

**Federal Trade Commission**

DEBORAH PLATT MAJORAS  
PAMELA JONES HARBOUR

Chairman

**TABLE OF CONTENTS**

**INTRODUCTION**.....1

**PART I MAJOR WIRELESS INTERNET TECHNOLOGIES AND THE MECHANICS OF IMPLEMENTATION**.....6

A. Wireless Internet Standards Using Unlicensed Radio Band Spectrum.....6

B. Wireless Internet Standards Using Licensed Radio Band Spectrum.....1ea.00000 0.0000

<b>PART V</b>	<b>LEGISLATIVE PROPOSALS RELATING TO MUNICIPAL WIRELESS</b>	
	<b>INTERNET PROVISION</b> .....	35
	A. Federal Bills.....	35
	B. State Bills.....	38
<b>PART VI</b>	<b>SUGGESTED GUIDING PRINCIPLES</b> .....	41
	<b>CONCLUSION</b> .....	49

---

<sup>1</sup> The term “broadband” is commonly used to refer to data services that are “fast,” always available, and capable of supporting advanced applications. Although there appears to be no strict definition, for purposes of this report “broadband” can be defined as “a general set of transmission capabilities and characteristics, such as always-on, high-speed Internet access with a sufficiently robust functionality suitable for evolving, bandwidth-hungry applications.” FCC, C



Municipalities' increasing interest and involvement in the development and management of wireless Internet networks appear to have spurred both state and federal legislators to introduce legislation that would define the extent to which municipalities may provide such services. At least nineteen states have some kind of legislation that defines the extent to which municipalities may provide Internet service.<sup>9</sup> At least eight of those nineteen states passed such legislation in the 2004-2006 period; similar bills were introduced in at least nine other states during that time.<sup>10</sup> Some of these state bills have proposed to define, restrict, or eliminate municipalities' ability to provide wireless Internet service. Many of these recent bills require municipalities to undertake feasibility studies, long-term cost-benefit analyses, public hearings, or referendums. Critics of such legislation, however, believe these requirements slow local implementation.<sup>11</sup> Federal bills would, variously, preempt state laws prohibiting municipal wireless Internet provision;<sup>12</sup> define how municipalities may go about implementing wireless Internet networks;<sup>13</sup> or prohibit municipal wireless Internet provision altogether.<sup>14</sup>

---

*infra* Appendix (summarizing major Internet technologies).

<sup>9</sup> See generally MICHAEL J. BALHOFF & ROBERT C. ROWE, MUNICIPAL BROADBAND: DIGGING BENEATH THE SURFACE 104-107 (2005), available at <http://www.balhoffrowe.com/pdf/Municipal%20Broadband--Digging%20Beneath%20the%20Surface.pdf>; INTEL, DIGITAL COMMUNITY BEST PRACTICES 10 (2005), available at <http://www.intel.com/business/bss/industry/government/digital-community-best-practices.pdf>.

<sup>10</sup> See generally BALHOFF & ROWE, *supra* note 9, at 104-108; THE BALLER HERBST LAW GROUP, PROPOSED STATE BARRIERS TO PUBLIC ENTRY (AS OF JUNE 8, 2006) (2006), available at [http://www.baller.com/pdfs/Baller\\_Proposed\\_State\\_Barriers.pdf](http://www.baller.com/pdfs/Baller_Proposed_State_Barriers.pdf).

<sup>11</sup> See generally INTEL, *supra* note 9, at 10.

<sup>12</sup> S. Res. 1294, 109<sup>th</sup> Cong., 1<sup>st</sup> Sess. (2005), available at <http://thomas.loc.gov/cgi-bin/query/z?c109:S.1294>: (McCain-Lautenberg "Community Broadband Act of 2005"); S. Res. 2686, 109<sup>th</sup> Cong., 2<sup>nd</sup> Sess. § 502 (2006), available at <http://thomas.loc.gov/cgi-bin/query/z?c109:S.2686>: (Stevens "Communications, Consumer's Choice, and Broadband Deployment Act of 2006"); H.R. 5252, 109<sup>th</sup> Cong., 2<sup>nd</sup> Sess. § 401 (2006), available at <http://thomas.loc.gov/cgi-bin/query/z?c109:H.R.5252>: (Barton "Communications Opportunity, Promotion, and Enhancement Act of 2006," as passed out of the House of Representatives and referred to the Senate).

<sup>13</sup> S. Res. 1504, 109<sup>th</sup> Cong., 1<sup>st</sup> Sess. § 15 (2005), available at <http://thomas.loc.gov/cgi-bin/query/z?c109:S.1504>: (Ensign "Broadband Investment and Consumer Choice Act of 2005"); S. Res. 2686, *supra* note 12.

<sup>14</sup> H.R. Res. 2726, 109<sup>th</sup> Cong., 1<sup>st</sup> Sess. (2005), available at <http://thomas.loc.gov/cgi-bin/query/z?c109:H.R.2726>: (Sessions "Preserving Innovation in Telecom Act of 2005").

---

<sup>15</sup> *Nixon v. Missouri Municipal League*, 541 U.S. 125, 131 (2004). There, the Court held that a provision of the 1996 amendment to the Communications Act (47 U.S.C. § 253) authorizing the preemption of state and local laws prohibiting “any entity” from providing a statutorily defined “telecommunications service” did not preempt state statutes that bar political subdivisions from doing so. The Court noted, however, that “in any event the issue here does not turn on the merits of municipal telecommunications services.” *Id.* at 132.

<sup>16</sup> *Id.* at 131.

<sup>17</sup> *Id.*

<sup>18</sup> *E.g.*, *FTC Staff Comment Before the Federal Communications Commission In the Matter of Auction of Advanced Wireless Services Licenses Scheduled for June 29, 2006* (Feb. 28, 2006), available at <http://www.ftc.gov/os/2006/03/ReplyoftheFTCBureauofEconomicsOnFCCAWSAuctionAUDocket06-30.pdf>. *FTC Staff Comment to the Hon. Frank Sawyer Concerning Ohio H.B. 622 to Define Conditions Under Which Municipalities May Grant Additional Cable Franchises in Areas Having an Existing Cable System* (July 5, 1990); *FTC Staff Comment Before the FCC In the Matter of Competition, Rate Deregulation and the Commission’s Policies Relating the Provision of Cable Television Service* (Apr. 1990); *FTC Staff Comment Before the FCC In the Matter of Evaluation of the Syndication and Financial Interest Rules* (Sept. 5, 1990); *FTC Staff Comment Before the Federal Communications Commission Concerning the Auction of Certain Unassigned Frequencies in the Radio Spectrum* (Oct. 29, 1986).

<sup>19</sup> *E.g.*, *In the Matter of Time Warner, Inc., et al.*, 123 FTC 171 (1997) (consent order imposing certain conditions on Time Warner proposal to acquire Turner Broadcasting and create the world’s largest media company, including several leading cable networks); *In the Matter of AOL, Inc. and Time Warner, Inc.*, FTC Dkt. No. C-3989 (2001) (consent order imposing certain conditions on merging parties, including that they allow competing Internet Service Providers to access Time Warner’s broadband cable Internet systems, and to allow content providers competing with Time Warner to have access to AOL’s Internet Service



municipalities providing wireless Internet service for their communities raise important competition issues. The purpose of this report is to summarize the FTC staff's research on wireless broadband Internet, including its provision in the municipal context, and to provide perspective on the competition issues that policymakers may encounter when considering municipal wireless Internet provision or related legislation.<sup>20</sup> To prepare this report, the FTC staff researched various technologies, legislative proposals, and case studies of municipalities that have participated in the deployment of, or are in the process of deploying, municipal wireless Internet systems.

