This rapid expansion is driven by the tremendous versatility of wireless telephones that today seamlessly provide the ability to communicate via voice, video and/or data.

80. Turning then to aggregate measures of output, the most commonly used measure centers on household-level adoption rates. Table 2 reveals that New York as well as national adoption rates are very high. By 2013, fully 98 percent of all households in New York subscribe to a wired or wireless telephone service.<sup>132</sup> This indicates that providers of telephony are providing a sufficiently high level of quality and attractive pricing, so that an extremely high

 <sup>&</sup>lt;sup>130</sup> See State of New York Public Service Commission, "Statement of Policy on Further Steps Toward Competition in the Intermodal Telecommunications Market and Order Allowing Rate Filings," Case 05-C-0616, April 11, 2006, pp. 35-36.
 <sup>131</sup> Federal Communications Commission, Industry Analysis and Technology Division, Wireline Competition

<sup>&</sup>lt;sup>131</sup> Federal Communications Commission, Industry Analysis and Technology Division, Wireline Competition Bureau, "Local Telephone Competition: Status as of December 31, 2013," October 2014, p. 1.

<sup>&</sup>lt;sup>132</sup> In recent years, the FCC reports the results of two different surveys conducted by the Census Bureau to estimate telephone subscribership. *See* footnote 117, above. Table 2 provides the results derived from the American Community Survey (ACS). The results from both surveys indicate a high level of subscription both in the United States and New York.

share of households is choosing to be connected to the communications network.

	Year												
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
New York	97.2%	96.9%	96.8%	96.5%	95.5%	94.8%	95.0%	97.9%	97.4%	97.2%	97.2%	97.5%	98.0%
U.S.	96.9%	96.6%	96.2%	95.7%	94.8%	94.1%	94.6%	98.2%	97.7%	97.5%	97.4%	97.4%	97.7%

 

 Table 2: New York and U.S. Telephone Penetration from 2001-2013 (Percentage of Occupied Housing Units with Telephone Service)

81. The focus on household-level subscriptions, however, understates a substantial change in New Yorkers' communications connectivity. In particular, the exploding proliferation of mobile telephony has created the opportunity for *individuals* to communicate as they wish independent of their location over the course of the day.

82. Figure 3 shows the dramatic rise of U.S. wireless subscriptions over time, with the number of subscribers across the U.S. rising from roughly 12 million in 1993 to 323 million in 2013. That indicates that there are more wireless subscriptions than people in the United

Sources: Federal Communications Commission, Federal-State Joint Board on Universal Service, "Universal Service Monitoring Report," 2006, Table 6.4, p. 6-14.; Federal Communications Commission, Federal-State Joint Board on Universal Service, "Universal Service Monitoring Report," 2008, Table 6.4, p. 6-15.; Federal Communications Commission, Federal-State Joint Board on Universal Service, "Universal Se

States.<sup>133</sup>



Figure 3: U.S. Average Annualized Wireless Subscriber Connections

83. Figure 4 shows that New Yorkers have been similarly quick to adopt wireless telephony, with the number of wireless subscriptions increasing by 329 percent from 1999 to 2013, from 4.8 million to 21.4 million over that period. As with the U.S. as a whole, there are

Source: Dr. Robert F. Roche and Liz Dale, "CTIA's Wireless Industry Indices, Annual Wireless Survey Results: A Comprehensive Report from CTIA Analyzing the U.S. Wireless Industry, Year-End 2013 Results," June 2014, Chart 2, p. 17.

<sup>&</sup>lt;sup>133</sup> According to Table 7 of the 2013 version of CTIA's Wireless Industry Indices, the U.S. population in June 2013 was 316 million. *See* Dr. Robert F. Roche and Liz Dale, "CTIA's Wireless Industry Indices, Annual Wireless Survey Results: A Comprehensive Report from CTIA Analyzing the U.S. Wireless Industry, Year-End 2013 Results," June 2014, Table 7, p. 26.

now more wireless subscriptions in New York than the population of New Yorkers.<sup>134</sup>



Figure 4: New York Wireless Subscribership from 1999-2013

84. A more granular assessment of subscription by New Yorkers is given in Figure 5 and shows that in recent years wireless adoption has increased dramatically across New York State's various economic areas. These data indicate that the proliferation of wireless telephony is not uniquely centered in New York's largest metropolitan area but rather is geographically robust.

Source: Dr. Robert F. Roche and Liz Dale, "CTIA's Wireless Industry Indices, Annual Wireless Survey Results: A Comprehensive Report from CTIA Analyzing the U.S. Wireless Industry, Year-End 2013 Results," June 2014, Tables 12-14, pp. 36-40.; and Federal Communications Commission, Industry Analysis and Technology Division, Wireline Competition Bureau, "Local Telephone Competition: Status as of December 31, 2013," October 2014, Table 18, p. 29.

<sup>&</sup>lt;sup>134</sup> According to Table 7 of the 2013 version of CTIA's Wireless Industry Indices, the New York population as of June 2013 was 19.7 million. *See* Dr. Robert F. Roche and Liz Dale, "CTIA's Wireless Industry Indices, Annual Wireless Survey Results: A Comprehensive Report from CTIA Analyzing the U.S. Wireless Industry, Year-End 2013 Results," June 2014, Table 7, p. 27.



Figure 5: Wireless Penetration Rates in New York By Economic Area

**Source:** Dr. Robert F. Roche and Liz Dale, "CTIA's Wireless Industry Indices, Annual Wireless Survey Results: A Comprehensive Report from CTIA Analyzing the U.S. Wireless Industry, Year-End 2013 Results," June 2014, Table 17, pp. 54, 63.

Note: The above data represents Economic Areas 5, 6, 7, 8, and 10.

85. As seen in Figure 6, while consumers have gravitated away from wireline telephony and toward the more versatile wireless platform, the level of subscribership in New York has grown significantly in the past few years. This growing level of subscription provides an indication not only of consumers' demand for telecommunications services, but also the ability of multiple providers to satisfy that demand.



**Sources:** Federal Communications Commission, Industry Analysis and Technology Division, Wireline Competition Bureau, "Local Telephone Competition: Status as of December 31, 2008," June 2010, pp. 19, 28.; Federal Communications Commission, Industry Analysis and Technology Division, Wireline Competition Bureau, "Local Telephone Competition: Status as of December 31, 2009," January 2011, pp. 20, 29.; Federal Communications Commission, Industry Analysis and Technology Division, Wireline Competition Bureau, "Local Telephone Competition: Status as of December 31, 2010," October 2011, pp. 19, 28.; FCC Local Telephone Competition Report, January 2013, pp. 20, 29.; Federal Communications Commission, Industry Analysis and Technology Division, Wireline Competition Bureau, "Local Telephone Competition: Status as of December 31, 2013," November 2013, pp. 20, 29.; Federal Communications Commission, Industry Analysis and Technology Division, Wireline Competition Bureau, "Local Telephone Competition: Status as of December 31, 2013," November 2013, pp. 20, 29.; Federal Communications Commission, Industry Analysis and Technology Division, Wireline Competition Bureau, "Local Telephone Competition: Status as of December 31, 2013," October 2014, pp. 20, 29.; Federal Communications Commission, Industry Analysis and Technology Division, Wireline Competition Bureau, "Local Telephone Competition: Status as of December 31, 2013," October 2014, pp. 20, 29.

86. Usage of telecom services has grown tremendously as well. Figure 7 displays the dramatic growth in wireless minutes of use. This growth is driven both by a growing number of wireless subscriptions and also the fact that wireless consumers in the United States are very intensive users. In 2013, estimates of the average monthly minutes of use per subscriber were

between 746 and 903 minutes as of year-end 2013.<sup>135</sup> That is, consumers averaged between 12 and 15 hours of wireless usage per month.



Figure 7: Wireless Minutes of Use (MOUs) in the U.S. from 1991-2013

Source: Dr. Robert F. Roche and Liz Dale, "CTIA's Wireless Industry Indices, Annual Wireless Survey Results: A Comprehensive Report from CTIA Analyzing the U.S. Wireless Industry, Year-End 2013 Results," June 2014, Table 43, p. 129.

87. While the growing volumes of voice traffic provide a telling indication of the success of this communications platform, New Yorker's mode of electronic communications has grown in a different direction as well in recent years. Specifically, with the growing use of alternative forms of communications such as text messaging, social networks, and video calling, the amount of data transferred is another measure of telephone use. Figure 8 below shows the

<sup>&</sup>lt;sup>135</sup> Dr. Robert F. Roche and Liz Dale, "CTIA's Wireless Industry Indices, Annual Wireless Survey Results: A Comprehensive Report from CTIA Analyzing the U.S. Wireless Industry, Year-End 2013 Results," June 2014, p. 133.

nationwide overall combined traffic volumes, aggregating voice, text, data and multimedia wireless traffic for the industry.



Figure 8: U.S. Annual Minutes, Messages, and MBs of Wireless Data Traffic from 2010-2013

**Source:** Dr. Robert F. Roche and Liz Dale, "CTIA's Wireless Industry Indices, Annual Wireless Survey Results: A Comprehensive Report from CTIA Analyzing the U.S. Wireless Industry, Year-End 2013 Results," June 2014, Chart 30, p. 146.

88. In the spirit of Principle 3, it is also instructive to assess how consumers view the quality and affordability of telecommunications services across countries. Figure 9 below shows that the U.S. leads OECD countries (*i.e.*, members of the Organization for Economic Cooperation and Development<sup>136</sup>) in wireless minutes of use (MOU) per subscriber, which provides a very positive indicator of satisfaction with wireless offerings in the United States.

<sup>&</sup>lt;sup>136</sup> See www.oecd.com.

Plainly, the light-touch governance of wireless telephony in the United States has produced considerable consumer benefits relative to other countries.



Source: "OECD Communications Outlook 2013," OECD Publishing, 2013, Table 3.13, p. 88.

