

Before the  
**FEDERAL COMMUNICATIONS COMMISSION**  
Washington, D.C. 20554

Comments

NBP Public Notice # 7

Contribution of Federal, State, Tribal, and  
Local Government to Broadband

GN Docket Nos.

09-47

09-51

09-137

**COMMENTS OF THE  
NATIONAL ASSOCIATION OF TELECOMMUNICATIONS  
OFFICERS AND ADVISORS (NATOA), NATIONAL LEAGUE OF CITIES (NLC),  
UNITED STATES CONFERENCE OF MAYORS (USCM), AND NATIONAL  
ASSOCIATION OF COUNTIES (NACo)**

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**I. INTRODUCTION**

The National Association of Telecommunications Officers and Advisors (“NATOA”), the National League of Cities (“NLC”), the United States Conference of Mayors (“USCM”), and the National Association of Counties (“NACo”), collectively “Commenters,” hereby file these comments in response to NBP Public Notice # 7.

**II. INTERESTED PARTICIPANTS**

Commenters represent those governments, agencies, and associations closest to America’s citizens. Local governments must play an integral role in the development and implementation of the National Broadband Plan if the Commission hopes to improve the broadband future of our citizens. If the Commission is successful, and Broadband becomes robust and universally available, local governments will be among the biggest beneficiaries. Local governments need these networks for our own internal use, for delivering services to our citizens, and for the economic development of our communities. Broadband is essential for

communities to develop the education and job opportunities that their citizens deserve. Local governments are not passive observers of the broadband world. We have been and continue to be among its biggest users, deployers, and innovators. We believe local governments are in the best position to address the urgent middle-mile and second-mile needs in communities across the United States. And we often can provide Last Mile services.

In an ex parte meeting with the Commission's Broadband Task Force, local government representatives were asked to produce a plan to enhance and to expand Middle Mile and Second Mile anchor institution networks, and to demonstrate the political credibility of the proposal by showing the support of a broad swath of local government elected officials. This filing constitutes the requested plan and statement of political support.

NATOA is the national association that represents the communications needs and interests of local governments, and those who advise local governments. NATOA's membership includes local government officials and staff members from across the nation whose responsibility is to advise and implement telecommunications policy for the nation's local governments. These responsibilities range from cable franchising, rights-of-way management and government access programming to information technologies and Institutional Network (I-Net) planning and management.

USCM is the official nonpartisan organization of cities with populations of 30,000 or more. There are 1,201 such cities in the country today. Each city is represented in the Conference by its chief elected official, the mayor. USCM was formed back in 1932 as a response to the Great Depression. Since that time, mayors have gathered to speak with one voice to promote policies and programs that would move our country in a direction that would promote jobs and economic competitiveness.

NLC is the nation's oldest and largest organization devoted to strengthening and promoting cities as centers of opportunity, leadership, and governance. Founded in 1924, NLC is a resource and advocate for more than 1,600 member cities and the 49 state municipal leagues, representing 19,000 cities and towns and more than 218 million Americans.

NACo is the only national organization that represents county governments in the United States. Founded in 1935, NACo provides essential services to the nation's 3,068 counties. NACo advances issues with a unified voice before the federal government, improves the public's understanding of county government, assists counties in finding and sharing innovative solutions through education and research, and provides value-added services to save counties and taxpayers money.

### **III. BROADBAND NETWORKS ARE ESSENTIAL ELEMENTS TO LOCAL GOVERNMENT CIVIC ENGAGEMENT AND E-GOVERNMENT.**

The Commission asks about the primary needs that broadband can help address in local governments. In short broadband networks enable local governments to “do more with less” in all areas of government activities affecting taxpayers and citizens. Many local governments today provide an array of governmental services to their residents more efficiently and at all times of the day using broadband technology. Police have video displays on their PDAs. Meter readers have GIS maps of underground facilities and meter locations. Tax assessors can easily update market information on property sales. Courts have flexible scheduling for jurors. And elected officials are carried on cable television in live council meetings and communicate with their constituents through blogging and other social media. Broadband has enabled remote utility meter reading and parking meter reading. Broadband facilitates public works departments' management of water supply and irrigation systems. It improves traffic management and operations of traffic signals. In fact, broadband can help local governments,

such as Montgomery County, Maryland, avoid catastrophic traffic signal failures like the one experienced just this week causing a nightmare for commuters in suburban Washington, DC.

Video surveillance has improved a variety of law and code enforcement operations including graffiti management and video arraignment, which can save significant prisoner transportation costs and minimizes exposure of defendants to the public. Further, greater broadband capacity will continue to improve interoperable public safety communications for the nations' first responders. Broadband can and is touching every element of local government activity and making it easier for citizens to engage with their local officials and participate with their government in more direct and meaningful ways.