The report is organized as follows. Part I and the Appendix describe the various wireless Internet technologies<sup>21</sup> that are currently being used or are under development. Part I also summarizes the legal status of wireless Internet. Part II describes the most common operating models being used to provide wireless Internet service. Part III summarizes proponents' arguments in favor of municipal wireless Internet provision, including its commercial and non-commercial uses. Part IV summarizes opponents' arguments why municipal wireless Internet provision should be limited or prohibited. Part V surveys recent federal and state legislative proposals regarding municipal wireless Internet provision. Finally, Part VI addresses competition issues that policymakers should consider in evaluating municipal wireless Internet legislation.

---

Provider), available at <http://www.ftc.gov/opa/2000/12/aol.htm>; *In the Matter of Cablevision Systems Corp.*, Dkt. No. C-3804 (1998) (consent order requiring Cablevision to divest certain assets of Tele-Communications, Inc. (TCI), in geographic areas where Cablevision and TCI competed as a condition for allowing the two companies to merge), available at <http://www.ftc.gov/os/caselist/c3804.htm>; *In the Matter of Tele-Communications, Inc.*, Dkt. No. C-3575 (1995) (consent order requiring TCI to divest either its cable television system or that of TeleCable Corp. in Columbus, Georgia, as a condition for allowing the two cable companies to merge).

<sup>20</sup> Municipal provision or facilitation of broadband Internet access through any medium – wireless, fiber, or other – may raise certain competition issues for policymakers. This report focuses on municipal involvement in wireless Internet access because it appears to be the medium most commonly considered by municipalities in recent years and has prompted a significant number of legislative responses both at the state and federal levels.

<sup>21</sup> The summary of technologies provided herein is to provide context and understanding for the remainder of the report. For a more detailed description of various Internet technologies, see FCC Report, *supra* note 1; WEBOPEDIA computer and Internet dictionary, <http://www.webopedia.com>.

---

<sup>22</sup> *E.g.*, T-MOBILE HOTSPOT, U.S. LOCATIONS (2006), <https://selfcare.hotspot.t-mobile.com/locations/viewLocationMap.do>.

<sup>23</sup> This power may vary, depending on a particular state's laws and a municipality's charter. State law may also affect whether a private provider could install a wireless Internet network without the use of such municipally granted rights-of-wa

---

<sup>28</sup> WEBOPEDIA, 802.11 (last visited Aug. 4, 2006), at [http://www.webopedia.com/TERM/8/802\\_11.html](http://www.webopedia.com/TERM/8/802_11.html). *See also* WEBOPEDIA, WIRELESS LAN STANDARDS (last visited Aug. 4, 2006), at [http://www.webopedia.com/quick\\_ref/WLANStandards.asp](http://www.webopedia.com/quick_ref/WLANStandards.asp).

There are thre

---

<sup>32</sup> See generally FCC Report, *supra* note 1, at 4, 19-24.

<sup>33</sup> “[W]ireless technologies frequently are a more cost-effective solution for serving areas with less dense populations, and provide rural and remote regions new ways to connect to critical health, safety, and educational services.” FCC Report, *supra* note 1, at 13.

<sup>34</sup> Moreover, although wireless Internet technology continues to improve, current technologies may be disrupted by severe weather conditions such as strong wind, physical structures such as buildings, large vehicles, trees, or fallen tree branches; by geographical features such as hills or valleys; or by other wireless signals such as those emitted by microwaves, baby monitors, or cordless phones. See generally TROPOS NETWORKS, METRO-SCALE MESH NETWORKING WITH TROPOS METROMESH™ ARCHITECTURE 9 (2005), available at [http://www.tropos.com/pdf/tropos\\_metro-scale.pdf](http://www.tropos.com/pdf/tropos_metro-scale.pdf). Some wireless carriers have begun to deploy Orthogonal Frequency Division Multiplexing technology, which does not require a direct line-of-sight between the transmitter and the receiver. In April 2004, Nextel began offering this service in Raleigh-Durham, North Carolina. FCC Report, *supra* note 1, at 21-22.

<sup>35</sup> See generally Michelle Kessler, *City Takes Fast Track to High-Speed Access*, USA TODAY, May 1, 2004, at 3B, available at [http://www.usatoday.com/money/industries/technology/2004-03-31-cerritos\\_x.htm](http://www.usatoday.com/money/industries/technology/2004-03-31-cerritos_x.htm). Cerritos, California, indicates that it will consider allowing multiple wireless Internet networks to compete with each other in the city.

<sup>36</sup> According to one study, among adults age eighteen to twenty-seven, 45 percent use a cellular phone equipped with wireless Internet capabilities and 22 percent use Wi-Fi enabled laptop computers. FCC Report, *supra* note 1, at 43 n.145 (citing John B. Horrigan, 28% of American Adults are Wireless Ready, Pew Internet Project Data Memo.0000 TD(ritos\_x.htm.)TiBT260.5200

---

<sup>37</sup> FCC Report, *supra* note 1, at 5.

<sup>38</sup> *See generally* WI MAX FORUM, WELCOME TO THE WI MAX FORUM

---

<sup>44</sup> See generally *id.*; FCC Report, *supra* note 1, at 24-26.

<sup>45</sup> Press Release, FCC, FCC to Commence Spectrum Auction that Will Provide American Consumers New Wireless Broadband Services (Dec. 29, 2004) (formally notifying the National Telecommunications and Information Administration (“NTIA”) of the Department of Commerce of the FCC’s intention to auction licenses for certain “3G” advance wireless

offer broadband Internet service targeted primarily “to the estimated 25 million homes and small businesses that do not have access to other broadband Internet options.”<sup>47</sup>

#### **D. Broadband Over Power Lines**

Some power companies began to offer broadband Internet service over power lines (“BPL”) in limited geographic areas in 2003.<sup>48</sup> In June 2004, President Bush noted that spreading broadband Internet throughout America utilizing the existing electrical power lines is a “great opportunity,” and that “our job in government is to help facilitate the use of electricity lines by helping with the technological standards that will make this more possible.”<sup>49</sup>

BPL systems use existing, medium-voltage electrical power lines (up to 40,000 volts) to provide broadband Internet access by coupling radio frequency energy onto the line.<sup>50</sup> A utility converts Internet data from a backbone connection into higher frequencies than electrical current, so the two do not interfere with each other. Data is then transmitted along power lines into customers’ neighborhoods. There, the utility can use wireless technology (such as Wi-Fi) to transmit data into customers’ homes, or use a wall socket adapter to convert power line signals so they can be carried into a computer’s usual ports.

There are now over forty deployments of BPL technology nationwide, most of which are in trial stages.<sup>51</sup> There are, however, a few commercial BPL systems, including Duquesne Light

---

<sup>47</sup> *Id.* at 23.

<sup>48</sup> *Id.* at 22-23 (initial trials of BPL occurred in Manassas, Virginia; Allentown, Pennsylvania; and Cincinnati, Ohio). *See also* DEPARTMENT OF COMMERCE, NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION, BROADBAND-OVER-POWERLINE REPORT (2004), *available at* <http://www.ntia.doc.gov/ntiahome/fccfilings/2004/bpl/index.html>; Michael D. Gallagher, Assistant Secretary for Communications and Information, National Telecommunications and Information Administration, U.S. Department of Commerce, Broadband over Power Lines: U.S. Innovation Driving Economic Growth, Presentation, Denver, Colorado (Sept. 16, 2006), *available at* [http://www.ntia.doc.gov/ntiahome/speeches/2005/MG\\_BPL\\_09162005\\_files/frame.htm#slide0075.htm](http://www.ntia.doc.gov/ntiahome/speeches/2005/MG_BPL_09162005_files/frame.htm#slide0075.htm).

<sup>49</sup> President George W. Bush, High Tech Improving Economy, Health Care, Education, Remarks by the President on Innovation to the U.S. Department of Commerce (June 24, 2004), *supra* note 3.

<sup>50</sup> FCC, Availability of Advanced Telecommunications, *supra* note 40, at 22.

<sup>51</sup> *See generally* UNITED POWER LINE COUNCIL, BPL DEPLOYMENT MAP (2006), *at* [http://www.uplc.utc.org/file\\_depot/0-10000000/0-10000/7966/conman/BPL+Map+12\\_12.pdf](http://www.uplc.utc.org/file_depot/0-10000000/0-10000/7966/conman/BPL+Map+12_12.pdf).