89. In summary, a close examination of output in the telecommunications sector indicates that both subscription and usage of communications services have expanded dramatically in recent years. Moreover, the breadth of the ways in which communications occurs has also expanded dramatically. This has all occurred under a "pro-competitive, de-regulatory

national policy framework,"<sup>137</sup> especially with regard to wireless service, which has produced massive gains in consumer surplus.

#### c. Innovation

90. A key feature of markets is their ability to generate innovations that benefit consumers. Accordingly, RBR principles point toward an examination of realized innovation. In the case of telecommunications markets, the era of increasingly liberalized regulation has also witnessed dramatic innovation.

91. Only a few years ago, and for nearly a century before, retail-level innovation in the telecommunications industry was completely unremarkable. For example, both the telephone itself and the communications services it provided in 1980 were effectively the same as those from fifty years earlier. Panels (a) and (b) of Figure 10 show typical telephones from 1919 and 1980. While these telephones were differently shaped and the rotary dial had morphed into a touchtone keypad over the years, the wireline telephone of 1919 and 1980 and its features were fundamentally the same.

92. In contrast, as seen in panel (c), the modern cellphone has evolved rapidly since its introduction in 1983. Not only have telephones themselves become smaller and sleeker, but the services they are capable of providing have expanded dramatically with the growing capacity to communicate by voice, data and/or video.

<sup>&</sup>lt;sup>137</sup> "House Resolution 353," House of Representatives, 104<sup>th</sup> Congress, Report No. 104-459, January 31, 1996, available at: http://www.gpo.gov/fdsys/pkg/BILLS-104hres353rh/html/BILLS-104hres353rh.htm.





93. While it is easy to identify many specific innovations in the telecommunications sector, at the highest level these fall into two principal categories. First, telephonic communications has gone from principally a landline network characterized by the ability to place voice calls between specific nodes to a nearly ubiquitous geographic grid of communications possibilities. Second, what was once a voice-only system of communications has rapidly morphed into one in which consumers seamlessly toggle among voice, data and video communications media.

94. The innovation and rapid deployment of wireless telephony has created profound benefits for New Yorkers. They include automatic GPS location and least-distance routing systems used by delivery and service firms; wireless inventory management tools; improved efficiency in health care by inputting patient information via wireless handheld devices; and more efficient management and documentation via wireless applications, such as being able to answer e-mails on wireless devices and to synchronize with office computer systems, to name a few.<sup>138</sup> And while these benefits can be systematically enumerated, they are perhaps even more compelling at an anecdotal level. Consider the mother who is shopping at one store and is able to call to get a rival store to generate an immediate quote on a piece of consumer electronics. And consider the value to a father who is able to call from his cellphone while away from her home to check on whether a nearby car repair shop can investigate a "check engine" light that just came on in his car. Similarly, businesspeople are now routinely able to download data to their modern smartphones to quickly and seamlessly update their understanding of evolving market conditions even though they are away from an office. Virtually every New York consumer of wireless devices can easily and quickly recount examples of value-enhancing applications of wireless communications in their personal and professional lives.

95. The dissemination of cellphones has positively affected the achievement of "universal service," a long-established goal of telecommunications policy. In particular, while "universal service" has proven to be a malleable concept over the years, two notable aspects of the discussion surrounding universal service have been enduring fixtures. First, for nearly a century universal service had been thought of exclusively in terms of "wireline" services.<sup>139</sup> Second, public policy efforts around universal service consistently focused on access (or deployment) of telephony to the *household* rather than to the *individual*. Implicit in this focus was the belief that the deployment of a wireline telephone (or more recently a wireline broadband connection) provided universal access to all household members for their communications needs and/or that wireless technologies were sufficiently inferior that they

<sup>&</sup>lt;sup>138</sup> Entner, Roger. "The Increasingly Important Impact of Wireless Broadband Technology and Services on the U.S. Economy," 2008, available at: http://files.ctia.org/pdf/Final\_OvumEconomicImpact\_Report\_5\_21\_08.pdf, retrieved on February 2, 2015.

<sup>&</sup>lt;sup>139</sup> Very recently, the FCC expanded its public efforts to promote universal service via wireless connectivity, *see* Olga Ukhaneva, "Universal Service in a Wireless World," Georgetown University working paper, 2014.

should not be considered in universal service measures. These historic beliefs/assumptions, however, have little or no validity today.

96. Indeed, innovations in mobile telephony have compelled a fresh and modified discussion of universal service along each of these two dimensions. In particular, while commercial cellular telephony (first commercially introduced in 1983) was initially thought by many to be a niche service confined to business people and wealthy households, the ensuing deployment and adoption of wireless telephony has been nothing short of spectacular.

97. Fueled by consumer demand and capital investment, there were more than 335 million cellphone subscriptions by 2014 in the U.S. alone and over 7 billion cellphone subscriptions worldwide.<sup>140</sup> And while cellphone service may initially have been unreliable (in terms of dropped calls and call quality), increased cell site deployment across the U.S. and over time has dramatically improved cellphone communications quality and simultaneously has supported increased device functionality via voice, data and video transmission.

98. In short, this diffusion of wireless telephony has significantly expanded the geographic coverage of communications access beyond what was possible with wireline telephony. Innovations in mobile telephony have dramatically improved the ability of individuals in New York and throughout the nation to either place or receive electronic communications at any moment in time, virtually independent of where they are located. Moreover, with the increasing deployment of smartphones, the breadth of the communications options has expanded from voice-only to a full panoply of voice, data and video. These innovations are rapidly moving

<sup>&</sup>lt;sup>140</sup> Dr. Robert F. Roche and Liz Dale, "CTIA's Wireless Industry Indices, Annual Wireless Survey Results: A Comprehensive Report from CTIA Analyzing the U.S. Wireless Industry, Year-End 2013 Results," June 2014, Table 8, p. 29.; and GSMA Intelligence, "Definitive Data and Analysis for the Mobile Industry," available at: https://gsmaintelligence.com/.

20<sup>th</sup>-century discussions of "universal service" to the more apt 21<sup>st</sup>-century concept of "universal connectivity."<sup>141</sup>

99. Another profound innovation in the telecommunications sector has been the rapid development and deployment of broadband services.<sup>142</sup> These broadband services enable consumers to move beyond mere voice communications to now also communicate via data or video.

100. Over the past 20 years, the availability of high-speed, broadband coverage in New York has grown immensely. First generation broadband networks, including DSL and cable broadband networks, were largely built out in the late 1990s and early 2000s. In more recent years, the availability, the speed and the options of providers from which customers can get their service has continued to increase at a fast pace. Table 3 shows the availability of broadband in New York as of June 2010 and as of the end of 2013. As readily seen, the availability of broadband services in New York has grown dramatically and approaches 100 percent with more and more lines offering higher and higher speeds.

<sup>&</sup>lt;sup>141</sup> See Jeffrey T. Macher, John W. Mayo, Olga Ukhaneva and Glenn Woroch "Universal Service: Now It's Getting Personal," Georgetown University working paper.

<sup>&</sup>lt;sup>142</sup> In this paper, I use the term "broadband" to broadly describe data-transmission technologies capable of providing internet access at relatively high speeds, such as DSL or cable. It is worth noting that for various purposes the term broadband may be defined more specifically. For example, in a December 11, 2014 press release, the FCC issued an order requiring companies receiving Connect America funding for fixed broadband to serve consumers with speeds of at least 10 Mbps for downloads and 1 Mbps for uploads. Also, in a January 29, 2015 press release, the FCC updated its broadband speed benchmark to 25 Mbps for downloads and 3 Mbps for uploads. The previous requirement set in 2010 was 4 Mbps for downloads and 1 Mbps for uploads. *See* Federal Communications Commission, "Rural Consumers Must Receive Broadband Delivering At Least 10 Mbps Downloads, 1 Mbps Uploads from Providers who Benefit from Connect America Support," December 11, 2014, available at: http://transition.fcc.gov/Daily\_Releases/Daily\_Business/2014/db1211/DOC-330989A1.pdf.; and "FCC Finds U.S. Broadband Deployment Not Keeping Pace," January 29, 2015, available at: https://apps.fcc.gov/edocs\_public/attachmatch/DOC-331760A1.pdf.

	Te	otal	Ru	ıral	Urban		
	2010	2013	2010	2013	2010	2013	
Download Speed≥3 mbps	99.5%	99.6%	96.3%	96.6%	100.0%	100.0%	
10 mbps	97.7%	99.3%	82.4%	94.4%	99.9%	100.0%	
25 mbps	85.6%	97.4%	39.7%	78.9%	92.2%	99.9%	
50 mbps	85.4%	97.2%	38.3%	77.5%	92.1%	99.9%	
Upload Speed $\geq 3$ mbps	88.1%	99.2%	44.4%	93.6%	94.4%	100.0%	
10 mbps	73.4%	81.5%	16.1%	24.9%	81.6%	89.2%	
25 mbps	18.6%	35.8%	4.3%	15.1%	20.7%	38.6%	
50 mbps	15.1%	25.6%	4.3%	11.5%	16.6%	27.5%	

## Table 3: Percentage of New York's Population with Access to Various BroadbandSpeeds

Sources: Department of Commerce, National Telecommunications and Information Administration, "Broadband Availability in Urban vs. Rural Areas," National Broadband Map, September 2011, p. 8; Department of Commerce, National Telecommunications and Information Administration, "Broadband Availability in Urban vs. Rural Areas," National Broadband Map, July 2014, p.8.

**Note:** Values for Total represent the average of rural and urban percentages, weighted by population.

101. The value of broadband innovations is also revealed by the high rate at which consumers have adopted broadband services. In 2000, a tiny 4 percent of households had adopted broadband service.<sup>143</sup> By 2013, fully 78 percent of Americans lived in households with high-speed internet use.<sup>144</sup> And in New York, over 80 percent of individuals reside in homes with high-speed internet use.<sup>145</sup>

<sup>&</sup>lt;sup>143</sup> U.S. Department of Commerce, National Telecommunications and Information Administration, "Exploring the Digital Nation: Embracing the Mobile Internet," October 2014, 1, p. 2.