While the following examples serve to illustrate these points, we ask the Commission to not lose sight of the larger context: the use of broadband networks at the local level has set in motion a dynamic process that is dramatically enhancing the relationship between local governments and the residents they serve. This enhancement will only accelerate as local government broadband services continue to grow in response to constituent demand and with the introduction of new technologies and applications. For example advances in wireless communications and smart phones will provide more platforms and new opportunities for interaction between local governments and citizens. Additionally, faster Internet speeds (particularly in the upstream direction), increased storage capacity, increased computing power coupled with lower costs for increasingly sophisticated digital electronics equipment will allow for greater citizen participation and personalization of their experience with local governments.

Local government officials are closest to the people they serve and are directly and immediately accountable to their citizens. The enormous growth of the Internet since the mid-nineties has been matched by heightened expectations from local residents for more convenient

and more efficient delivery of government services and greater access to information. For this reason local governments have long used broadband to inform citizens, provide essential services, transact business, make government more transparent and promote civic engagement. One can make the case that citizen demand for on line local government services and content has contributed to greater adoption of broadband.

Over the past fifteen years local government websites have grown from simple bulletin boards with community information to interactive portals that allow citizens to obtain information, provide feedback, apply for permits, pay fees, sign up for classes, watch video programming and take advantage of a host of other content and features. There are literally thousands of local government websites that provide a wide variety of information and services to citizens all over the country. The following are just a few examples.

Sacramento County, California affords citizens on line opportunities to apply for permits, access public records, contracts, County codes and practically anything one would need to do business in the County. There are resources for residents including schools, parks, government and municipal services. Citizens can access public health, mental health, foster parenting, family assistance and related services through the County. The site promotes the County's tourism with information about museums, sports, concerts, and accommodations.<sup>1</sup>

Tampa, Florida's website contains a variety of "how do I" information resources, including a Business Guide, Citizens Guide, City Government Guide, Customer Service Center, Employees Guide, and Visitors Guide. Visitors to the site can access a variety of local programming, learn about energy efficiency initiatives, emergency preparedness, make utility and parking ticket payments, and report code violations, among other options.<sup>2</sup>

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<sup>1</sup> See, Sacramento County Homepage, <http://www.saccounty.net>.

<sup>2</sup> See, City of Tampa Homepage, <http://www.tampagov.net>.

The City of Seattle, Washington, has an extensive web presence. Its government channel, the Seattle Channel has an accompanying web site that contains a video library of over six years of City Council meetings, Mayor press conferences and local arts programming. Content from the channel is also available on YouTube.<sup>3</sup> The City has also begun podcasting meetings of its Citizens Telecommunication and Technology Advisory Board.

Creative, functional use of local government websites is not reserved to large communities. Chandler, Arizona,<sup>4</sup> Takoma Park, Maryland,<sup>5</sup> and Arlington, Massachusetts<sup>6</sup> are just a few examples of smaller communities that provide a wide range of interactive informational opportunities for their citizens.

Arvada, Colorado<sup>7</sup> offers an on line, virtual City Hall called “Ask Arvada.” It allows citizens to request service and information 24/7. Information can be found with a simple keyword or phrase without knowing which department or where to find it on the website. Citizens can also sign up for the “Notify Me” program and receive information on City Council meetings, community events, and real time traffic issues.

Local libraries are using broadband services to allow residents to download e-books and audiobooks and to conduct research at any time. In many communities libraries provide the single largest source of connectivity for those that cannot afford a computer or Internet access. Of note, in a recent survey conducted by the American Library Association, 70% of respondents

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<sup>3</sup> See City of Seattle Homepage, <http://www.seattle.gov>

<sup>4</sup> See City of Chandler Homepage, <http://www.chandleraz.gov>

<sup>5</sup> See City of Takoma Park Homepage, <http://www.takomaparkmd.gov>

<sup>6</sup> See City of Arlington Homepage, <http://www.arlingtonma.gov>

<sup>7</sup> See City of Arvada Homepage, <http://www.arvada.org>

indicated that libraries were the only source of free access to computers and to the Internet in their communities.<sup>8</sup>

Local communities are deploying broadband networks to make significant enhancements to public safety. The City of Binghamton, New York developed a public wireless network to support video surveillance cameras in neighborhoods and business areas that were experiencing high crime rates. According to the Binghamton Police Department within six months of launching the network total crime rate dropped six percent and car thefts went down by 26 percent in comparison to the previous year.<sup>9</sup>

Philadelphia, Pennsylvania has a public safety radio network that relies on broadband to provide connectivity between tower sites, and also between tower sites and two command centers. Philadelphia also has a video surveillance system that relies on broadband to provide real-time monitoring and recording of video streams using a network that utilizes both wireless and wireline technologies.<sup>10</sup>

Broadband also allows local governments to improve traffic in their area. In 2007, Montgomery County, Maryland, looked into using their Fiber-Net broadband system to allow traffic signals to be more flexible and responsive to changing needs depending on issues such as traffic flow, accidents, and light failures.<sup>11</sup> Had this system been implemented, the recent system failures would likely have been avoided and repair would have been much faster. On November 4, 2009, approximately 750 signals in Montgomery County lost their synchronization due to

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<sup>8</sup> Denise M. Davis, John Carlo Bertot, and Charles R. McClure, “Libraries Connect Communities 3: Public Library Funding & Technology Access Study (Sept. 25, 2009), [http://www.ala.org/ala/research/initiatives/plftas/2008\\_2009/librariesconnectcommunities3.pdf](http://www.ala.org/ala/research/initiatives/plftas/2008_2009/librariesconnectcommunities3.pdf).