---

<sup>52</sup> Akweli Parker, *Broadband's New Outlet*, PHILLY.COM, Sept. 11, 2005, available at <http://64.233.161.104/search?q=cache:KpJrawN9GjUJ:www.philly.com/mld/philly/12611837.htm+broadband%27s+new+outlet+akweli+parker&hl=en&gl=us&ct=clnk&cd=1>. Duquesne has approximately 2,800 customers, and has reported no substantial problems with the technology. *Id.* See also COMMUNICATIONS TECHNOLOGIES, INC., C

*available*



to the Communications Act's Title II common carrier requirements for "telecommunications services."<sup>58</sup> As noted by the Task Force, however, even with a deregulatory framework, it is likely that certain regulatory requirements will be imposed on wireless broadband technologies.<sup>59</sup> One factor that may affect the regulation of wireless broadband is the possibility of federal legislation that would overhaul the Communications Act in order to address the convergence of telecommunications technologies.<sup>60</sup>

## II. OPERATING MODELS

Municipalities and other entities that have implemented wireless Internet networks have most commonly used one of six general operating models, from which a variety of hybrids may be created by combining various features of each model. This report describes six of these models: non-profit, cooperative, contracting out, public-private partnership, municipal, and government loan-grant.

### A. Non-Profit Model

Under this operating model, a non-profit organization (such as an I.R.S. § 501(c)(3) organization) volunteers to organize, fund, deploy, and maintain a wireless Internet network, perhaps without charge to users. The non-profit may raise funds from charitable donations or grants or secure loans from a private institution or municipality. The non-profit negotiates with a municipality to secure rights-of-way access to streetlights, traffic lights, or other buildings. It may contract with a private telecommunications company to design and operate certain aspects of the network. The non-profit may provide service to a particular public space or public attraction, such as a park or museum.

For example, the 501(c)(3) "Open Park Project" maintains Wi-Fi hotspots near the U.S. Supreme Court, the Library of Congress, and Pershing Park-Freedom Plaza, just off the National Mall in Washington, D.C. The organization has requested that the Smithsonian Institution let it

---

under the 1996 amendment to the Communications Act).

<sup>58</sup> A "telecommunications service" is "the offering of telecommunications for a fee directly to the public . . . regardless of the facilities used." 47 U.S.C. § 153(46). "Telecommunications" is "the transmission, between or among points specified by the user, of information of the user's choosing, without change in the form or content of the information as sent and received." 47 U.S.C. § 153(43). *See also Brand X* at 2697-98.

<sup>59</sup> FCC Report, *supra* note 1, at 67.

<sup>60</sup> *See e.g.*, S. Res. 1504, 109<sup>th</sup> Cong., 1<sup>st</sup> Sess. § 15 (2005), *available at* <http://thomas.loc.gov/cgi-bin/query/z?c109:S.1504>: (Ensign "Broadband Investment and Consumer Choice Act of 2005")

---

<sup>61</sup> *E.g.*, OPEN PARK PROJECT, ABOUT US

---

<sup>66</sup> See *id.*; FCC Report, *supra* note 1, at 34.

<sup>67</sup> Eric Griffith, *The Wisconsin City Has Had a Rocky Year Trying to Get to This Point, But New Vendors are Now Signed to Install the City-Wide Network*, WI-FIPLANET.COM, Oct. 12, 2005, 2005 WLNR 17084141; Ben Fischer, *Web Setup May Not be City Wide There's No Guarantee*, *WI-FIPLANET.COM*, Oct. 12, 2005, 2005 WLNR 17084141; *The Wireless Internet Project*, WI-FIPLANET.COM, Oct. 12, 2005, 2005 WLNR 17084141; *TrgBTn6Coyoa R*

Philadelphia<sup>TM</sup> Executive Committee's initial business plan proposed that the city create a non-profit, public-private corporation to oversee implementation. The plan called for securing start-up funding from foundations, grants, bank loans, and other non-city sources. The city's role would be to provide access to city-owned assets, such as light poles, for the placement of Wi-Fi antennas. The design, deployment, management, and maintenance of a city-wide Wi-Fi network would be contracted out to private companies.<sup>69</sup>

The business plan called for the corporation to provide market-based rates lower than those of cable and DSL, and to provide discounted rates to low-income persons, certain other residents, and small businesses. Free service would be provided in public spaces like parks and squares. Access to the network also would be available to retail service providers, telecommunications companies, and other institutions at low, wholesale rates. The corporation would use excess cash flow to promote computer and Internet use by low-income persons and small businesses. In addition, the city of Philadelphia would be an anchor tenant for the network and would purchase certain services from the corporation, such as business-class DSL, T-1 lines, and mobile data services. The city's wireless executive committee originally estimated that the project would require a \$10 million investment in the first year and \$500,000 per year for the following four years.<sup>70</sup>

In October 2005, however, Philadelphia announced that it would partner with EarthLink to fund, deploy, maintain, and own the network's hardware. In January 2006, the parties reached a ten-year agreement. Although the contract does not specify the monthly rate that consumers will be charged, city officials indicate they expect rates to be about \$20 per month, with a discounted rate of about \$10 per month for low-income users and \$9 per month for wholesalers. EarthLink also will give Wireless Philadelphia five percent of revenues, which, in turn, will fund the non-profit corporation's "digital divide" program.<sup>71</sup> Deployment and operating costs have been estimated at \$15-18 million, including \$10 million for infrastructure.<sup>72</sup>

---

<sup>69</sup> See generally *id.*

<sup>70</sup> *Id.* at 12-13, 27, 30-31, 37-38.

<sup>71</sup> Generally, the expression "digital divide" has been used to refer to differences in computer and Internet access and literacy in society.

<sup>72</sup> *Earthlink Wins Philadelphia Bid*, MUNIWIRELESS.COM Oct. 4, 2005, at <http://www.muniwireless.com/municipal/bids/851>; *EarthLink Nabs Philadelphia Wi-Fi Deal*, BROADBAND BEAT, Oct. 8, 2005, 2005 WLNR 17768806. Larry Eichel, *Wi-Fi Highway Is Uncertain Route for Several Cities, Phila. Ponders Potential Tax Burdens, Lack of Demand, and the Economics of Digital Divide*, PHILA. INQUIRER, Nov. 13, 2005, at A1, 2005 WLNR 18331304; Deborah Yao, *EarthLink Inc. Has Finalized a 10-year Contract to Provide Wireless Internet Service Across Philadelphia, A City Official Said Monday*, THE WASHINGTON POST, Jan. 30, 2006, available at <http://www.washingtonpost.com>; *Next Step for Phila.'s Wireless*

---

---

<sup>76</sup> FCC, WIRELESS OUTREACH (Mar. 24, 2006), at <http://wireless.fcc.gov/outreach/ruralvision/>.

<sup>77</sup> *Id.*

<sup>78</sup> *Id.*

<sup>79</sup> *See generally* FELD ET AL., *supra* note 7. *See also* JOSEPH STIGLITZ ET AL., THE ROLE OF GOVERNMENT IN A DIGITAL AGE, 2-5, 53-76 (2000),

---

<sup>80</sup> *See generally* FELD ET AL., *supra* note 7, at 7-8. Thus, proponents concerned about addressing an area's lack of any br

---

<sup>82</sup> See generally BALHOFF & ROWE, *supra* note 9, at 111-121. See *supra* Part II A., B., C., D., F. (describing non-profit, cooperative, contracting out, public-private partnership, and government loan-grant models).

<sup>83</sup> See generally FELD ET AL., *supra* note 7, at 7.