<sup>&</sup>lt;sup>144</sup> Federal Communications Commission, Federal-State Joint Board on Universal Service, "Universal Service Monitoring Report," 2014, Table 6.9, p. 53.

<sup>&</sup>lt;sup>145</sup> *Id.* Table 6.10, p. 54.

102. The deployment of broadband service, with its rich ability to communicate via voice, data or video has also expanded significantly for wireless services. Figure 11 provides a side-by-side comparison of the speed of connections for both fixed connections and mobile devices by the end of 2013. Of particular interest, note that the mobile telephone companies have quickly embraced the development of broadband in wireless devices with over 67 percent of wireless connections providing broadband with download speeds higher than 3 Mbps by the end of 2013.



#### Figure 11: Speed Composition of Fixed Connections and Mobile Connections as of December 31, 2013

**Source:** Federal Communications Commission, Industry Analysis and Technology Division, Wireline Competition Bureau, "Internet Access Services: Status as of December 31, 2013," October 2014, Figure 2, p. 3.

103. Along with the expansion and increase in speed on mobile broadband networks, the introduction and dramatic explosion in the adoption and use of smartphones also has

drastically changed communications over recent years.<sup>146</sup> First popularized for business uses by Blackberry, since the 2007 launch of the original iPhone, smartphones have been enthusiastically adopted by New Yorkers, as well as other American consumers. For example, according to Pew Research, by January 2014, 58 percent of American adults owned a smartphone.<sup>147</sup>

104. Mobile broadband and smartphones together have given software and hardwarebased companies new opportunities to exploit inefficiencies in, and to disrupt, many previously stable industries traditionally thought of as outside of the communications sector. Innovators are now using modern mobile software platforms to introduce more consumer-friendly interfaces that are improving services provided by a number of industries including hotels, taxicabs, professional services, energy and health care. While the innovations are benefitting an array of consumers, it is especially noteworthy that they are expanding the reach of electronic communications to traditionally difficult-to-serve consumers. For instance, according to *Scientific American* "[w]ireless gadgets have changed the way nearly everyone communicates, but one group has benefited more than others: the deaf. For those who cannot make a voice call, texting and video, in particular, have not only opened them up to the hearing world and to each other, but also allowed them to use American Sign Language (ASL), often their native language."<sup>148</sup>

105. Finally, while it is tempting to view innovative developments in any industry or economy as exogenous, economic analysis reveals that innovation is best seen as a product of the

<sup>146</sup> In fact, it is not an exaggeration to say that mobile broadband and smartphones together have given software and hardware based companies new opportunities to innovate and to introduce more consumer-friendly interfaces for products and services, such as hotels, taxicabs, professional services, energy and even health care.

<sup>147</sup> Pew Research Center, "Mobile Technology Fact Sheet" January 2014, available at:

http://www.pewinternet.org/fact-sheets/mobile-technology-fact-sheet/.

<sup>&</sup>lt;sup>148</sup> John Eischeid, "Sign of the Times: Deaf Find Their Voices via Mobile Video Apps," Scientific American, August 26, 2010, available at: http://www.scientificamerican.com/article/deaf-mobile-video-and-apps/.

institutional environment created by policymakers. In light of this important connection, it is important to note that the explosion of innovation that has come to define the telecommunications sector to date has coincided with the period of light-touch regulation and has been concentrated in those sectors that have been most reliant on market-based incentives, such as wireless and broadband, rather than regulatory incentives to promote innovation.

#### d. Pricing

106. In the absence of perfect, and unrealizable, regulatory design, efficient pricing is best attained through the realization of well-functioning markets. Efficient pricing, in turn, requires that prices be able to reflect changes in market conditions. As demand increases relative to supply and market conditions tighten, well-functioning markets should see increases in price. These price increases, in turn, provide signals to consumers regarding the scarcity of the good or service in question and also provide investment-potential signals to producers and potential entrants. In markets that are sufficiently open to either expansion by incumbent firms or entry, supply increases often are able to keep abreast of even rapidly growing demand to insulate consumers from the permanency of higher prices. Alternatively, as costs decline and supply increases relative to demand, well-functioning markets typically witness price declines. The key, then, to well-functioning markets is not the assurance of perpetual price decreases or of low prices *per se*, but rather is the ability of prices to act as efficient signals to both consumers and producers of current market conditions.<sup>149</sup> As first identified by Adam Smith, well-functioning

<sup>&</sup>lt;sup>149</sup> It is widely recognized that regulated prices have often deviated markedly from efficient prices. A principal case in point was the historical suppression of local telephone service prices with the corollary regulatory taxation of long-distance prices as a source of financial support for these low prices. As the PSC has previously recognized, in a competitive market, these artificial suppressions are unsustainable. *See* State of New York Department of Public Service, "Telecommunications in New York: Competition and Consumer Protection, A White Paper Prepared by the State of New York Department of Public Service Staff," Case 05-C-0616, September 21, 2005, p. 43. "These

markets — supported by prices that freely change in response to supply and demand conditions — offer the potential to efficiently allocate society's resources without the need for substantial governmental expenditures or intervention.<sup>150</sup> Over the years, the general embrace of market-based allocation of resources has proven to be remarkably successful in enhancing economic growth.<sup>151</sup>

107. A critical and often under-appreciated characteristic of efficient pricing in wellfunctioning markets is the fact that *marginal* customers (an economic term that refers to customers who are most responsive to price and quality) will act to drive the pricing behavior of firms, with a substantial benefit provided to *infra-marginal* customers. In this context, "marginal" consumers are those customers who are very focused on, and sensitive to, relative prices and will readily change providers in the event of a more attractive price offering or superior quality of an alternative provider.

108. It is these consumers who will, as a result, act to drive the pricing behavior of firms, with a substantial benefit to those other, infra-marginal, customers who are less focused on those factors. In every market, including telecommunications markets, there are such infra-marginal consumers, who, while enjoying a good or service are either unwilling or not in a ready position to change suppliers in the event of an unwanted price change. In telecommunications

<sup>150</sup> An Inquiry into the Nature and Causes of the Wealth of Nations, Adam Smith, 1776, par. IV.2.9.

relatively low basic rates stem from a legacy regulatory regime that borrowed higher revenue margins from more lucrative markets to keep rates lower then [sic] they would be. In a competitive environment, prices tend to reflect cost and such pricing strategies are no longer workable." *See also* David L. Kaserman and John W. Mayo, "Cross-Subsidies in Telecommunications: Roadblocks on the Road to More Intelligent Telephone Pricing," Yale Journal on Regulation, Volume 11, Winter 1994, pp. 120-147.; and David L. Kaserman, John W. Mayo and Joseph E. Flynn, "Cross-Subsidization in Telecommunications: Beyond the Universal Service Fairy Tale," Journal of Regulatory Economics, Volume 2, Number 3, September 1990, pp. 231-245.

<sup>&</sup>lt;sup>151</sup> Gregory Clark, "A Farewell to Alms: A Brief Economic History of the World," Princeton University Press, Figure 1.1, p. 2, available at: http://www.holtz.org/Library/Social%20Science/Gregory%20Clark%20-%20A%20Farewell%20to%20Alms.pdf.

markets these customers may be those who are elderly, handicapped, or who are simply so distracted by the flurry of daily activity that they are less sensitive to price changes than marginal consumers. The presence of such infra-marginal customers has, over the years, created many calls for special regulatory protections, such as Lifeline, for groups that are perceived to be infra-marginal. Fortunately, however, a common characteristic of market pricing typically acts to protect these groups without the need for substantial regulation. Specifically, because firms must set their prices to attract marginal customers, infra-marginal consumers are typically treated as if they were marginal consumers, enjoying all the benefits of their more sensitive marginal counterparts.<sup>152</sup>

109. For decades, virtually all telecommunications prices were regulated. Studies of the economic consequences of these prices revealed that in many cases they acted to distort efficient resource allocation and harm economic welfare.<sup>153</sup> For example, for years, long-distance prices were held at artificially high levels in order to generate subsidies to hold local telephone rates at artificially low levels. While well-intentioned, these regulatory price distortions were seen to significantly damage consumer welfare and were far from effective in providing the most

<sup>&</sup>lt;sup>152</sup> While some forms of price discrimination, for example, geographically-differentiated pricing, may be sustainable (and even desirable) in telecommunications, the ability of telecommunications firms to accurately identify inframarginal consumers, set up discriminatory prices and successfully prevent both arbitrage and consumer backlash appears especially unlikely in telecommunications markets. This point was recognized by the NY PSC when it observed "[t]o the extent carriers offer packages on a region-wide or territory-wide basis, competitive threat need not be ubiquitous nor uniform to effectively constrain carrier pricing decisions." *See* State of New York Department of Public Service, "Telecommunications in New York: Competition and Consumer Protection, A White Paper Prepared by the State of New York Department of Public Service Staff," Case 05-C-0616, September 21, 2005, pp. 30-31.

<sup>&</sup>lt;sup>153</sup> See, e.g., Alfred E. Kahn, "The Road to More Intelligent Telephone Pricing," Yale Journal on Regulation, Volume 1, 1984, pp. 139, 140-143, (discussing inefficiencies in telecommunications pricing systems); and David L. Kaserman and John W. Mayo, "Roadblocks on the Road to More Intelligent Telephone Pricing," Yale Journal on Regulation, Volume 11, 1994.

effective mechanism to promote adoption of telephone service.<sup>154</sup> Similarly, as noted by the NY PSC, "regulated rates have suppressed rural rates to levels below those in urban areas, thereby discouraging investment in the telephone infrastructure."<sup>155</sup>

110. Slowly, regulatory restraints on pricing have been removed on an increasing number of telephone services in an increasing number of states. While some have decried these deregulatory steps and others have exalted such moves, the RBR approach compels us to see what *results* have unfolded in telecommunications markets that have operated in less regulated environments. We consider four specific telecommunications services – wireless, long distance, broadband data and wireline voice – and finally conclude our assessment of prices by examining the relationship between the aggregate of telecommunications prices and a broad measure of consumer prices.