<sup>9</sup> See “The City of Binghamton, NY: Alvarion’s video surveillance solution enables improved public safety and security,” (submitted by Alvarion to NATOA in response to 2009 Community Broadband Awards), attached hereto as Appendix 1.

<sup>10</sup> This information is according to a conversation between NATOA and Phillip Bullard, Assistant City Solicitor of the City of Philadelphia Law Department.

<sup>11</sup> See Modernization of the Montgomery County Traffic Signal System (Mar. 14, 2007), available at <http://www.baltometro.org/ITS/TSF07-3C-MontCoTSS.pdf>.

network problems.<sup>12</sup> It is estimated that the manual restoration of the synchronization could take weeks – causing weeks of nightmarish traffic delays and forcing the county to offer free public bus services at enormous revenue losses.<sup>13</sup> Broadband can help local governments avoid these problems.

Social media and other collaboration tools enabled by broadband present local governments and their citizens unprecedented opportunities to connect in innovative and mutually beneficial ways. They provide a means for enhancing the democratic process while at the same time improving government services, saving money and increasing government accountability by harnessing the collective knowledge and ingenuity of our citizens to identify issues and arrive at new solutions that address community needs.

The use of crowdsourcing<sup>14</sup> by local governments recognizes that government does not have all the answers. Many local governments are publishing and releasing data in an open format that is more accessible and favorable for programming by residents. This allows the public to use the data and enhance their original purpose by allowing data collaboration and integration through mashups and semantic web technologies.

In the District of Columbia, former CTO Vivek Kundra originated an “Apps for Democracy” contest to solicit new ideas for applications using public data. According to its website<sup>15</sup> “last year's winning applications were (1) DC Historic Tours, a Google Maps mash-up that plots routes for walking tours of Washington, D.C., and marks points of interest with Flickr photographs and Wikipedia excerpts; and (2) iLive.at, another mash-up powered by Google that

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<sup>12</sup> See “Montgomery County traffic mess may continue,” The Washington Post, Nov. 5, 2009, available at [http://voices.washingtonpost.com/getthere/2009/11/montgomery\\_county\\_traffic\\_mess.html](http://voices.washingtonpost.com/getthere/2009/11/montgomery_county_traffic_mess.html).

<sup>13</sup> *Id.*

<sup>14</sup> Crowdsourcing is a term credited to Jeff Howe of “Wired” magazine. It means that certain functions, which were the exclusive purview of one individual or a small group can be outsourced to the broader community using the power of social media applications. By engaging residents local governments are learning that innovative solutions that address community needs can be achieved by harnessing the collective knowledge and ingenuity of our citizens.

<sup>15</sup> Apps for Democracy Homepage, <http://www.appsfordemocracy.org/>, (last visited November 5, 2009).

pinpoints demographic data and locations of schools, banks, parks, transportation lines, recent crime reports and other information for people who are looking to move to the district area. The district estimated it avoided \$2.3 million in costs because of the applications developed in last year's contest.

Boston, Massachusetts has a program named Citizen Connect developed for \$20k, that allows “Boston-area iPhone users to report problems to the City in four categories: potholes, graffiti, streetlights and other. And it's the ‘other’ category that could prove revolutionary. ...By selecting ‘other,’ you could snap a photo of the location, the GPS will grab your coordinates and you can write in the field, ‘Plant tree here.’”<sup>16</sup>

Pierce County, Washington and the City of Tacoma, Washington use Twitter to provide real time updates on road construction, closures and traffic delays – a practice that has become popular for many area commuters. In the City and County of San Francisco, California, the Board of Supervisors provides Twitter updates and residents can tweet the city’s 311 Information Center about problems, such as graffiti and potholes. Residents receive a tracking number that lets them follow the city's progress in addressing their issues.

San Francisco’s Facebook page hosts a wide variety of information about the City, government services, transportation issues and the arts. In addition to print content, it links to multiple YouTube videos covering a similar variety of City topics. The site also contains an open discussion function, where any user can address and discuss any issue of his or her choosing.

Another San Francisco tool, data.SF.org, offers real-time access to datasets such as citywide performance measurement data, GIS mapping data, crime statistics, City service

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<sup>16</sup> Chad Vander Veen, “New York City, Boston Add Web 2.0 to Customer Relationship Management,” Government Technology (Oct. 23, 2009), available at <http://www.govtech.com/gt/articles/732056?elq=72c1665d0e76456ebd237133d229e855>

schedules and related information. Access to this raw data has sparked many innovative new applications that allow “mash-ups” or combinations of various datasets with beneficial new uses. San Francisco encourages the use of City data for application development and provides an Application Showcase with access to these tools on the dataSF.org site.