<sup>84</sup> See TROPOS NETWORKS, METRO-SCALE WI-FI FOR PUBLIC SAFETY SAN MATEO POLICE DEPARTMENT (2004), *available at* [http://www.tropos.com/pdf/SMPD\\_Casestudy.pdf](http://www.tropos.com/pdf/SMPD_Casestudy.pdf); Paul Swidler, *Patrolling With Wi-Fi*, WI-FI PLANET.COM, Nov. 10, 2003, *at*



---

<sup>87</sup> See, e.g., TROPOS NETWORKS, TROPOS METRO-SCALE WI-FI NETWORKS FOR VIDEO SURVEILLANCE (2004), *available at* [http://www.tropos.com/pdf/metro-scale\\_video.pdf](http://www.tropos.com/pdf/metro-scale_video.pdf).

<sup>88</sup> TROPOS NETWORKS, PIONEERING MULTI-USE METRO-SCALE WI-FI:



---

Some economic studies find a positive correlation between certain public investments, such as highways and hospitals, and economic growth. Other studies, however, express skepticism as to whether such public expenditures actually do cause that growth. Specifically, some studies suggest that economic growth may, itself, lead to higher incomes, greater tax revenues, and, thus, greater government spending, or that other exogenous factors could cause both economic growth and public investments to increase together. In addition, whatever its source, economic growth may create spillover effects across jurisdictions. Thus, the more narrow an analysis becomes (e.g. a municipal or state-level analysis instead of a country-level analysis), the more difficult it may be to trace and identify particular relationships between a public expenditure made in one jurisdiction and economic growth occurring there. *See generally* Alicia Munnell, *Policy Watch: Infrastructure Investment and Economic Growth*, 6 J. ECON. PERSPECTIVES 189 (1992).

Moreover, the marginal returns from public investments may decline after a certain point, as is generally the case with private investments, or in some cases may even be negative overall. One recent study investigating the effects of substantial increases in a city's public infrastructure expenditures concludes. "Empirical evidence from a sample of large US cities suggests that while public capital provides significant productivity and consumption benefits, an ambitious program of locally funded infrastructure provision would likely generate negative net benefits for these cities." A.F. Haughwout, *Public Infrastructure Investments, Productivity and Welfare in Fixed Geographic Areas*, 83 J. Pub. Econ. 405-28 (2002).

For certain types of infrastructure investments, such as sports stadiums, research indicates that claims that they produce increased economic growth relative to other investments in similar

age, interest, etc., and not simply whether or not Internet access is available.<sup>97</sup> In addition, some commentators have suggested that it is important to compare municipal wireless proposals to other alternative strategies for improving Internet access, such as subsidizing first-time personal computer purchases.<sup>98</sup>

**E. Political Accountability and Competition Among Municipalities Reduces the Risk of Inefficient Provision**

Some municipal Wi-Fi proponents argue that municipalities are politically accountable to their constituents and, thus, will undertake the provision of a wireless Internet network only if it is genuinely in the interest of its constituents.<sup>99</sup> Otherwise, elected municipal representatives will pay a price at the polls. Proponents also suggest that municipalities, to some degree at least, compete with each other to attract and retain residents and businesses by offering them an array of public services at an associated tax or user fee rate. Individuals and businesses can “vote with

---

<sup>97</sup> See generally FCC, Availability of Advanced Telecommunications, *supra* note 40, at 28-37. See also generally, GAO, BROADBAND DEPLOYMENT IS EXTENSIVE THROUGHOUT THE UNITED STATES, BUT IT IS DIFFICULT TO ASSESS THE EXTENT OF DEPLOYMENT GAPS IN RURAL AREAS (2006) (finding that a variety of factors influence whether consumers adopt broadband service), available at <http://www.gao.gov/new.items/d06426.pdf>.

<sup>98</sup> See generally Jeffrey T. Prince, *Measuring the Digital Divide: Structural Estimation of Demand for Personal Computers* (2004) (working paper, Cornell University), available at <http://www.scholar.google.com>. According to this study, a short-term \$200 subsidy to first-time personal computer purchasers would increase demand by 60 percent. Prince’s estimate implies that a one-year \$200 subsidy would cost a city the size of Philadelphia approximately \$5.4 million. The city of Philadelphia has approximately 600,000 households. U.S. CENSUS BUREAU, STATE AND COUNTY QUICKFACTS (Dec. 13, 2005), available at <http://quickfacts.census.gov/qfd/states/42/4260000.html> (590,071 households as of 2000). Assuming that 40% of the households do not own a personal computer, if the annual rate of first-time purchases is 7% (as in Prince’s data set), then  $600,000 * .40 * .07 = 16,800$  first-time purchases would be expected each year. With a 1-year, \$200 per-household subsidy for the purchase of a personal computer, demand would be expected to increase 60%. Thus,  $1.6 * 16,800 = 26,880$  first-time purchases would be expected. Such a subsidy would cost the city  $26,880 * 200 = \$5.4$  million. See also *supra* Part II F. (describing government loan-grant model).

<sup>99</sup> See generally FELD ET AL., *supra* note 7, at 6-7. Proponents maintain that political accountability and competition among municipalities reduces the risk of inefficient provision in general, an argument that generally is applicable to any of the six basic operating models.

their feet” by choosing to reside in a municipality that offers a preferred array of services.<sup>100</sup> Thus, according to this argument, such competition among communities ensures that a municipality will only provide a wireless Internet network if it genuinely meets the preferences of its citizens. Public choice scholarship, however, indicates that the democratic political process itself is imperfect, may produce sub-optimal economic outcomes and, in some cases, can even result in outright government failure. Thus, critics suggest that relying on a private third-party Internet service provider to the greatest extent possible is the best approach.<sup>101</sup>

---

<sup>100</sup> In the wireless Internet context, the most relevant conditions for this “Tiebout”-type competition are: (1) there are enough different communities so that each type of individual can find the level of public services he or she prefers; (2) relocation among these communities is costless; (3) there are no spillovers between jurisdictions; and (4) the per-unit cost of public services does not continually decline as the number of residents increases (i.e., economies of scale are eventually exhausted). See Charles Tiebout, *A Pure Theory of Local Government Expenditure*, LXIV J. POL. ECON. 416 (1956) (proposing that if public goods or services are provided by a large number of local governments, consumers will be able to choose an efficient level of services).

The first two conditions are quite restrictive and do not hold perfectly. Nonetheless, the U.S. economy is both substantially diverse and substantially mobile. Because wireless Internet networks are generally excludable, they are unlikely to generate spillovers effects between jurisdictions and, thus, condition three appears to generally hold. Similarly, as explained below, wireless Internet networks do not appear to be characterized by substantial economies of scale and, thus, condition four also appears to hold. See *infra* Part IV C. A product or service that meets conditions three and four, however, generally loses its resemblance to a public good or natural monopoly. In such a situation, economic theory would generally expect a private firm to provide this kind of good. See Truman F. Bewley, *A Critique of Tiebout’s Theory of Local Public Expenditures*, 49 ECONOMETRICA 713 (1981).

Empirical evidence for the Tiebout Hypothesis is mixed but generally supportive. See W.E. OATES, *On Local Finance and the Tiebout Model*, 71 THE AMERICAN ECON. REV. PAPERS AND PROCEEDINGS 93 (May 1981); D.L. Rubinfeld, *The Economics of the Local Public Sector* in A.J. AUERBACH & M. FELDSTEIN, EDs., HANDBOOK OF PUBLIC ECONOMICS, VOL. 571 (1987).

<sup>101</sup> See generally JAMES M. BUCHANAN, PUBLIC CHOICE: THE ORIGINS AND DEVELOPMENT OF A RESEARCH PROGRAM (2006), available at <http://www.gmu.edu/centers/publicchoice/pdf%20links/Booklet.pdf>. See also *Nixon v. Missouri Municipal League*, 541 U.S. 125, 131 (2004) (noting that “(if things turn out bad) government utilities that fail leave the taxpayers with the bills.”); FELD ET AL., *supra* note 7, at 16 (“it is no doubt true that some municipal enterprises will fail, the same is true of many businesses.”).