111. As discussed above, the U.S. wireless industry has largely been left lightly regulated since its inception and is not subject to pricing regulations. In that environment, technological development and competition in the wireless industry have combined to greatly reduce the prices of wireless services, even as quality and capacity has increased enormously. That can be seen using various measures of wireless communications prices. For example, according to data presented in the FCC's *Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless*, the average local monthly bill for mobile wireless

<sup>&</sup>lt;sup>154</sup> See, e.g. David L. Kaserman and John W. Mayo, "Cross-Subsidies in Telecommunications: Roadblocks on the Road to More Intelligent Telephone Pricing," Yale Journal on Regulation, Volume 11, Winter 1994. James M. Griffin, "The Welfare Implications of Externalities and Price Elasticities for Telecommunications Pricing," Review of Economics and Statistics, Volume 64, February 1982, pp. 59-66.

<sup>&</sup>lt;sup>155</sup> State of New York Public Service Commission, "Statement of Policy on Further Steps Toward Competition in the Intermodal Telecommunications Market and Order Allowing Rate Filings," Case 05-C-0616, April 11, 2006, p. 53.

services fell from \$96.83 in 1987 to \$47.00 in 2011, a decrease of 51 percent.<sup>156</sup> In addition, as shown in Figure 12, data collected by the Bureau of Labor Statistics shows that prices for wireless services have fallen by more than half, in real terms, since 1999.



Sources: Bureau of Labor Statistics, "Consumer Price Index," Series IDs: CUUR0000SA0, CUUS0000SA0, and CUUR0000SEED). Notes: [1] CPI values are indexed so that values in 1999 equal 100. [2] Inflation-Adjusted Price of Wireless Services represents

112. Data also shows that wireless prices have fallen substantially when measured on a per minute basis. Figure 13 shows that between 1993 and 2011, the price as measured by the average revenue per voice minute fell from \$0.439 to \$0.047, a decrease of almost 90 percent.<sup>157</sup>

<sup>&</sup>lt;sup>156</sup> Federal Communications Commission, "Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Commercial Mobile Services," Sixteenth Report, March 21, 2013, p. 279. <sup>157</sup> *Id.* p. 15.



**Source:** Federal Communications Commission, "Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Commercial Mobile Services," Sixteenth Report, March 21, 2013, p. 15.

113. The reduction in wireless data prices has been even more dramatic. Figure 14 shows that, from 2008 to 2010, the effective price per megabyte (MB) of mobile data services fell from \$0.47 to \$0.05, a decline of 89 percent in only two years.<sup>158</sup>

<sup>&</sup>lt;sup>158</sup> *Id.* p. 15.


Figure 14: U.S. Effective Price Per Message/MB/MOU for Data

Source: Gerald R. Faulhaber, Robert W. Hahn, and Hal J. Singer, "Assessing Competition in U.S. Wireless Markets: Review of the FCC's Competition Reports," July 11, 2011, p. 18.

114. The deregulation of long-distance services, which started with the break-up of AT&T in 1984, provides a rich example of the effect of competition, changing technology and evolving business models on prices.<sup>159</sup> Prior to the break-up, AT&T controlled the local exchange bottleneck facilities through which all long-distance calls had to pass.<sup>160</sup> The 1984 divestiture ended AT&T's control over these facilities, allowing new carriers to enter the industry and compete for long-distance customers.<sup>161</sup> States began to deregulate long-distance

<sup>160</sup> David L. Kaserman and John W. Mayo, "Competition and Asymmetric Regulation in Long-Distance Telecommunications: An Assessment of the Evidence," 1996, p. 2.

<sup>&</sup>lt;sup>159</sup> See David L. Kaserman and John W. Mayo, "Competition in the Long Distance Market," in Handbook of Telecommunications Economics, Volume 1, Cave et al, eds., 2002, p. 526.

<sup>&</sup>lt;sup>161</sup> *Id.* 

pricing in the 1980s and in 1994, the FCC ended price regulation of AT&T. The result was a large decrease in long-distance prices that continued through the 2000s.<sup>162</sup> Figure 15 shows that real long-distance charges, as reported by the Bureau of Labor Statistics, have decreased substantially, particularly from the mid-1980s into the 2000s.



Sources: Bureau of Labor Statistics, "Consumer Price Index," Series IDs: CUUR0000SA0, CUUS0000SA0, and CUUR0000SS27051.

Notes: [1] CPI values are indexed so that values in 1979 equal 100. [2] Inflation-Adjusted Price of Landline Services represents the Landline Interstate Toll Call CPI adjusted by the CPI for All Items.

115. While landline long-distance prices were declining precipitously, the growing

popularity of wireless services has created a powerful additional downward pressure on long-

<sup>&</sup>lt;sup>162</sup> Department of State, "Deregulating Communications," available at:

http://economics.about.com/od/governmenttheeconomy/a/telecom.htm. *See also* David L. Kaserman and John W. Mayo, "Competition in the Long Distance Market," in Handbook of Telecommunications Economics, Volume 1, Cave et al, eds., 2002, p. 526.

distance pricing. In particular, in recent years, wireless companies have introduced pricing plans that include a charge for a "bucket" of minutes of calling. These buckets do not differentiate between minutes that are "local" and those that are "long distance". The result is that as long as a consumer is within his or her bucket, the marginal price of a long-distance telephone call effectively becomes zero. In response to this pricing model, local exchange companies too have introduced plans in which consumers may place unlimited amounts of either local or longdistance calling for a flat fee, again effectively reducing the price of a marginal call to zero.

116. Broadband services, which are also price deregulated, have also witnessed price changes over time — a considerable reduction when adjusted for inflation — that have benefitted consumers. For example, as defined by the BLS, the price of Internet Services fell by roughly 40 percent as compared to the overall CPI from 2002 to 2013. This is shown in Figure 16 below.



Sources: Bureau of Labor Statistics, "Consumer Price Index," Series IDs: CUUR0000SA0, CUUS0000SA0, and CUUR0000SEEE03.

Notes: [1] CPI values are indexed so that values in 1999 equal 100. [2] Inflation-Adjusted Price of Internet Services represents the Internet Services CPI adjusted by the CPI for All Items.

117. It is also possible to track the evolution of local prices as the regulatory environment has unfolded. It is important when doing so, however, to recognize that local exchange prices were for many years artificially suppressed by regulatory fiat.<sup>163</sup> More recently, regulators have begun to recognize the need for more market-determined pricing for local exchange service. For example, in its Competition III Order, the NY PSC permitted Verizon to "gradually raise existing flat rate basic service rates up to a statewide cap rate." The NY PSC

<sup>&</sup>lt;sup>163</sup> Alfred E. Kahn, "The Road to More Intelligent Telephone Pricing," The Yale Journal on Regulation, Vol. 1: 139, 1984, p. 141; and David L. Kaserman, John W. Mayo, "Cross-Subsidies in Telecommunications: Roadblocks on the Road to More Intelligent Telephone Pricing," Yale Journal on Regulation, 1994, pp. 126-127.

indicated that allowing such pricing flexibility would "ensure that high quality telephone services continue to be available, while also providing regulated carriers better incentive to maintain and upgrade their networks."<sup>164</sup> Consequently, the observed price changes for local exchange service have largely reflected the movement to more economically sustainable levels.

118. The Bureau of Labor Statistics tracks U.S.-wide prices of local wireline services. Through 2009, the BLS tracked local landline services and long distance landline services separately. Beginning in 2010, the two measures were replaced by a combined "landline" services.<sup>165</sup> Figure 17 below shows that overall, since 2010, landline prices tracked overall CPI fairly closely. After adjusting for inflation, prices decreased slightly in 2011 and barely increased in 2012 and 2013.

<sup>&</sup>lt;sup>164</sup> State of New York Public Service Commission, "Statement of Policy on Further Steps Toward Competition in the Intermodal Telecommunications Market and Order Allowing Rate Filings," Case 05-C-0616, April 11, 2006, p. 57.

<sup>&</sup>lt;sup>165</sup> See Bureau of Labor Statistics, "Item Structure and Publication Changes to the Consumer Price Indexes for January 2010," February 1, 2010, available at: http://www.bls.gov/cpi/cpichg2010.htm.



Sources: Bureau of Labor Statistics, "Consumer Price Index," Series IDs: CUUR0000SA0, CUUS0000SA0, and CUUR0000SEED04.

Note: CPI values are indexed so that values in 2010 equal 100. [2] Inflation-Adjusted Price of Landline Services represents the Landline Services CPI adjusted by the CPI for All Items.

119. It is also possible to observe the evolution of overall telephone services pricing over time.<sup>166</sup> As seen in Figure 18, prices of telephone services have fallen relative to the prices of other goods and services. As readily seen, the price changes of telephone services have consistently trailed changes in overall prices as measured by the Consumer Price Index (CPI). This means that the real price of telephone services has fallen relative to the price of other goods and services sold in the United States. This increasing value and affordability of telephone services is underscored by the fact that these standard measures of price changes do not account

<sup>&</sup>lt;sup>166</sup> Given the emergence of unlimited local and long distance, governmental agencies have combined the various services into consolidated measure of "telephone services."

for changes in the quality of telephone services. Thus, substantial benefits beyond an accounting of price changes, are provided by the growing versatility of wireless communications, with smartphone applications that permit consumers to readily engage in Internet searches, location and mapping services, online comparison shopping and so on.



Figure 18: Change in Prices of All Items and Telephone Services U.S. City Average

**Sources:** Bureau of Labor Statistics, "Consumer Price Index," Series IDs: CUUR0000SEED, CUUR0000SA0, CUUS0000SA0, CUUR0000SEED03, CUUR0000SEED04, CUUR0000SS27051, CUUR0000SS27061, and CUUR0000SEEE03.