As noted above, the use and benefits of broadband to promote civic engagement and e-government will continue to grow in ways that we can only imagine – so long as high capacity broadband networks continue to grow and are accessible and affordable to all Americans. As just one example of exciting new local government applications expected in the very near future, Seattle is planning the following enhancements in the next six months. My.Seattle.gov will be a user-customizable portal to City information and services. This will allow individual users of www.seattle.gov to customize the website for information or services they commonly use, e.g. maps, building permits, utility bill payments, news and so forth. It will feature a single-sign-on - one username and password to access all City services (presently, a user must create a username/password for each City department’s applications). Seattle will also implement a public engagement portal to allow discussion and debate, rating and ranking of ideas and issues.

Local governments use broadband to facilitate a variety of additional government services. Broadband has enabled remote utility meter reading and parking meter reading. Broadband facilitates public works departments’ management of water supply and irrigation systems. It improves traffic management and operations of traffic signals. Video surveillance has improved a variety of law and code enforcement operations including graffiti management and video arraignment, which can save significant prisoner transportation costs and minimizes exposure of defendants to the public. Further, greater broadband capacity will continue to improve interoperable public safety communications for the nations’ first responders.

#### **IV. LOCAL GOVERNMENT ACTIONS AND POLICIES ARE ESSENTIAL TO THE DEPLOYMENT OF BROADBAND SERVICES TO COMMUNITIES AND THEIR CITIZENS.**

##### **A. Local Government Fiber Networks are Major Players in Broadband Deployment.**

For decades, local governments around the country have built and operated communications networks to serve the needs of local communities. It is uncontested that network deployment sophistication exists at the local level; virtually every American community relies on the public safety communications network owned and operated by the local government and its first responder agencies.

Beyond these countless public safety networks, there also exist thousands of local government broadband networks that deliver greater speed, capacity, and reliability to users over fiber optics than would otherwise be available from the private sector. Generally, these networks fall into two categories: first, public-facing networks that reach all the way to the home or business and second, internal networks focused on inter- and intra-government use that sometimes also have capabilities made available to the public.

With respect to both categories of networks, local governments have deployed facilities that are focused on different goals than are carrier networks; indeed, a non-profit network that does not require short-term profits can focus on long-term and community-based goals. As a result, one common element of most local government networks is that they enable greater bandwidth, higher speeds, and more services – for lower prices – than do carrier networks focused first and foremost on profit. In this way, local government networks address community needs and further community interests, based on local decision-making, and in a way that is locally-driven and accountable to local voters.

The first category of local government networks is those that provide broadband and other communications services to homes and businesses. According to the Fiber-to-the-Home Council, these networks include 57 systems employing ultra-high capacity fiber-to-the-premises technology.<sup>17</sup> Most of these networks are located in rural areas and are operated by municipal electric utilities that, in an earlier age, brought the benefits of public power to their communities when private providers did not see sufficient profit incentive to do so, much as these utilities now bring the benefits of robust broadband to their communities.<sup>18</sup> As the Fiber-to-the-Home Council report also shows, municipal fiber networks have not only been very popular with their customers, but they have also enhanced economic development and benefitted their communities in multiple other ways. Municipal fiber systems that provide services directly to households and business have averaged take rates of 54% nationwide. This exceeds by nearly 20% the average take rates of fiber systems operated by large established carriers.

The following are brief summaries of several representative examples of successful municipal broadband initiatives:

- Bristol, Virginia: As the twenty-first century began, Bristol, Virginia, a town of 18,000 on the border of Virginia and Tennessee in southwest Virginia, was facing the simultaneous decline of its bedrock industries – tobacco, textiles, coal mining, and agriculture. Many of its stores and businesses were boarded up, and the future looked grim for Bristol and the entire region. The City leaders, with the encouragement and assistance of U.S. Rep. Rick Boucher, decided to take matters into their own hands and rebuild the local economy through advanced telecommunications infrastructure and

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<sup>17</sup> Fiber-to-the-Home Council, “Municipal Fiber to the Home Deployments: Next Generation Broadband as a Utility Municipal Utility” (updated October 2009), <http://www.baller.com/pdfs/MuniFiberNetsOct09.pdf>. This white paper on local government networks, which discusses in detail their economic development benefits.

<sup>18</sup> *See id.*

services. In 2001, Bristol won a crucial challenge to Virginia's then-existing barrier to public entry, and it began to build a state-of-the-art FTTH system. Three years of industry-backed legislative challenges and litigation disrupted Bristol's progress and substantially added to its burdens and costs, but Bristol stayed the course. Now, the City system serves more than 65 percent of Bristol's residents and businesses, and it has begun to attract hundreds of high-paying jobs to the town and region. For example, a recent article notes that two new employers alone will bring up to 1500 high-paying jobs to Bristol.<sup>19 20</sup>

- Lafayette, Louisiana: "When Nucomm International needed to locate a new call center – one that would add 1,000 jobs ... to the local economy – it chose Lafayette, Louisiana, because the city is building a massive fiber network to connect everyone."<sup>21</sup>
- Cedar Falls, Iowa: The business case of Cedar Falls Utilities combines fiber to businesses with hybrid fiber-coaxial cable to residences. "In the 1990s, Cedar Falls Utilities built a citywide municipal hybrid fiber/coaxial network and provided specialized broadband telecommunications services including fiber connections to commercial and industrial customers in both the city and the industrial park. In contrast, the neighboring town of Waterloo, served by incumbent cable and telecommunications operators, generally did not have any fiber connectivity. Cedar Falls projected that, by the end of 2003, it would have companies employing over

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<sup>19</sup> Paul Miller, "Bristol's Broadband Push," *Virginia Business* (November 2006),

<http://www.gatewayva.com/biz/virginiabusiness/magazine/yr2006/nov06/tele1.shtml>.