---

<sup>102</sup> *See generally* NEW MILLENNI

---

PRIVATIZATION: A COMPILATION OF STUDY FINDINGS, EXECUTIVE SUMMARY (Mar. 1993) (Reason Foundation How-To Guide No. 6), *available at* <http://www.reason.org/guide6.html>; Andrei Shleifer, *State Versus Private Ownership*, 12 J. ECON. PERSPECTIVES 133, 138 (1998) (concluding that privatization generally leads to both cost reductions and quality improvements when incentives to do so are strong); William L. Megginson & Jeffrey M. Netter, *From State to Market: A Survey of Empirical Studies on Privatization*, 39 J. ECON. LIT. 321 (2001) (surveying literature on privatization of state-owned enterprises and concluding that privately owned firms are generally more efficient and more profitable than comparable state-owned firms).

<sup>105</sup> See generally W.K. VISCUSI ET AL., *ECONOMICS OF REGULATION & ANTITRUST* Chs. 11-14 (2000, 3d Ed.).

<sup>106</sup> See generally *id.* at 441-42, 446-47.

<sup>107</sup> See generally Jim Baller, *Deceptive Myths About Municipal Broadband, Disinformation About Public Ownership Is Impeding Progress*, BROADBAND PROPERTIES, May 2005, at 14-17, *available at* [http://www.baller.com/pdfs/Baller\\_BroadbandProperties\\_May05.pdf](http://www.baller.com/pdfs/Baller_BroadbandProperties_May05.pdf). *But see* BALHOFF &





---

<sup>115</sup> See generally NEW MILLENNIUM RESEARCH COUNCIL, *supra* note 102, at viii, 26-27.

<sup>116</sup> Sappington & Sidak, *supra* note 109, at 193-95, 199-201.

<sup>117</sup> *Id.* For example, a government enterprise might install general-purpose equipment (versus speciality or cutting-edge technology which requires specialized, project-specific equipment) on a large scale. *Id.* at 195. Or, the enterprise might retain a large on-site staff with broad legal, engineering, computing, and/or marketing expertise that can substitute for specialized expertise in particular areas, and their higher associated marginal costs. *Id.*

<sup>118</sup> *Id.* at 189 n.17. Cf. R. Braeutigam & John C. Panzar, *Diversification Incentives Under “Priced-Based” and “Cost-Based” Regulation*, 20 RAND J. ECON. 373 (1989); Timothy J. Brennan, *Cross-Subsidization and Cost Misallocation by Regulated Monopolists*, 2 J. REG. ECON. 37 (1990).

<sup>119</sup> See generally



---

<sup>126</sup> See generally *In the Matter of Petition for Declaratory Ruling of Continental Airlines, Inc.* FCC ET Docket No. 05-247 (filed 2005) (seeking declaratory ruling under FCC regulations to allow Continental to continue Wi-Fi service at Boston-Logan International Airport despite restrictions and/or removal of such antenna sought by the Massachusetts Port Authority). See also *Hearing on State and Local Issues and Municipal Networks: Hearing Before the Senate Committee on Commerce, Science, and Transportation*, 109





---

<sup>140</sup> NEW MILLENNIUM RESEARCH COUNCIL, *supra* note 102, at 21. *See also* BALHOFF & ROWE, *supra* note 9, at 81-100.

<sup>141</sup> *See supra* Part IV B.

<sup>142</sup> *See generally* NEW MILLENNIUM RESEARCH COUNCIL, *supra* note 102, at v.

<sup>143</sup> *See generally* BALHOFF & ROWE, *supra* note 9, at 81-100.

<sup>144</sup> *See generally id.*

<sup>145</sup> *See generally* Stephen E. Margolis, *Path Dependence, Lock-in and History*, 11 J. LAW, ECON., & ORG. 205 (1995); Stephen E. Margolis, *Path Dependence and Public Policy: Lessons from Economics* (Jan. 2005) (working paper), available at <http://www.gmu.edu/departments/economics/pboettke/workshop/spring05/Margolis.doc> (surveying economic path dependence and lock-in theories discussing the appearance of path dependence in public policy). *See also* TEX. PUB. UTIL. COMM. RULES & LAWS CH. 26.142 (1999), available at <http://www.puc.state.tx.us/rules/subrules/telecom/26.142/26.142.cfm>. The Texas Public Utilities Commission required that dominant telecommunications utilities make Integrated Services Digital Network (“ISDN”) service available to customers in certain areas by February

service must make important decisions about whether it should facilitate the adoption of an existing technology or wait for a prospectively superior technology to mature, and whether it may need to upgrade its network in the future.

Proponents suggest that municipalities are inherently risk-averse and would not consider providing wireless Internet service unless it were genuinely necessary. In addition, they argue that municipal involvement in other communications technologies such as cable television has been generally successful and demonstrates that municipalities can competently participate in a technologically sophisticated industry.

---

<sup>147</sup> See generally Baller, *supra* note 107. But see BALHOFF & ROWE, *supra* note 9, at 31-57 (concluding that the financial performance of municipal broadband operations has generally been disappointing, in part because of the introduction of new competitive factors over time).

<sup>148</sup> See generally Baller, *supra* note 107, at 14-15.

rules without discrimination in favor of itself or any advanced telecommunications service provider that it owns.<sup>149</sup>

Representative Barton’s proposed “Communications Opportunity, Promotion, and Enhancement Act of 2006” contains a similar provision.<sup>150</sup> Such provisions appear designed to guard against unregulated municipal provision of a telecommunications service giving rise to anticompetitive conduct against private sector rivals, while still allowing municipalities to provide broadband services.<sup>151</sup>

Senator Stevens’ “Communications, Consumer’s Choice, and Broadband Deployment Act of 2006” would preempt states and local governments from prohibiting public provision of an advanced communications service. The bill has non-discrimination provisions that require public providers to: apply ordinance

---

<sup>149</sup> S. Res. 1294, 109<sup>th</sup> Cong., 1<sup>st</sup> Sess. (2005) (McCain-Lautenberg “Community Broadband Act of 2005”).

<sup>150</sup> H.R. 5252, 109<sup>th</sup> Cong., 2<sup>nd</sup> Sess. § 401 (2006) (Barton “Communications Opportunity, Promotion, and Enhancement Act of 2006,” as passed out of the House of Representatives on June 8, 2006 and referred to the Senate). Under the bill, “[n]either the Communications Act of 1934 [47 U.S.C § 151 *et seq.*] nor any State statute, regulation, or other State legal requirement may prohibit or have the effect of prohibiting any public provider of telecommunications service, information service, or cable service . . . from providing such services to any person or entity.” *Id.* at § 401(a). The bill also would prohibit states or their political subdivisions that are affiliated with a public provider of telecommunications service, information service, or cable service from granting “any preference or advantage” to such a provider. *Id.* at § 401(b).

A subsequent Senate version of the Barton bill would incorporate the McCain-Lautenberg bill’s language on non-discrimination. H.R. 5252, 109<sup>th</sup> Cong., 2<sup>nd</sup> Sess. § 501 (2006), *available at* [http://commerce.senate.gov/public/\\_files/HR5252RSa.pdf](http://commerce.senate.gov/public/_files/HR5252RSa.pdf) (Barton “Communications Opportunity, Promotion, and Enhancement Act of 2006,” as reported out of the Senate Committee on Commerce, Science & Transportation ). *See also supra* note 149. This version would also incorporate modified language from the Stevens bill regarding public-private partnerships, open bidding, approval, and existing and pending proposals. *See* note 152.