120. While aggregate data on the evolution of prices in telecommunications is revealing, the emergence of cable-based and VoIP-based offerings provides an even clearer indication of the robust benefits that consumers have available today for satisfying their telecommunications needs. Tables 4 and 5 show that, beyond the numerous wireless options that are available in New York, there are many other inexpensive options available for voice service by incumbent local exchange providers, cable telephony providers and VoIP providers. In addition to creating affordable options for New Yorkers, these alternatives often also include services in their basic rates such as free long-distance and international calling.

City	Carrier	Plan	Price
Binghamton	Verizon	Unlimited Local Plan	\$24.95 per month
Buffalo	Verizon	Unlimited Local Plan	\$24.95 per month
Massena	Verizon	Unlimited Local Plan	\$24.95 per month
New York City	Verizon	Unlimited Local Plan	\$24.95 per month
Ogdensburg	Verizon	Unlimited Local Plan	\$24.95 per month
Binghamton	Verizon	Sensible Minute	\$2.99 per month and \$.09 per minute
Buffalo	Verizon	Sensible Minute	\$2.99 per month and \$.09 per minute
Massena	Verizon	Sensible Minute	\$2.99 per month and \$.09 per minute
New York City	Verizon	Sensible Minute	\$2.99 per month and \$.09 per minute
Ogdensburg	Verizon	Sensible Minute	\$2.99 per month and \$.09 per minute
Binghamton	Verizon	Message Rate Service	\$15.80 per month and \$.09 per call
Buffalo	Verizon	Message Rate Service	\$15.80 per month and \$.09 per call
Massena	Verizon	Message Rate Service	\$15.80 per month and \$.09 per call
New York City	Verizon	Message Rate Service	\$15.80 per month and \$.09 per call
Ogdensburg	Verizon	Message Rate Service	\$15.80 per month and \$.09 per call
Rochester	Frontier	Digital Phone Essentials	\$27.99 per month
Rochester	Frontier	Digital Phone Unlimited	\$30.99 per month

Table 4: New York City-Level Basic Wireline Rates

**Note:** The above price data were collected for flat-rate residential telephone service, net of taxes and surcharges, on November 26, 2014 from http://www.verizon.com/home/phone/.

Carrier	Туре	Plan	Price
Vonage <sup>[1]</sup>	VoIP	400 Minutes Per Month	\$12.99 per month
Vonage <sup>[1]</sup>	VoIP	800 Minutes Per Month	\$21.99 per month
Vonage <sup>[1]</sup>	VoIP	Unlimited Minutes Per Month	\$25.99 per month
VOIP.com <sup>[2]</sup>	VoIP	Month to Month	\$19.95 per month
VOIP.com <sup>[2]</sup>	VoIP	12-Month Term	\$16.95 per month
VOIP.com <sup>[2]</sup>	VoiP	24-Month Term	\$14.95 per month
ViaTalk <sup>[3]</sup>	VoIP	Month to Month	\$15.75 per month
ViaTalk <sup>[3]</sup>	VoIP	24-Month Term	\$7.88 per month
Time Warner Cable <sup>[4]</sup>	Cable	Home Phone International	\$10.00 per month

**Table 5: New York VoIP and Cable Voice Service Rates** 

#### Sources and Notes:

- [1] From http://www.vonage.com/personal/phone-plans?. The plans include calls to landlines and mobiles in the U.S., Canada, and Puerto Rico.
- [2] From http://www.voip.com/voip\_service.aspx. The plans include unlimited minutes inside the U.S. and Canada.
- [3] From http://www.viatalk.com/broadband\_phone\_service.htm. The plan includes unlimited minutes inside the U.S. and Canada.
- [4] From http://www.timewarnercable.com/en/plans-packages/phone/domestic-internationalcalling-plans.html?iid=phone\_link\_phoneplanspackages. The plans include unlimited calls to the U.S., Canada, Mexico, China, Hong Kong, and U.S. territories.
- [5] The above price data were collected for flat-rate residential telephone service, net of taxes and fees, on December 22, 2014. This price is for the VoIP service only and does not include the cost of any related broadband Internet access. The VoIP services and rates apply to all of New York State, and the cable service applies to at least the cities of Binghamton, Massena, Ogdensburg, Buffalo, and New York City.

121. Finally, consider telephone service in New York as a "share of wallet" exercise.

In particular, how has the combination of flat or falling prices of telephone service combined with growing usage affected New Yorkers' expenditures for telephone service relative to their incomes? Table 6 provides (1) a column of nominal median income of households in New York since 1990; (2) a column reporting the annual cost of basic telephone service in New York; and (3) a column reporting the ratio of the basic telephone service cost as a share (in percent) relative to New Yorkers' median income. To obtain local wireline service, a typical household would

need to spend less than 1 percent of their household income. <sup>167</sup> Second, over the years, the required "share of wallet" of New York households has decreased. By 2013, basic telephone service offered by Verizon amounted to only 0.5% of the median New York family income.

<sup>&</sup>lt;sup>167</sup> Of course, the affordability of basic service is more strained for lower income households. Even here, however, basic telephone service remains a very small share of household incomes. And, targeted assistance for low-income households is available through the Lifeline program.

	NY Nominal Household Median Income	Annual Cost of Basic Telephone Service	Annual Cost of Basic Telephone Service as a Percentage of Median Income			
1990	\$31,591	\$226.08	0.72%			
1991	\$31.794	\$267.24	0.84%			
1992	\$31,051	\$267.24	0.86%			
1993	\$31,697	\$267.24	0.84%			
1994	\$31,899	\$267.24	0.84%			
1995	\$33,028	\$264.36	0.80%			
1996	\$35,410	\$241.92	0.68%			
1997	\$35,798	\$241.92	0.68%			
1998	\$37,394	\$241.92	0.65%			
1999	\$39,989	\$241.92	0.60%			
2000	\$40,744	\$236.04	0.58%			
2001	\$42,114	\$258.24	0.61%			
2002	\$41,966	\$258.24	0.62%			
2003	\$42,788	\$271.32	0.63%			
2004	\$44,649	\$271.32	0.61%			
2005	\$47,176	\$271.32	0.58%			
2006	\$48,222	\$276.00	0.57%			
2007	\$48,944	\$276.00	0.56%			
2008	\$50,461	\$276.00	0.55%			
2009	\$50,216	\$276.00	0.55%			
2010	\$49,781	\$276.00	0.55%			
2011	\$50,636	\$276.00	0.55%			
2012	\$47,680	\$276.00	0.58%			
2013	\$53,843	\$276.00	0.51%			
Sources:	U.S. Census Bureau, "Annual	Social and Economic Suppleme	ents," Current Population			
	Survey, 1990-2007.; and Federal Communications Commission Industry Analysis & Technology Division Wireline Competition Bureau, "Reference Book of Rates, Price					
	Indices, and Household Expendence	ditures for Telephone Service,"	1990-2007.			
Notes:	[1] Flat-rate service is defined as a	a service in which customers d	o not pay any additional fees			
	for calls within their local area,	, regardless of the number of ca	alls they place. In regions			
	where flat-rate service pricing	is unavailable, the price for me	ssage/measured service is			
	used.		C			
	[2] The monthly cost of basic telep Annual Cost of Basic Telephon	phone service is multiplied by tw	welve in order to arrive at the			
	[3] The New York State Average percentages	is calculated as a simple avera	ge of the six New York cities'			
	[4] The annual cost of basic teleph	none service for years after 200	07 were provided by Verizon.			

# Table 6: Price of Basic Telephone Service as a Percentage of Median HouseholdIncome in New York State from 1990-2013

#### e. Investment

122. Investment behavior by firms in a given sector provides a clear indication of both whether the existing and anticipated policy environment is conducive to economic growth of the sector and whether, in that environment, firms have a healthy "intent to serve" consumers of tomorrow. It provides a precursor to future consumer benefits.

123. Without question, the fast-changing telecommunications industry is characterized by very high levels of investment, where firms must be constantly improving to remain competitive in a fiercely competitive market. The total amount of investment from the telecommunications industry is higher than any other industry in the United States. In fact, in the past three years, AT&T and Verizon ranked first and second in total capital expenditures, among nonfinancial firms and across *all* industries.<sup>168</sup> Indeed, the two companies invested more than \$100 billion dollars combined between 2011 and 2013, alone.<sup>169</sup> For this reason, both companies, year after year, have been named "Investment Heroes" by the Progressive Policy Institute, which tracks company and industry investment across the United States. It should also be noted that the White House reports that "[s]ince President Obama took office in early 2009, nearly \$250 billion in private capital has been invested in U.S. wired and wireless broadband networks. In just [2011 and 2012], more high-speed fiber cables have been laid in the United States than in any similar

<sup>&</sup>lt;sup>168</sup> Diana G. Carew and Michael Mandel, "U.S. Investment Heroes of 2014: Investing at Home in a Connected World," Progressive Policy Institute, September 10, 2014, p. 5, available at:

http://www.progressivepolicy.org/issues/economy/u-s-investment-heroes-2014-investing-home-connected-world/. The PPI report does not include "financial and insurance companies" because these companies "reporting of capital expenditures is not consistent with [PPI's] interpretation of plants, property, and equipment." <sup>169</sup> *Id.* 

period since 2000. Moreover, during President Obama's first term, the annual investment in U.S. wireless networks alone grew more than 40 percent from \$21 billion to \$30 billion."<sup>170</sup>

124. In addition, CTIA data shows that capital expenditure by wireless service providers has been high and has increased significantly since around 2008, as shown in Figure 19.



Figure 19: Annual CapEx by U.S. Wireless Service Providers

**Source:** CTIA The Wireless Association, "Annualized Wireless Industry Survey Results," 2014, available at: http://www.ctia.org/docs/default-source/Facts-Stats/ctia\_survey\_ye\_2013\_graphics-final.pdf?sfvrsn=2.

125. Indeed, as shown in Figure 20, capital expenditures by U.S. broadband providers

have remained high across wireline, wireless, and cable industries.

<sup>&</sup>lt;sup>170</sup> "Four Years of Broadband Growth," June 2013, p. 5, available at:

http://www.whitehouse.gov/sites/default/files/broadband\_report\_final.pdf. (Footnotes omitted).