<sup>20</sup> Additional information about Bristol is attached as Appendix – is a presentation provided by Bristol Virginia Utilities, the municipal electric and communications utility in the town of Bristol, Virginia. BVU's fiber-to-the-premises network is universally credited with enabling unprecedented economic development and job creation in this rural area of Virginia. BVU was the recipient of NATOA's 2009 Community Broadband Fiber Network of the Year Award.

<sup>21</sup> Christopher Mitchell, "Municipal Broadband: Demystifying Wireless and Fiber-Optic Options," *Institute for Local Self Reliance* (January 2008), <http://www.newrules.org/sites/newrules.org/files/images/munibb.pdf>.

5,000 people and occupying 4,000,000 square feet of building space. In contrast, Waterloo had a total of 10 businesses in its three industrial parks and has witnessed companies relocating from Waterloo to Cedar Falls, in part because of their need for bigger bandwidth.”<sup>22</sup> As Doris Kelly showed in an analysis comparing Cedar Falls and Waterloo on a broad range of criteria, the only significant difference between them was that Cedar Falls had a public broadband utility.<sup>23</sup>

- In a recent Cedar Falls coup, Peregrine Financial Group, a large commodities trader based in Chicago, decided to relocate its headquarters to Cedar Falls, including executives averaging \$200,000 a year, providing Cedar Falls a windfall valued at \$124 million.<sup>24</sup>
- Tacoma, Washington: Tacoma’s Click! Network has played a significant role in revitalizing Tacoma and has attracted more than 100 high-tech businesses to the community. Business leaders readily acknowledge that Tacoma’s municipal communications utility’s ability to serve their needs is the key factor that made them comfortable with moving to Tacoma rather than to Seattle or other large cities.<sup>25</sup>
- Powell, Wyoming: In anticipation of the construction of a fiber-to-the-home system in rural Powell, Wyoming, a South Korean venture capital firm agreed to pay up to \$5.5 million to engage 150 certified teachers in rural Wyoming to teach English to students in South Korea using high speed video teleconferencing. The Powell fiber

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<sup>22</sup> John Windhausen, “A Blueprint for Big Broadband,” EDUCAUSE at 10 (January 2008), <http://net.educause.edu/ir/library/pdf/EPO0801.pdf>.

<sup>23</sup> Doris Kelly, A Study on the Economic and Community Benefits of Cedar Falls, Iowa’s Municipal Broadband Network (July 2004), [http://www.baller.com/pdfs/cedarfalls\\_white\\_paper.pdf](http://www.baller.com/pdfs/cedarfalls_white_paper.pdf).

<sup>24</sup> Drew Anderson, “Peregrine an Economic Windfall for the Cedar Valley,” WFCCourier.com (December 20, 2008), [http://www.wfcourier.com/progress/section2/article\\_e68cebb4-e455-55ae-a52f-07bda3f70272.html](http://www.wfcourier.com/progress/section2/article_e68cebb4-e455-55ae-a52f-07bda3f70272.html).

<sup>25</sup> John Cook, “Digital Economy May Spark Tacoma’s Renaissance,” *Seattle-Post Intelligencer Reporter* (August 16, 2000), <http://www.seattlepi.com/business/taco16.shtml>

system will enable the teachers to work from home. The company that developed this project is now planning similar projects for China, Japan, and Taiwan.<sup>26</sup>

- Auburn, Indiana: When Cooper-Standard Automotive was going to move 75 high-tech jobs out of this small Indiana town because no private company was willing to provide broadband in the town, the mayor and municipal electric utility offered to furnish Cooper “industrial strength connectivity” through fiber optics. Cooper accepted and stayed.<sup>27</sup> Now, Auburn has extended its fiber network throughout the town.
- The Dalles, Oregon, vs. Danville, Virginia: The Dalles, Oregon, a city of 11,873 in the picturesque Columbia River Gorge, operates a 17-mile municipal fiber optic network. In 2005, as a direct result of The Dalles’s municipal networking capabilities, Google decided to purchase an industrial site there for \$1.87 million, to house high-tech equipment that would be connected to the rest of the company’s network. The project will create “between 50 and 100 jobs over a matter of time, earning an estimated average of \$60,000 annually in wages and benefits.”<sup>28</sup> In contrast, Danville, Virginia, did not have a fiber network when AOL came looking for a site. As a result, AOL struck Danville off its list of potential sites for a new data center and located the center in Prince William County, Virginia.<sup>29</sup>

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26 Associated Press, “English ed company gets \$1.5 million,” Trib.com (May 9, 2008), [http://trib.com/news/breaking/article\\_8ea9ef0d-2c2a-5ac4-be4b-81adbcf0ce8a.html](http://trib.com/news/breaking/article_8ea9ef0d-2c2a-5ac4-be4b-81adbcf0ce8a.html).