<sup>151</sup> *See supra* Parts IV B., III A., respectively.



addition, the bill contains a “grandfather” clause for existing public providers.<sup>152</sup> This language addresses the same concerns as the McCain-Lautenberg and Barton bills, with an additional emphasis on looking first to private and public-private solutions before municipal provision.<sup>153</sup> This emphasis is also consistent with the concern that government provision may not be as efficient as private provision.<sup>154</sup>

Senator Ensign’s “Broadband Investment and Consumers Choice Act of 2005” states that it is designed to provide protection against undue government competition with the private sector.<sup>155</sup> Under the bill, any state or local government seeking to provide a communications service must give conspicuous notice and a detailed accounting of the proposal. Within 90 days of the notice, it must allow private parties to submit open bids on equal terms with the government in a process conducted by a neutral third party, and, in the event of identical bids, the neutral third party must give preference to the private party. If a state or local government wins the bid, “a non-governmental entity shall have the ability to place facilities in the same conduit, trenches, and locations . . . for concurrent or future use under the same conditions . . . .”<sup>156</sup> It appears to address issues similar to those covered by the Stevens bill.<sup>157</sup>

Representative Sessions’ proposed “Preserving Telecom Act of 2005” would amend the Communications Act of 1934 such that:

- (1) Effective 60 days after the date of enactment of the Preserving Innovation in Telecom Act of 2005, neither any State or local government, nor any entity affiliated with such a government, shall provide any telecommunications, telecommunications service, information service, or cable service in any geographic area within the jurisdiction of such government in which a corporation or other private entity that is not affiliated with any State or local government is offering a substantially similar service.

---

<sup>152</sup> S. Res. 2686, 109<sup>th</sup> Cong., 2<sup>nd</sup> Sess. § 502 (2006) (Stevens “Communications, Consumer’s Choice, and Broadband Deployment Act of 2006”).

<sup>153</sup> *See supra* Parts IV B., III A.

<sup>154</sup> *See supra* Part IV A.

<sup>155</sup> S. Res. 1504, 109<sup>th</sup> Cong., 1<sup>st</sup> Sess. § 15 (2005) (Ensign “Broadband Investment and Consumers Choice Act of 2005”). The bill also provides a grandfather clause for an existing state or local government communications service, unless it “substantially” expands its existing service or enters into a new line of commerce. *Id.* at § 15(e).

<sup>156</sup> *Id.* at § 15(d).

<sup>157</sup> *See supra* notes 153-54 and related text.

(2) Paragraph (1) shall not prohibit a State or local government or affiliated entity thereof from providing in any geographic area within the jurisdiction of such government any service that such government or entity was providing on the date of enactment of the Preserving Innovation in Telecom Act of 2005.<sup>158</sup>

Again, these provisions appear to respond to concerns that government provision of a telecommunications service may create competitive problems, while allowing a grandfather exception for existing providers.<sup>159</sup>

## **B. State Bills**

A variety of state bills have proposed to prohibit, limit, or define the ability of municipalities to participate in the creation and operation of a wireless Internet network. Some of these bills would prohibit municipalities from providing Internet service in all circumstances or subject to certain exceptions like a grandfather clause for existing municipal providers,<sup>160</sup>

---

<sup>158</sup> H.R. Res. 2726, 109<sup>th</sup> Cong., 1<sup>st</sup> Sess. (2005) (Sessions “Preserving Innovation in Telecom Act of 2005”).

<sup>159</sup> *See supra* Part IV A. - D.

<sup>160</sup> *See* Texas H.B. 789, 79<sup>th</sup> 1<sup>st</sup> CALLED SESS. § 54.201 *et seq.* (2005), *available at* <http://www.legis.state.tx.us/home.aspx>. As originally proposed, H.B. 789 would have prohibited municipalities from providing any “telecommunications” or “information” services as defined under federal law. *Id.* An amended version of the bill incorporated a number of exceptions, including: a grandfather clause for existing municipal providers of video or broadband services and an exception for the provision of wireless Internet for governmental functions. Ultimately, the bill died in conference committee.

<sup>161</sup> *See* Ohio H.B. 188, 126<sup>th</sup> GEN. ASSEM. (2005), *available at* [http://www.legislature.state.oh.us/bills.cfm?ID=126\\_HB\\_188](http://www.legislature.state.oh.us/bills.cfm?ID=126_HB_188). H.B. 188 would have prohibited subject to certain exceptions state and local agencies from providing any new electronic commerce services or expanding a similar communications network where such a service is provided by two or more private providers. The bill died in committee.

<sup>162</sup> *See* Pennsylvania H.B. 30, SESS. OF 2003 § 3014 (H) (2003) (as amended on third consideration, in Senate, Nov. 18, 2004, signed into law Nov. 30, 2004), *available at* <http://www.legis.state.pa.us/cfdocs/billinfo/billinfo.cfm?year=2003&ind=0&body=H&type=B&bn=0030>.

---

<sup>163</sup> See Florida S.B. 1714 / H.B. 1325, 107<sup>th</sup> REG. SESS. (2005), *available at* [http://www.flsenate.gov/cgi-bin/view\\_page.pl?Tab=session&Submenu=1&FT=D&File=sb1714.html&Direct](http://www.flsenate.gov/cgi-bin/view_page.pl?Tab=session&Submenu=1&FT=D&File=sb1714.html&Direct)

several bills would require voter approval for any such network<sup>168</sup> and regular reports by the municipality on the network's progress.<sup>169</sup> Some bills also have proposed that a municipal network meet certain financial specifications or performance requirements.<sup>170</sup> These provisions address concerns that a government enterprise may not perform as well as a private provider, a possibility that may be mitigated through public transparency and accountability.<sup>171</sup> They are also consistent with proponents' arguments that political accountability reduces the risk of inefficient provision.<sup>172</sup>

Several bills would prohibit the cross-subsidization of municipal telecommunications services with revenue from other sources, and would prohibit below-cost pricing.<sup>173</sup> Such prohibitions are aimed at concerns that a government enterprise may engage in anticompetitive conduct against private sector rivals. They also require efficient performance, consistent with that of a similar private provider.<sup>174</sup>

---

<sup>168</sup> See Iowa H.F. 861, 81<sup>st</sup> GEN. ASSEM. 2005 SESS. (2005), available at <http://coolice.legis.state.ia.us/Legislation%5CBills%5CHouseFiles%5CIntroduced%5CHF861.html>. H.F. 861, which died in committee, would have required a municipality to obtain super-majority voter approval of at least 60 percent both to provide a wireless Internet service and to issue revenue bonds to pay for such a project.

<sup>169</sup> See Florida S.B. 1322 2<sup>nd</sup> ENGROSSED, 107<sup>th</sup> REG. SESS. (2005), available at <http://www.flsenate.gov/data/session/2005/Senate/bills/billtext/pdf/s1322er.pdf>. S.B. 1332, which was signed into law on June 2, 2005, requires a municipality providing a communications service to hold a public meeting each year to report on the municipal network's progress toward its objectives. *Id.* at § 8(2)(k).

<sup>170</sup> S.B. 1322 requires that if a municipal wireless system's revenues do not cover operating costs and bond payments after four years, the municipality must hold a public hearing to review a plan to do one of four things: (1) shut down the system; (2) sell the system; (3) enter into a partnership with a private entity; or (4) continue operating the system. *See id.* at § 8(2)(k)(1).

<sup>171</sup> See *supra* Part IV A.

<sup>172</sup> See *supra* Part III E.

<sup>173</sup> Under S.B. 1322, “[a] governmental entity providing a communications service may not price any service below the cost of providing the service by subsidizing the communications service with moneys from rates paid by subscribers of a noncommunications services utility or from any other revenues.” S.B. 1332 at § 8(2)(k)(1)(f).

<sup>174</sup> See *supra* Parts IV A., B.

---

<sup>175</sup> FCC Report, *supra* note 1, at 32.

<sup>176</sup> *Id.* at 33.

<sup>177</sup> U.S. DEP'T OF COMMERCE, NAT'L TELECOMMUNICATIONS AND INFORMATION ADMIN., A NATION ONLINE: ENTERING THE BROADBAND AGE 13-14 (2004), available at <http://www.ntia.doc.gov/reports/anol/NationOnlineBroadband04.pdf>. See also THE FLORIDA PUBLIC SERVICE COMMISSION OFFICE OF MARKET MONITORING AND STRATEGIC ANALYSIS, *supra* note 81, at 34-39.