Source: USTelecom, "Migration to Modern Networks What Do the Latest Data Show?," August 14, 2014, p. 8.

126. Finally and consistent with Principle 3, a useful benchmark for investment arises from international comparisons. Figure 21 reveals that the per capita average annual investment in telecommunications in the United States ranks second among leading countries and is fully 64 percent higher than the OECD average.



Figure 21: Average Annual Telecommunications Capital Investment Per Capita 1997-2011 in U.S. Dollars

Source: USTelecom, "International Broadband Investment Comparison," available at: http://www.ustelecom.org/broadband-industry-stats/investment/international-comparison.

127. In sum, aggregate investment levels have been robust by any benchmark. Critically, these investments provide a private-sector platform for economic growth and innovation. For example, investments by wireless companies in recent years have enabled the rapid diffusion of 4G LTE networks in New York and around the country, permitting consumers to enjoy novel and heretofore unattainable abilities to communicate with each other and with technological platforms. These investments have been most pronounced in areas of the industry that are lightly regulated.

128. Despite this, some would ask that regulation dictate specific areas of investment or types of technology by ILECs. The merits of proposals for such regulatory micromanagement of ILEC investment are, however, entirely suspect on RBR grounds. Relaxing regulatory constraints rather than tightening them has produced a stunning level and breadth of investment activity by communications providers. By all accounts, these investments have been driven by a desire to retain and attract consumers by putting in place next-generation communications services. Consumers, in turn have overwhelmingly embraced new and innovative communications technologies. In short, there has been an unprecedented investment, especially in more recent years, in communications infrastructure, *not* as the result of regulatory fiat, but rather due to market-driven imperative.

129. The combination of a seemingly insatiable appetite by consumers for newer, faster, sleeker and more versatile means of communication, the threat of competitive losses, and an increasingly liberalized policy environment in many states that has more freely allowed firms to invest in forward-looking technologies, has produced a virtuous circle of investment that has created both substantial consumer benefits and, in many cases, strengthened companies in the communications industry. These companies have then, in turn, collectively invested hundreds of billions, employ 861,800 U.S. workers,<sup>171</sup> and support many small and medium-sized businesses that are an integral part of the communications industry supply chain. Alternatively, while one could imagine an omniscient regulatory process that could serve consumers better by more adeptly and efficiently managing the investment process, any realistic assessment of a more overt regulatory role in this space indicates that the likelihood of such improvements through regulatory intervention are extremely low.

<sup>&</sup>lt;sup>171</sup> This employment statistic is for January 2015. *See* Bureau of Labor Statistics, "Employment, Hours, and Earnings from the Current Employment Statistics survey (National)," Industry: Telecommunications, Series ID: CES5051700001.

#### V. Discussion of Potentially Vulnerable Consumers

130. While the assessment of the RBR metrics above indicates the success of New York's movement toward relaxing regulatory constraints, and point toward the merits of further relaxation, a number of questions may arise regarding the ability and willingness of historically vulnerable groups to adapt to the new telecommunications environment. For instance, policymakers may seek to assure themselves that poor households and elderly households are able to substitute away from any unwarranted price increases by their incumbent local exchange providers. In particular, two concerns may arise. First, considering the rapidly evolving shift of households away from their historic wireline carrier, if the poor and elderly are unwilling to shift away from price increases by a less regulated local exchange carrier, effectively becoming the "residual" consumers, then such price increases may become more attractive to incumbent local exchange carriers.<sup>172</sup> Second, if these customers are less able and willing to shift away from their historical wireline telephone company in the face of an unpalatable price increase, then these groups may bear a disproportionate amount of the burden associated with any price increase.

131. Fortunately, an examination of consumers' substitution patterns over the past decade indicates that these concerns appear to have little or no substantive merit. For instance, consider Figure 22, which displays the evolution of wireline and wireless telephone portfolio choices of below-poverty households.<sup>173,174</sup> There we see that the shift away from wireline

<sup>&</sup>lt;sup>172</sup> In the language of more formal economics, the concern is that more price-elastic consumers have already fled the wireline network and that the remaining consumers are less price elastic.

<sup>&</sup>lt;sup>173</sup> The focus in this section is on consumers' propensity to substitute wireless for wireline communications. It draws upon data collected from the Centers for Disease Control. The results reported here are based upon annually-conducted surveys of between 35,000 and 40,000 households across the United States. *See* Jeffrey T. Macher, John W. Mayo, Olga Ukhaneva and Glenn A. Woroch, "Demand in a Portfolio-Choice Environment: The Evolution of Telecommunications," Georgetown McDonough School of Business Research Paper No. 2012-19, August 20, 2012, available at: http://ssrn.com/abstract=2133424, for a complete description of these data. While the descriptive statistics presented here provide substantial intuitive support for the proposition that wireless telephone subscriptions

telephony over the past decade has been substantially more pronounced among poor households than those with incomes above the poverty level. For instance, while the dependency of poor households on "landline only" telephone subscriptions was substantially higher than all households (68.7 percent versus 48.7 percent)<sup>175</sup> in 2003, the share of poor households that rely exclusively on wireline telephony has fallen very sharply to under 13 percent today. Even more dramatically, the share of poor households that have "cut the cord", becoming wireless only, grew from 6 percent in 2003 to over 57 percent by 2013, and to 59.1 percent by 2014.<sup>176</sup>

offer a substantive competitive alternative to traditional landline services, my research efforts have probed this issue more deeply in recent years. In particular, in Macher, et al. (2012), we develop an economic model of price and non-price determinants of consumers' telephone subscription portfolios. That econometric model indicates that subscription to wireline and wireless telephony are substitutes rather than complements. Important aspects of the paper are further highlighted on p. 93.<sup>174</sup> Because New Yorkers have robustly shown a propensity to also substitute to cable-based telephony, CLEC and

<sup>&</sup>lt;sup>1/4</sup> Because New Yorkers have robustly shown a propensity to also substitute to cable-based telephony, CLEC and VOIP providers (*see*, e.g., Federal Communications Commission, Industry Analysis and Technology Division, Wireline Competition Bureau, "Local Telephone Competition: Status as of December 2013," October 2014, Table 10, p. 21, showing that by 2013, non-ILEC residential subscribers of wired telephone service in New York outnumbered ILEC subscribers), the analysis in this section provides an extremely conservative picture of the marketplace options available to, and being availed by, vulnerable consumer groups. As will be seen, even this very conservative approach is very comforting.

<sup>&</sup>lt;sup>175</sup> The landline only percentage for all households in 2003 is given in Figure 2 in Jeffrey T. Macher, John W. Mayo, Olga Ukhaneva and Glenn A. Woroch, "Demand in a Portfolio-Choice Environment: The Evolution of Telecommunications," Georgetown McDonough School of Business Research Paper No. 2012-19, August 20, 2012, available at: http://ssrn.com/abstract=2133424.

<sup>&</sup>lt;sup>176</sup> Stephen J. Blumberg and Julian V. Luke, "Wireless Substitution: Early Release of Estimates from the National Health Interview Survey, January – June 2014," National Center for Health Statistics, December 16, 2014, p. 6, available at: http://www.cdc.gov/nchs/nhis.htm.



Figure 22: Households with Wireline, Wireless, Both or Neither Among Households Below Poverty Threshold 2003-2013

132. This shift towards wireless service can be seen in the distribution of wireline and wireless subscribership in the federal Lifeline program. As seen in Figure 23, consumers' use of Lifeline subsidies has drastically shifted in the past decade. In 2003, nearly 100 percent of Lifeline support payments were spent in support of landline telephone access. By 2012, 73 percent of Lifeline support payments were to households seeking support for access to wireless telephony.



# Figure 23: Lifeline Payments (in millions) 2003-2012

133. State-level analyses corroborate the national data. Specifically, a report analyzing Lifeline subscribership in Florida showed that the program grew 47 percent between July 2010 and June 2011. The report attributed the growth to "the ETC designation [of] prepaid wireless providers such as SafeLink Wireless and Assurance Wireless."<sup>177</sup> In fact, SafeLink Wireless, Florida's largest provider of Lifeline wireless service, had a subscribership increase of 12.9% between September 2007 and June 2011. In contrast, carriers offering wireline service like

Source: Federal Communications Commission, Federal-State Joint Board on Universal Service, "Universal Service Monitoring Report, Supplementary Report Material," 2013, LI Support - by Study Area.xlsx.

<sup>&</sup>lt;sup>177</sup> "Link-Up Florida Lifeline Assistance: Number of Customers Subscribing to Lifeline Service and the Effectiveness of Procedures to Promote Participation," The Florida Public Service Commission, December 2011, p. 25, available at: http://www.psc.state.fl.us/publications/pdf/telecomm/tele-lifelinereport2011.pdf. "ETC" stands for "eligible telecommunications carriers." These are carriers that have been designated as eligible to receive financial support from the Universal Service Administrative Company (USAC) because they provide LifeLine Program-supported services. *See* "Telecom Carriers," Universal Service Administrative Company, available at: http://www.usac.org/li/telecom-carriers/.

AT&T and CenturyLink saw Lifeline subscribership decline over this same period by -2.6% and -5%, respectively.<sup>178</sup> Similarly, for New York, the Universal Service Administrative Company (which administers universal service programs for the FCC) reported that in the third quarter of last year, the vast majority of Lifeline disbursements in the state went to wireless "eligible telecommunications carriers."<sup>179</sup> Undoubtedly, poor households have demonstrated both the ability and the propensity to avail themselves of the wireless alternatives to traditional wireline telephony. Importantly, this observed propensity to switch has occurred in an environment with little price-based incentive to switch away from wireline service.<sup>180</sup> This suggests that the propensity of poor households to switch away from landline service would be especially pronounced in the event of an unwarranted price increase by their current local exchange provider.<sup>181</sup>

134. Another issue that naturally surfaces in discussions of relaxing regulatory constraints on local exchange carriers is the potential impact of any regulatory reform on the elderly. Of particular concern is the fear by some that this demographic segment will not participate in the transformation to a "wireless economy" to the same extent as other

<sup>&</sup>lt;sup>178</sup> "Link-Up Florida Lifeline Assistance: Number of Customers Subscribing to Lifeline Service and the Effectiveness of Procedures to Promote Participation," The Florida Public Service Commission, December 2011, p. 10, available at: http://www.psc.state.fl.us/publications/pdf/telecomm/tele-lifelinereport2011.pdf.