27 David Isenberg, “Connectivity Spells J.O.B.S.,” *Isen.blog* (November 19, 2004), <http://isen.com/blog/2004/11/connectivity-spells-jobs.html>.

<sup>28</sup> Kathy Gray, “Port deal with Google to create jobs,” The Dalles Chronicle (February 16, 2005), <http://www.gorgebusiness.com/2005/google.htm>.

29 Chris Kahn, “Danville Area Looks to Move From Tobacco, Textiles to Tech,” Associated Press (October 3, 2003), cited in J. Baller and C. Lide, “Bigger Vision, Bolder Action, Brighter Future: Capturing the Promise of Broadband for North Carolina and America” at 16 (June 2008), [http://www.baller.com/pdfs/baller\\_herbst\\_enc.pdf](http://www.baller.com/pdfs/baller_herbst_enc.pdf).

- Jackson, Tennessee: “For a small city, Jackson, Tennessee, boasts a high concentration of firms that provide off-site computing resources for other businesses. The reason: its state-of-the-art fiber network.”<sup>30</sup>

The examples above – particularly the contrast between The Dalles’s and Danville’s experience – confirm that advanced telecommunications networks are essential to attract or retain “New Economy” businesses and institutions. As business site selection experts now frequently say, “[t]o be a real competitor in the new global economy, an area must provide an advanced telecommunications infrastructure – the basic building blocks of the IT [information technology] sector.”<sup>31</sup> In other words, having an advanced telecommunications network will not guarantee that a business will move to or stay in a community, but not having such a system will for many communities guarantee failure.

The second category of local government broadband networks is those that meet the needs of inter- and intra-government communications and communications among community anchor institutions, including providing services to and among first responders, schools, community colleges, libraries, government facilities, and public health facilities.<sup>32</sup> There exist thousands such broadband networks throughout the country, and they utilize a wide range of different architectures, technologies, and operating entities.

A number of key characteristics and accomplishments are held in common by most of these government anchor broadband networks:

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30 Geoff Daily, “Fiber-Wired City Attracts Managed Services Businesses,” Killerapp.com (December 27, 2006), [http://www.broadbandproperties.com/2006issues/dec06issues/killerapp\\_decFiberWired.pdf](http://www.broadbandproperties.com/2006issues/dec06issues/killerapp_decFiberWired.pdf).

31 “Heartland Goes High Tech,” Site Selection Magazine (November 2001), <http://www.siteselection.com/features/2001/nov/midwest/pg03.htm>.

<sup>32</sup> Attached hereto as Appendices 2– 8, 11, and 14 are a range of case studies of such networks that describes their architectures, business cases, capabilities, and the incomparable services they provide.

**1. All government anchor institution networks include extensive private involvement.**

Local government anchor institution networks are usually built and sometimes operated in part or in whole by private contractors. In every case, there is extensive private sector involvement in the government anchor network, ranging from design, construction and deployment to procurement of equipment and operations of facilities and services. Some local government networks are publicly owned and operated, some are operated by public entities over privately leased facilities, and some are privately operated under contract for services to the local government. The OpenCape network in Massachusetts, for example, combines public mission, ownership, and control with licensed private operation.<sup>33</sup> The non-profit OpenCape Corporation will own the network under the supervision of a board representing the county, towns, public safety, healthcare, schools and higher education, research institutions, and economic development interests. A for-profit partner selected through a competitive bidding process will be licensed to operate the network under a 25 year indefeasible right of use agreement. The private partner will pay OpenCape a flat fee and a percentage of gross revenues, which OpenCape will use for operating costs and to maintain and expand the network.

**2. Government anchor networks address unmet needs of government and its agencies and anchor institutions that private providers will not meet at reasonable cost.**

Government anchor networks enable communities to upgrade capacity beyond the T1 circuits (or, even worse, dial up modems) currently used to connect many public locations. Commenters note that many of their members are concerned by the cost of leasing T1 circuits—but even more so by concerns that the leased circuits are limited in performance and capacity and that these limitations constrain capability to meet school,

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<sup>33</sup> A case study of OpenCape’s network is attached hereto as Appendix 2 (hereinafter “OpenCape Case Study”).

library, and government needs for applications and data exchange in support of day-to-day operations.