<sup>178</sup> See generally BALHOFF & ROWE, *supra* note 9, at 116.

A number of years ago, the FTC staff expressed views about government provision of telecommunications and information services in competition with the private sector that have some relevance to the current debate about municipal provision of wireless Internet service. See *Hearing on The Provision of Telecommunications and Information Services by the Federal Government in Competition with the Private Sector, Hearing Before the House Government Information and Individual Rights Subcommittee of the Committee on Government Operations*, 97<sup>th</sup> Cong. (1982) (testimony of Timothy J. Muris, Director, Bureau of Consumer Protection, Federal Trade Commission, on behalf of the FTC Bureaus of Consumer Protection and Economics). Staff cautioned that government competition with the private sector may potentially stifle the development of innovative and competitive services in the private marketplace where government oversteps limits on its role in providing such service, is slow to react to changing market conditions due to bureaucratic operating constraints, or uses political channels to help it compete on unequal terms. Staff also observed that competing with the government entails a perceived risk that the rules of competition may favor the government, particularly where a government enterprise is regulated.

---

that the mere existence of a government enterprise inevitably creates a concern in the marketplace that government will expand its role further, a concern that may deter private competitors from entering.

<sup>179</sup> See generally Sahr, *supra* note 126, at 8-9 (criticizing the conduct of the Massachusetts Port Authority as both regulator of Logan Airport and competitor in the provision

---

<sup>181</sup> *See generally* STIGLITZ ET AL., *supra* note 79, at 77.

<sup>182</sup> EXECUTIVE OFFICE OF THE PRESIDENT, OFFICE OF MANAGEMENT AND BUDGET, CIRCULAR NO. A-76 1 (REVISED

---

<sup>183</sup> The Circular states:

A commercial activity is a recurring service that could be performed by the private sector and is resourced, performed, a



determining when government should act or not act in an increasingly digital economy. The authors suggest that an evaluation of government actions that affect the marketplace proceed as follows:

[P]olicy makers should ask . . . whether the good or service is a public good or externalities (or other market failures) are present. If the answer to that question is no, the government should not provide the good or service. If the answer is yes, policy-makers must . . . [ask] whether the good or service can be provided more efficiently through appropriate regulation or subsidization, relative to direct public provision. If the answer to that question is yes, the government should proceed with appropriate regulation or subsidization if private-sector entities are already active, and not attempt to enter the market as a direct or indirect service provider itself. If either public-sector provision would be more efficient or if no private-

---

***“Yellow Light” for On-Line and Informational Government Activity***

Principle 4: The government should exercise caution in adding specialized value to public data and information

Principle 5: The government should only provide private goods, even if private-sector firms are not providing them, under limited circumstances

Principle 6: The government should only provide a service on-line if private provision with regulation or appropriate taxation would not be more efficient

Principle 7: The government should ensure that mechanisms exist to protect privacy, security, and consumer protection on-line

Principle 8: The government should promote network externalities only with great deliberation and care

Principle 9: The government should be allowed to maintain proprietary information or exercise rights under patents and/or copyrights only under special conditions (including national security)

***“Red Light” for On-Line and Informational Government Activity***

Principle 10: The government should exercise substantial caution in entering markets in which private-sector firms are active

Principle 11: The government (including government corporations) should generally not aim to maximize net revenues or take actions that would reduce competition

Principle 12: The government should only be allowed to provide goods or services for which appropriate privacy and conflict-of-interest protections have been erected

STIGLITZ ET AL., *supra* note 79, at 5. The authors indicate that, “[t]he principles, while developed to reflect recent technological advances, are intended to be applicable in both the digital and ‘bricks and mortar’ world.” *Id.* at 50.

sector entities exist, policy-makers should proceed with direct provision only if privacy and pricing issues have been appropriately addressed.<sup>186</sup>

Balhoff and Rowe provide a decision schematic specific to potential municipal involvement with wireless Internet.<sup>187</sup> They suggest that a community should first evaluate whether there is a functioning private broadband marketplace. If private sector provision exists but is underdeveloped or underutilized, the community may consider strategies to facilitate increased deployment and/or use. If a private provider will not serve the community on its own, the municipality may consider a pro-competitive public-private partnership. Finally, as a last resort, the municipality may consider incurring the risk of owning and/or operating a broadband wireless network itself. Robert K. Sahr, Chairman of the South Dakota Public Utilities Commission, has proposed a similar decision framework.<sup>188</sup>

Figure 1 draws on these principles to provide a decision-tree analysis that may be useful in evaluating whether a municipality should participate in the provision of wireless Internet service.<sup>189</sup> First, a municipality should ask whether broadband Internet service is available from a private provider or will be provided by a new entrant in a timely manner. If the answer is yes, the municipality should then ask whether additional broadband provision would create a substantial positive externality, substantially improve the efficiency of an inherently governmental service, or meet substantial unmet demand. If the answer to these questions is no, the municipality should not provide a wireless Internet service. If, however, the answer to one or more of these questions is yes, the municipality should then ask whether broadband provision could be improved more efficiently through incentive strategies for individual users and/or private

---

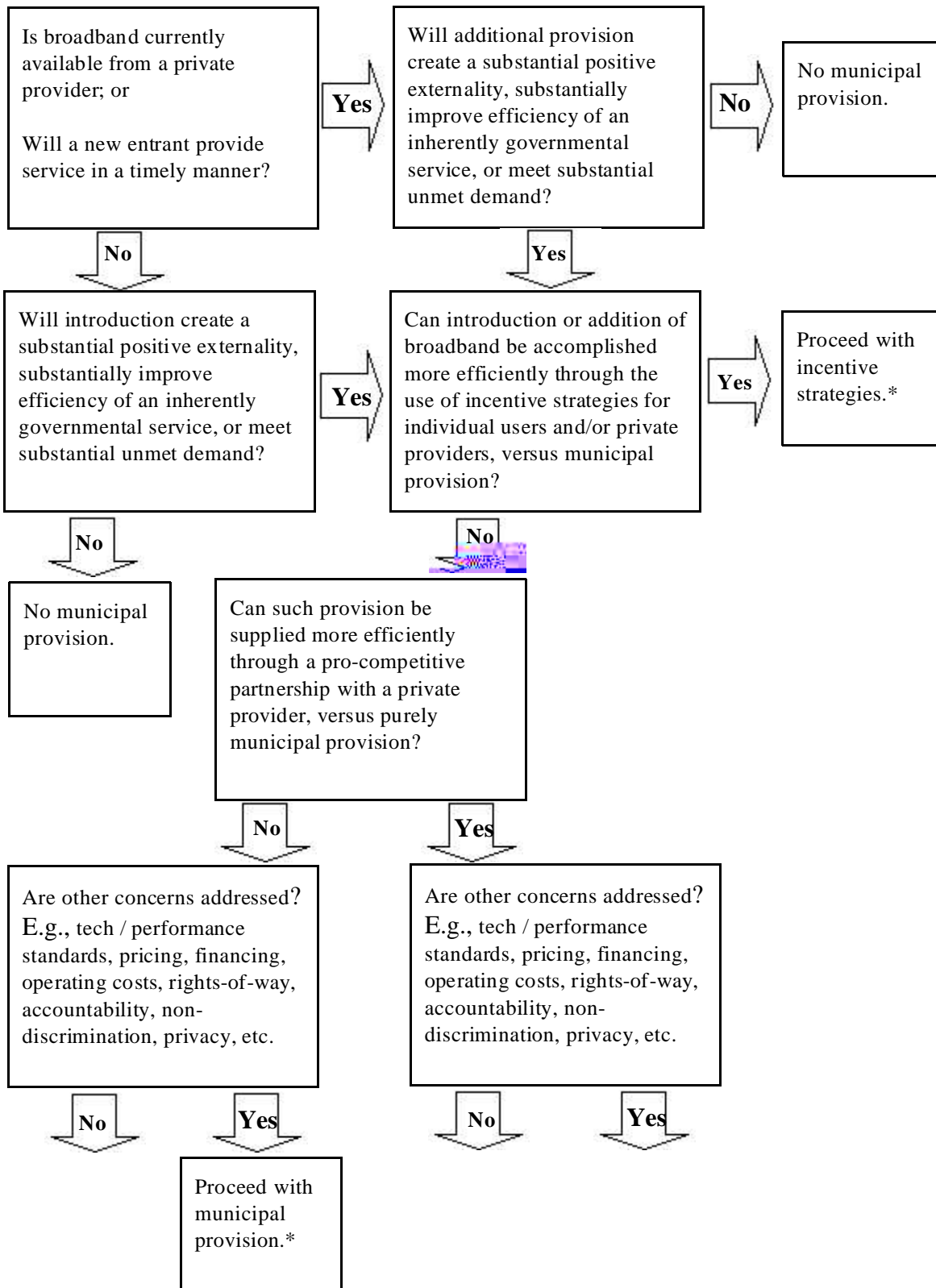
<sup>186</sup> *Id.* at 75-76.