<sup>&</sup>lt;sup>179</sup> See "Low Income Support Mechanism: Wireless and Other ETC Disbursements by State," Universal Service Administrative Company, October 27, 2014, available at: http://www.usac.org/\_res/documents/about/pdf/quarterly-stats/LI/Wireless-and-Other-ETC-Disbursements-by-State.pdf.

<sup>&</sup>lt;sup>180</sup> Landline telephone service prices have virtually mirrored changes in the aggregate Consumer Price Index over the December 2009-July 2013 period, indicating no inflation-adjusted price increase over this period. *See* Federal Communications Commission, Federal-State Joint Board on Universal Service, "Universal Service Monitoring Report," 2014, Table 4.3. Over the same time period, the breadth and versatility of services offered via wireless telephony have increased with the proliferation of smart-phones.

<sup>&</sup>lt;sup>181</sup> This conclusion mirrors that of the California Public Utility Commission, which stated that "[w] e also find no compelling reason to segment the market further by user characteristics, such as income or use characteristics (e.g., business or residential use, or level of use). In particular, there is no persuasive evidence that the patterns of use by low-income customers differ enough from other customers to be considered a separate market, or that competition in voice communications market will not benefit low-income customers." Public Utilities Commission of the State of California, "Order Instituting Rulemaking on the Commission's Own Motion to Assess and Revise the Regulation of Telecommunications Utilities", Decision 06-08-030, August 30, 2006, p. 76.

demographic segments. That is, might the elderly be disadvantaged due to a belief by some that the elderly may be unable or unwilling to embrace change, have technological anxieties, limited wireless telephony options, or some other reason? While these concerns are substantive, policy ought not to be based merely on fears. Indeed, as is explained below, the facts indicate the contrary. But, to take the analysis step by step, two important questions must be addressed before concerns about the ability of the elderly to make the transition to wireless telephony is allowed to slow otherwise needed regulatory reform. First, do the elderly have telephony choices? And second, are the elderly taking advantage of these telephony choices?

135. As part of a larger research effort, I have investigated the evolution of telephone demand among the U.S. elderly population over the 2003-2013 period.<sup>182</sup> The results — both at a cursory level and a more econometrically-refined level — are telling: while younger households have moved more quickly to embrace the wireless revolution, older households are rapidly transitioning to wireless services as well. In short, elderly households are not "stuck in the past" or "stuck in their ways" but are instead demonstrably nimble adopters of modern wireless technologies and the ever-increasing platform of communications options that this new technology brings. The AARP also highlights these trends.<sup>183</sup> A survey conducted by the AARP showed that 91% of respondents between the ages of 65 to 74 owned cell phones, and that 73% of respondents over the age of 75 were cell phone owners.<sup>184</sup>

<sup>&</sup>lt;sup>182</sup> See, e.g., Jeffrey T. Macher and John W. Mayo "The Wireless Revolution: Are the Elderly Keeping Up?" Economic Policy Vignette 2012-5-29, Georgetown Center for Business and Public Policy, McDonough School of Business, Georgetown University, May 2012.

<sup>&</sup>lt;sup>183</sup> Erin Pinkus and Jennifer Sauer, "AARP National Survey of Residents Age 40+: Summary of Opinions on Telecommunications Issues," AARP, available at:

http://www.aarp.org/content/dam/aarp/research/surveys\_statistics/general/2013/AARP-National-Survey-of-Residents-Age-40-Plus-Summary-of-Opinions-on-Telecommunications-Issues-AARP-rsa-gen.pdf. <sup>184</sup> *Id.* p. 4.

136. Consider Figure 24 which shows the portfolio of elderly households' telephone choices over the 2003 through 2013 period. As with Figure 22, each household is categorized as being in one of four mutually exclusive and exhaustive categories: "none," "landline," "wireless," or "both".



Figure 24: Households with Wireline, Wireless, Both or Neither Among Households with Head of Household Over 50 Years Old 2003-2013

137. Three facts regarding the elderly and wireless telephony are readily apparent in Figure 24. First, the adoption of wireless telephony by the elderly has been pronounced, especially over the past decade. Although cellular telephony was first introduced in 1983, twenty years later only 41 percent of elderly households possessed wireless subscription service in 2003. But by 2013, wireless adoption among the elderly had grown to 85 percent. Over four out of five

elderly households today possess wireless service, which can be used as an alternative to traditional landline service.

138. Second, the growth of wireless-only elderly households has been significant: from one percent in 2003 to over 25 percent by the end of 2013. Fully one-quarter of elderly households have become wireless-only, and the growth path of wireless-only elderly households is along the same path as the larger population of households, but with a slight lag. While it is still true that the level of wireless-only elderly households is lower than the average across the general population of other U.S. households, this demographic segment is indeed embracing the wireless revolution and "catching up" to the younger population.

139. Third, complementing the move by elderly households toward wireless services, we find that the percentage of these households that rely exclusively on landline telecommunications has fallen dramatically: from 58 percent in 2003 to under 14 percent by the end of 2013. These data indicate that elderly households are not economically yoked to traditional wireline telephone subscriptions.

140. A final issue concerns the confluence of the elderly and the poor. That is, a particular concern by some may arise about the vulnerability of poor, elderly households to the consequences of regulatory flexibility by incumbent local exchange carriers. Again, however, the facts do not provide support for this concern. Figure 25 reveals a ready willingness of poor elderly households to shift from wireline to wireless telephony. Among the nominally most vulnerable elderly households—those living in poverty—we find that roughly 36 percent have "cut the cord" by dropping their landline telephone subscription all together. And exclusive reliance among these households on traditional wireline telephone subscriptions has fallen precipitously from 83 percent to 24 percent in the last decade.

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141. In sum, the data provide considerable comfort that in their use and purchasing of communications services, elderly households are not as economically vulnerable as some may fear or have posited. Indeed, elderly households – similar to all other U.S. households – appear to increasingly see value in wireless services and have transitioned rapidly – and are continuing to do so – to move away from landline telephones. While regulatory reform in landline telecommunications needs to be sensitive to potentially vulnerable segments of society, it should not be sidetracked by empty concerns. While some elderly households will surely remain loyal to wireline services, the data provide no indication that elderly households are, as a group, unwilling or unable to shift from wireline to wireless services to satisfy their telecommunications needs.

142. Another group of customers that merits focus as issues of relaxing regulation moves to the fore are young households. In particular, it is often observed that in matters of technology adoption, trends among young households are precursors to the behaviors that will spread to the larger population. In this context, examining consumption patterns among young households provides a window into the emerging future of telecommunications portfolios that the broad population will soon reveal.

143. Consider Figure 26. There we see that the share of households headed by young adults who rely exclusively on landline telephone service has fallen dramatically over the 2003-2013 period. By the end of 2013, only *1.3* percent of young households relied exclusively on wireline telephone subscriptions to satisfy their telecommunications needs. The share of these households that rely on both wireline and wireless subscriptions has similarly declined. While over 40 percent of young households relied on both wired and wireless telephone subscriptions in 2003, that dual reliance had fallen to less than 13 percent by the end of 2013. Most dramatically, the share of wireless-only young-adult households grew to over 82 percent by the end of 2013. While the exact timing of the evolution of other households along this path is uncertain, the overwhelming demonstration by young households of the versatility and value of wireless communications relative to wired telephone service provides substantial comfort to any concerns about the larger base of consumers being "locked-in" to wireline telephone service or subject to monopolistic price increases.



# Figure 26: Households with Wireline, Wireless, Both or Neither Among Households with All Members Under Age 31 2003-2013

144. Finally, we note that while the descriptive statistics presented here provide substantial support for the proposition that wireless telephone subscriptions offer a substantive competitive alternative to traditional landline services, corollary research efforts have probed this issue more deeply in recent years. In particular, in Macher, et al. (2012), we employ modern discrete-choice econometric methods to illuminate the price and non-price determinants of households' decisions to subscribe to a wireline service, a wireless service, both or neither.<sup>185</sup>

145. The results of this empirical inquiry are telling. In all estimations, regardless of the specification, we find that prices of the relevant alternatives (wireless and wireline) are

<sup>&</sup>lt;sup>185</sup> Jeffrey T. Macher, John W. Mayo, Olga Ukhaneva and Glenn A. Woroch, "Demand in a Portfolio-Choice Environment: The Evolution of Telecommunications," Georgetown McDonough School of Business Research Paper No. 2012-19, August 20, 2012, available at: http://ssrn.com/abstract=2133424.

statistically significant drivers of consumers' choices of their telephone subscription portfolios.<sup>186</sup> In particular, we find that the price of any alternative (landline or mobile) is negatively related to subscriptions to that service. That is, if the price of landline service were to be increased, the estimations robustly reveal that subscriptions to that service will decline. Importantly, this is after the econometric model has controlled for the independent influence of a host of other non-price determinants of consumers' demand. While this "own-price" effect is perhaps unsurprising, the estimation results also indicate that the price of any alternative (landline or mobile) is *positively* related to price movements of the other alternative. That is, price increases of landline telephone service are positively related to wireless telephone subscription. In the jargon of economists, the results reveal that wireline and wireless subscriptions are "substitutes" rather than "complements".<sup>187</sup>

146. The model estimates permitted us to explore the evolution of consumer behaviors to price changes. For instance, by bifurcating our sample into an early period (2003-2006) and a later period (2007-2010) we were able to estimate the impact of a price change of wireline service on consumers.<sup>188</sup> The estimates reveal that in the early period changes in the price of wireline service precipitated only modest substitution by marginal consumers (*i.e.*, those who would respond to a price change). Specifically, during the early period, only about one-half of the marginal substitution was the result of households dropping their wireline service. Instead,

<sup>&</sup>lt;sup>186</sup> This exercise examines the choice of consumers among four alternatives: (1) no telephone; (2) a wireline telephone only; (3) both a wireline and a wireless telephone; or (4) only a wireless telephone. Thus, the price effects observed capture the sensitivities of consumers to switch among these alternatives in response to price changes.