In Montgomery County, Maryland, for example, elementary schools served over the County's own fiber optic network, FiberNet, receive connections of a symmetrical 100 Mbps for an annual operating cost of \$71 per megabit per site.<sup>34</sup> In contrast, those elementary schools served over T1 circuits leased from the phone company pay an annual per megabit cost per site of \$1,826 after the e-Rate discount is taken into account. Without the e-Rate subsidy to the carrier, the cost per megabit per site would be \$3,652 per year – compared with \$71 for the County's own network. The County plans future upgrades to 1 Gbps at an incremental cost of \$7.11 for each additional megabit per site. The County also notes that the per site costs decrease as additional sites are added, a realization of economies that are not available to those schools receiving T1 circuits from the carrier.

In the absence of government networks, anchor institutions often cannot purchase comparable high capacity circuits from the private sector because the anchors cannot afford such private sector pricing for such bandwidth; rather, they would simply cap their bandwidth needs and never deploy better applications that require more bandwidth. In other cases, the bandwidth is just not available to the anchor institutions at any price. In this way, there is usually no alternative to a government anchor institution network to provide high bandwidth to anchor institutions. In the District of Columbia, for example, the District's own fiber network can meet the needs of new anchor institutions by building fiber optics construction at a cost of \$15,000 to \$25,000 per mile for aerial

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<sup>34</sup>See NATOA *ex parte* notice, Docket No. 09-51 (September 16, 2009)..

construction and \$40,000 to \$50,000 per mile for underground construction.<sup>35</sup> The anchor institution pays only for its own equipment and ongoing operating costs. In order to obtain a comparable service from a private vendor, a District agency would need to purchase a customized service of two separate MPLS connections of the required speeds to each site, plus pay the cost of construction of two separate fiber routes, with one of the two routes traveling to a second more-distant central office. Depending on fiber availability, the agency would likely need to pay tens or hundreds of thousands of dollars per site for construction, in addition to the monthly recurring service charge for the service.

**3. Government anchor networks offer very high-bandwidth and affordable scaling as the needs grow.**

Government fiber networks have a lifetime of decades. And the fiber is endlessly upgradeable and capable of supporting greater speeds and bandwidths as government needs and applications grow. Because of the extraordinary scaling capability of fiber optics, government networks can readily scale with the community's needs simply by upgrading electronics.

For example, the regional government anchor network in the National Capital Region, NCRnet, was developed because of a regional understanding that dark fiber is superior to leased circuits for scaling to support a wide variety of applications, current and future.<sup>36</sup> Dark fiber is the most flexible transmission medium, as it allows simple electronic upgrade to support new network technologies and emerging applications.

Currently, NCRnet is mostly a gigabit network, but additional bandwidth or segmentation

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<sup>35</sup> A case study of the District of Columbia's municipal network is attached hereto as Appendix 3 (hereinafter DC-NET Case Study").

<sup>36</sup> A case study on the National Capital Region's regional government anchor network is attached hereto as Appendix 4 (hereinafter "NCRnet Case Study").

of traffic for performance management is simply a question of installing electronic upgrades at the hub sites, and does not require additional construction or redesign of the physical architecture.<sup>37</sup>

Similarly, the District of Columbia's network planner notes that, because DC-NET controls both ends of the fiber, it can use any equipment and immediately upgrade capacity or add new services.<sup>38</sup> With a modular upgrade, DC-NET can upgrade any one of its backbone fiber pairs to 320 Gbps -- over a hundred times faster than widely available commercial service offerings.<sup>39</sup>

#### **4. Private carriers and service providers cannot match government anchor network prices and costs.**

The experience of every case study described in these Comments is the same. They offer better, bigger, faster, more scalable services to anchor institutions cheaper than the private sector would or could provide. Government anchor networks deliver dramatic savings relative to leased carrier services and other carrier managed network services, and simultaneously offer far greater capabilities and capacity with endless opportunity to scale to even greater capacity as needs arise. The networks listed in these Comments, as well as all the other networks within the experience of the Commenters, are currently providing savings to their communities relative to commercial services, and savings are likely to continue to increase as government and school communications use increases, because the factors that all the government networks to offer better services at lower costs will not change over time.

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<sup>37</sup> See *id.*

<sup>38</sup> See DC-NET Case Study, *supra* note 35.

<sup>39</sup> See *id.*

The District of Columbia, for example, estimates annual savings from its network, DC-NET, of more than \$5 million, based on current usage.<sup>40</sup> This savings will grow as the communications needs of District agencies grow. The savings arise from a combination of voice and data services, along with avoided costs for the operation of the public safety radio network, data center interconnection, and other critical communications. These savings would be much larger if the District Government attempted to buy enhanced services from incumbent carriers that would be truly technically equivalent to DC-NET's services. The District estimates that 80 percent of the savings are related to data circuits which, over time, will grow as a proportion of District communications use, thus further increasing the savings.<sup>41</sup>

Comparing the cost between a leased service and a government-owned and operated network is not trivial, as it requires making certain assumptions regarding future requirements and/or future costs of leased services. Fortunately, government-owned infrastructure costs, including both hardware and physical fiber plant, remain relatively constant with respect to initial and ongoing expenses (though their capabilities increase with time). What is also clear is that the cost of needed leased services will increase dramatically with time—because the local community's communications needs will grow dramatically (frankly, in most communities, available connectivity options are not meeting even today's needs) and because there is little competition for such services.