<sup>187</sup> BALHOFF & ROWE, *supra* note 9, at 120-122.

<sup>188</sup> In Sahr's view "[f]irst, municipalities should act only where a market failure exists." Sahr, *supra* note 126, at 5-6. "Second, where market failure exists, communities should ascertain whether or not providers are willing to serve the market immediately or in the near term." *Id.* "Third, municipalities should consider available funding sources [such as federal grants] and possible incentives to attract private investment." *Id.* "Fourth, after pursuing the first three options, municipalities should consider public-private partnerships." *Id.* "Fifth, municipalities, after assessing the appropriate risks and benefits, may consider constructing and operating a municipal-owned or sponsored network." *Id.* But a municipality "should continue to evaluate opportunities for non-governmental solutions." *Id.*

<sup>189</sup> This report addresses the issue of municipal provision or facilitation of wireless Internet service as a possible low-cost alternative to more traditional wireline technologies. This decision-tree framework and its underlying principles are also sufficiently broad, however, to be informative to policymakers considering similar decisions in the wireline broadband Internet context.

providers than through municipal provision. If the answer is yes, then the municipality should proceed with the incentive strategy. If the answer is no, the municipality should then ask whether wireless Internet provision can be supplied more efficiently through a pro-competitive partnership with a private provider, versus purely municipal provision. If other concerns, such as technolo





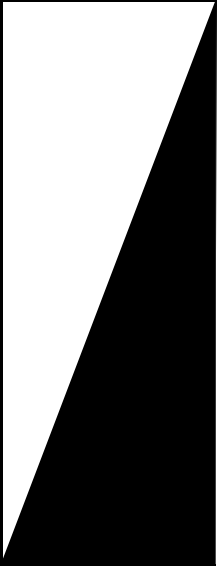
**Appendix – Major Internet Technologies<sup>1</sup>**

Technology	Delivery	Speed	Price Per Mo.	Range	Development	Performance	Deployment
Dial-Up Modem	Dial-up via traditional copper wireline telephone connection	Traditional: up to 56 Kbps <sup>2</sup> Hi-speed: up to 280 Kbps <sup>3</sup>	Traditional: \$5+ Hi-speed: \$10+ <sup>4</sup>	Traditional copper wireline telephone connection	Mature	Connection generally consistent	Available via traditional telephone

Available v00 438.9600 TDTj22.9600 TD0.48001.6-1.0200Dig(Tradit0Tj 14.4000 0.0000(tonal)TjET 1.00000 0.00000 0.00000 1.00000 0.0000 0.0000 cm0.00 0.00 0.00 rg438.9600394Tj22.9600

Technology	Delivery	Speed	Price Per Mo.	Range	Development	Performance	Deployment

cati

Technology	Delivery	Speed	Price Per Mo.	Range	Development	Performance	<del>Reliability</del>
							



Technology	Delivery	Speed	Price Per Mo.	Range	Development	Performance	Deployment

1. Sources used in this paper and Appendix regarding Internet technology characteristics and related market prices are drawn from generally recognized and up-to-date authorities. As technological standards and market conditions continue to evolve, however, such information is subject to change.
2. *See generally* NETZERO, NETZERO.COM (2006).
3. *See generally id.*
4. *See generally id.* *See also* COMPARENOW.NET, DIAL UP INTERNET PROVIDERS (2006), at <http://comparenow.net/dialup.html>.
5. *See generally* WEBOPEDIA.COM, xDSL (2006), at <http://webopedia.com/TERM/x/xDSL.html>.
6. *See generally* CNET.COM, TOP DSL PROVIDERS (Feb., Aug. 2006), at [http://reviews.cnet.com/7020-9031\\_7-0.html?tag=bbw&sortColumn=speed&ac=](http://reviews.cnet.com/7020-9031_7-0.html?tag=bbw&sortColumn=speed&ac=).
7. *See generally* COMPARENOW.NET, BROADBAND INTERNET PROVIDERS (2006), at <http://comparenow.net/broadband.html>.
8. *See generally* WEBOPEDIA.COM, *supra* endnote 5.
9. *See generally id.*
10. Press Release, Cisco Systems, UPC to Test Cable Internet Speeds of up to 30 Mbps (2004), *available at* <http://www.cisco.com/press/pressrels/2004/20041201.pdf>. Fiber to the Home Fiber optic wireline connection Up to 30 Mbps download

11. *See generally* CNET.COM, TOP CABLE PROVIDERS (Feb., Aug. 2006), *at* [http://reviews.cnet.com/7020-9031\\_7-0.html?tag=bbw&ac=&filter=9032&action=Go%21](http://reviews.cnet.com/7020-9031_7-0.html?tag=bbw&ac=&filter=9032&action=Go%21).
12. *See generally* COMPARENOW.NET, *supra* endnote 7; EARTHLINK.COM, HIGH SPEED PRICING (2006), *at*

25. *See generally id.* at 24.
26. *See generally* VERIZON, VERIZON.COM (2006); SPRINT, SPRINT.COM (2006); CINGULAR, CINGULAR.COM (2006).
27. *See generally* FCC Report, *supra* note 1, at 24.
28. *See generally id.*
29. *See generally id.* at 26-27.
30. *See generally id.*
31. *See generally* COMMUNICATIONS TECHNOLOGIES, INC., COMTEKBROADBAND.COM (2006); Robert Valdes, *How Broadband Over Powerlines Works*, HOWSTUFFWORKS.COM (2006), at <http://computer.howstuffworks.com/bpl.htm>.
32. *See generally* COMMUNICATIONS TECHNOLOGIES, INC., *supra* endnote 31.
33. *See generally id.*
34. *See generally* Valdes, *supra* endnote 31.
35. *See generally* UNITED POWER LINE COUNCIL, BPL DEPLOYMENT MAP (2006), at [http://www.uplc.utc.org/file\\_depot/0-10000000/0-10000/7966/conman/BPL+Map+12\\_12.pdf](http://www.uplc.utc.org/file_depot/0-10000000/0-10000/7966/conman/BPL+Map+12_12.pdf).
36. *See generally* STARBAND, STARBAND.COM (2006); DIRECWAY, DIRECWAY.COM (2006); WILDBLUE, WILDBLUE.COM (2006).
37. *See generally* STARBAND, *supra* endnote 36; DIRECWAY, *supra* endnote 36; WILDBLUE, *supra* endnote 36.
38. *See generally* STARBAND, *supra* endnote 36; DIRECWAY, *supra* endnote 36; WILDBLUE, *supra* endnote 36.
39. *See generally* STARBAND, *supra* endnote 36; DIRECWAY, *supra* endnote 36; WILDBLUE, *supra* endnote 36.

40. VERIZON, THE SPEED OF FIOS™ WILL CHANGE FOR YOUR LIFE (2006), at <http://www22.verizon.com/FiOSforhome/channels/FiOS/root/package.aspx>.
41. *See generally id.*
42. *See generally id.*