<sup>&</sup>lt;sup>187</sup> Our estimations also explored the sensitivity of this result among both elderly and poor households. While we find modestly more price sensitivity among young households, our principal results remain intact. For more details, *see* Jeffrey T. Macher, John W. Mayo, Olga Ukhaneva and Glenn A. Woroch, "Demand in a Portfolio-Choice Environment: The Evolution of Telecommunications," Georgetown McDonough School of Business Research Paper No. 2012-19, August 20, 2012, footnote 38, available at: http://ssrn.com/abstract=2133424.

<sup>&</sup>lt;sup>188</sup> Similar results occur with alternative bifurcations of the sample.

while some consumers dropped their wireline service, a substantial share was prompted to experimentally adopt wireless service without disconnecting from their wireline service. In the later period, however, the estimates suggest that the marginal consequence of any wireline price change was predominantly to stimulate "cord cutting" behavior by households. This result is likely to have been driven, however, by the substantial increase in the quality and versatility of wireless networks and devices.

#### VI. Conclusion

147. This paper assesses the current state of New York telecommunications regulatory oversight using a Results-Based Regulation (or RBR) framework. RBR is rooted in core economic principles and offers regulators general guideposts for assessing the merits of alternative governance choices for dynamic industries. It focuses on what specific implications and observations emerge from each of the five principles of RBR for the evolution of the New York State telecommunications industry. The analysis indicates that the steps New York has taken to reform regulatory constraints on local exchange telecommunications providers have been met with a host of beneficial results for consumers. Consequently, New York can both confidently move forward with a more relaxed regulatory posture toward the industry and, armed with the RBR principles, can adapt in the future to the evolving market.

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# **PUBLICATIONS**:

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"The Effectiveness of Mandatory Fuel Efficiency Standards in Reducing the Demand for Gasoline" (with John E. Mathis), <u>Applied Economics</u>, Volume 20, Number 2, February 1988, pp. 211-220.

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"The Technological Determinants of the U.S. Energy Industry Structure," <u>The Review of</u> <u>Economics and Statistics</u>, Volume 66, February 1984, pp. 51-58.

# B. BOOKS, MONOGRAPHS, AND OTHER PUBLICATIONS

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"Bringing Mobile Broadband to Rural Americans," (with Anna-Maria Kovacs) <u>Roll Call</u>, May 9, 2014.

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"Universal Service: Can We Do More with Less?" in <u>New Directions in Communications</u> <u>Policy</u>, Randolph J. May, Editor, Carolina Academic Press, 2009.

"The Economic Facts and FAQs of National Video Franchising: Reflections on the House of Representatives Debate," Policy Matters 06-16, AEI-Brookings Joint Center, June 2006.

"We're all for Competition, But...," Policy Matters 06-03, AEI-Brooking Joint Center, February 2006.

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"Entries and Exits of Firms in the Tennessee Economy: Foundations for Research," <u>Survey of Business</u>, The University of Tennessee, Vol. 23, Summer 1987, pp. 21-23.

"The Relationship of Manufacturing and Nonmanufacturing Firm Entry and Exit in Tennessee" (with Joseph E. Flynn), <u>Survey of Business</u>, The University of Tennessee, Volume 23, Number 2, Fall 1987, pp. 11-16.

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### CONGRESSIONAL AND REGULATORY TESTIMONIES:

U.S. Senate (Commerce, Science and Transportation Committee; Energy and Natural Resources Committee, Subcommittee on Water and Power); U.S. House of Representatives, Subcommittee on Railroads, Pipelines, and Hazardous Materials); Federal Communications Commission; U.S. International Trade Commission; Tennessee State Legislature (Senate Finance, Ways and Means Committee; Special Joint Legislative Committee on Business Taxation; and, Senate State and Local Government Committee); Maryland State Legislature (Environmental Works Committee); Pennsylvania Public Utility Commission; Michigan Public Service Commission; Missouri Public Service Commission; Illinois Commerce Commission; West Virginia Public Utility Commission; Wyoming Public Utility Commission; Washington Utilities and Transportation Commission; Utah Public Service Commission; Wisconsin Public Service Commission; California Public Utilities Commission; Florida Public Service Commission; Delaware Public Service Commission; Montana Public Service Commission; Maryland Public Service Commission; Massachusetts Department of Public Utilities; Georgia Public Service Commission; Colorado Public Utilities Commission; North Carolina Public Utilities Commission; Missouri Public Service Commission; Texas Public Utility Commission; Arkansas Public Service Commission; Connecticut Department of Public Utility Control; Kansas State Corporation Commission; and New Jersey Board of Public Utility Commissioners.

#### INVITED SEMINARS AND SELECTED CONFERENCE PRESENTATIONS:

Columbia University, University of Chicago, London Business School, University of Paris (Dauphine IX), Vanderbilt University, INSEAD, Washington University in St. Louis, University of Michigan, Ohio State University, University of Minnesota, University of Florida, University of Arkansas, University of Texas, University of Missouri, Florida State University, Rutgers University, American University, University of Missouri, Kansas University, University of Utah, University of Colorado, University of Basel (Switzerland), University of Freiburg (Germany), University of Central Florida, American Enterprise Institute, Brookings Institution, Federal Communications Commission, Australian Competition and Consumer Commission (ACCC), Telecommunications Policy Research Conference (TPRC), National Conference of State Legislatures, U.S. Advisory Commission on Intergovernmental Relations

#### **SELECTED CONSULTING:**

U.S. Department of Justice, Antitrust Division; U.S. Federal Trade Commission; AT&T; Sprint; MCI Telecommunications; Verizon; Optus Communications (Australia); United Parcel Service; Commonwealth of Virginia, Tennessee Valley Authority; Antitrust Division, Office of the Attorney General, State of Tennessee; U.S. Senator Howard Baker, Jr., U.S. Senate Majority Leader; Oak Ridge National Laboratory; AmerenUE; Arkansas Consumer Research; Division of Energy Conservation and Rate Advocacy, Office of the Arkansas Attorney General; U.S. Department of Energy

### **PROFESSIONAL PRESENTATIONS:**

American Economic Association Annual Conference, Western Economic Association Annual Conference, Southern Economic Association Annual Conference, European Association for Research in Industrial Economics Annual Conference, Center for Research in Regulated Industries Eastern Annual Conference, Center for Research in Regulated Industries Western Annual Conference, Southeastern Economic Analysis Conference

## WORKING PAPERS:

"Demand in a Portfolio Choice Environment: The Evolution of Telecommunications" (with Jeffrey T. Macher, Olga Ukhaneva and Glenn Woroch), October 2014.

"Targeting Efforts to Raise Rivals' Costs: Moving from 'Whether' to 'Whom'" (with David M. Mandy and David E.M. Sappington), January 2015.

"Now It's Getting Personal: Universal Service in a Wireless World," (with Jeffrey T. Macher Olga Ukhaneva and Glenn Woroch), December 2014

"International Telecommunications Demand" (with Olga Ukhaneva), March 2015.

"Regulation in a 'Deregulated' Industry: Railroads in the Post-Staggers Era" (with David .E.M. Sappington), May 2015.

## **EDITORIAL REVIEWER:**

National Science Foundation, Brookings Institution, Federal Trade Commission, The MIT Press, <u>American Economic Review</u>, <u>Quarterly Journal of Economics</u>, <u>Journal of Law and</u> <u>Economics</u>, <u>Economic Journal</u>, <u>Journal of Business</u>, <u>RAND Journal of Economics</u>, <u>Journal of</u> <u>Regulatory Economics</u>, <u>Review of Economics and Statistics</u>, <u>Economic Inquiry</u>, <u>Journal of</u> <u>Industrial Economics</u>, <u>Journal of Economics & Management Strategy</u>, <u>Journal of Law</u>, <u>Economics and Organization</u>, <u>Journal of Economic Behavior and Organization</u>, <u>Review of</u> <u>Industrial Organization</u>, <u>Scandinavian Journal of Economics</u>, <u>Eastern Economic Journal</u>, <u>Southern Economic Journal</u>, <u>Contemporary Economic Policy</u>, <u>Economic Development and</u> <u>Cultural Change</u>, <u>Industrial Relations</u>, <u>Growth and Change</u>, <u>Review of Regional Studies</u>, <u>Journal of Economics and Business</u>, <u>Quarterly Review of Economics and Business</u>, <u>Journal of Policy Analysis and Management</u>, <u>Quarterly Journal of Business and Economics</u>, <u>Regional Science and Urban Economics</u>, <u>Financial Review</u>, <u>Journal of Money</u>, <u>Credit</u>, <u>and</u> <u>Banking</u>, <u>Social Science Quarterly</u>, <u>Telecommunications Systems</u>, <u>Public Finance Quarterly</u>, <u>Japan and the World Economy</u>, <u>Energy Economics</u>, <u>Information Economics and Policy</u>

## EDITORIAL AND ACADEMIC OVERSIGHT BODIES

Associate Editor, Information Economics and Policy, 2007-2011.

Editorial Board, Journal of Regulatory Economics, 1999-present.

Editorial Board, Review of Industrial Organization, 2002-2003; 2010-present.

Associate Editor, Economic Inquiry, 2013-present.

Board of Academic Advisors, The Free State Foundation, 2008 – 2009.

Research Advisory Committee, National Regulatory Research Institute (Ohio State University), 1993-1997.

## **PROFESSIONAL MEMBERSHIPS:**

American Economic Association Western Economic Association Southern Economic Association American Law and Economics Association International Telecommunications Society European Association for Research in Industrial Economics