It is important to note that the business case for government networks usually is based conservatively on current lease levels and costs -- which are guaranteed to grow. In contrast to leased circuits, government-owned fiber can be upgraded to higher capacity

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<sup>40</sup> *Id.*

<sup>41</sup> *Id.*

at no increase in recurring costs. The government's fiber offers capabilities that leased circuits cannot and enhances the community's ability to innovate and grow with new applications. And, significantly, the community's owned fiber does not entail recurring costs for capacity *ad infinitum* as do leased services.

For example, the planners of NCRnet, the regional fiber infrastructure in the Washington, DC region, estimate that leased services offer less functionality and higher overall costs relative to constructing this government anchor network.<sup>42</sup> According to the NCRnet business case analysis, even under the most conservative scenario, which would relax some of the bandwidth assumptions, *the cost of a private fiber network would be recouped in just eight years relative to leased services.*

Savings are derived from aggregation and non-profit provision of a number of different revenues. In Palm Beach County, Florida, for example, the county has connected its fiber network to Florida Lambda Rail, which provides a non-profit source of Internet capacity for all the anchors on the county network.<sup>43</sup> The county's own anchor institutions, including schools, government buildings, and public safety, realize annual savings of \$30,000 annual savings in Internet access alone.<sup>44</sup> In addition, the county is able to connect non-county anchor institutions and provide them access for \$100 per month, a cost that is simply passed through from Florida Lambda Rail.<sup>45</sup> For an extra \$700 per month, the County provides non-County anchor institutions and municipalities 100MB connections.<sup>46</sup>

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<sup>42</sup> NCRnet Case Study, *supra* note 36.

<sup>43</sup> A case study of Palm Beach County, Florida is attached hereto as Appendix 5 (hereinafter "Palm Beach Case Study").

<sup>44</sup> *Id.*

<sup>45</sup> *Id.*

<sup>46</sup> *See id.*

The savings offered by government anchor networks can also accrue to the private sector. In Ontario County, New York, for example, the Finger Lakes Regional Telecommunications Development Corporation (FLRTDC) notes that cellular service providers are realizing savings of as much as 66 percent over prior costs, which are being reinvested into new technologies and better services throughout the County.<sup>47</sup>

Similarly, the OpenCape network in Massachusetts plans to offer Middle Mile connectivity to the private sector at 50 percent below current costs.<sup>48</sup>

**5. Government anchor networks demonstrate local authority creates cost efficiencies from through shared construction and incremental cost mechanisms.**

There are several common lessons to be learned from the successes of local government broadband anchor institution networks. Local governments enjoy several cost advantages and economic incentives that are different than private providers. As a result, local governments can implement these declining-cost, scale economy networks in a manner that actually passes the full declining cost savings and other externalities through to the anchor institutions and their constituencies.

Many government anchor networks were enabled by the sharing of construction costs by private and public entities. For example, the cable franchising regime established by Federal law<sup>49</sup> has enabled localities to negotiate for cable operators to build additional fiber optic strands for local use while the cable operators were deploying their own facilities. These networks are known as Institutional Networks or “I-Nets.” The localities paid for those strands and sometimes also for related equipment, over time, and frequently at incremental cost. The cable operators were incented to enter these

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<sup>47</sup> A case study of Ontario County, New York is attached hereto as Appendix 6 (hereinafter “Ontario County Case Study”).

<sup>48</sup> See OpenCape Case Study, *supra* note 33.

<sup>49</sup> See generally 47 U.S.C. § 541 *et seq.*

agreements because this was encouraged by the federal Cable Act as a legitimate form of compensation to the taxpaying public for the enormous benefit cable operators realized from the use of public rights-of-way in building their networks.<sup>50</sup>

The end result was realization of extraordinary economies: two networks, one public and one private, but built at the cost of only one network with costs shared by the cable operator and the local government. The efficiencies continue today beyond the build-out period—the collocation of the fiber for the two networks enables maintenance and repair by the cable operator of both networks, with the locality frequently bearing the cost of repair to its fiber, again on a shared cost basis.

The efficiencies of I-Nets have been realized in cities as large and densely populated as New York City and in rural areas as remote and sparsely populated as Humboldt County, California. Thousands of miles of broadband, connecting thousands of anchors, have been achieved through the I-Net mechanism of shared construction scenarios and incremental cost mechanisms.

In similar fashion, many communities worked with other communications providers to enable these same efficiencies. During the heyday of the CLEC fiber build-outs, local communities granted CLECs opportunity and access to public rights of way and sometimes other public property in return for placement of additional conduits in trenches while the CLECs placed their own facilities. Once again, both parties benefit from mutual exchange (the private sector receiving access to public rights of way and other public benefits; the public sector receiving facilities such as conduit) – and the total cost of meeting both parties’ needs was far lower than undertaking both projects separately.

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<sup>50</sup> *See id.*

Another example of a government anchor network that has achieved multiple efficiencies is NCRnet, the regional interoperable public safety infrastructure in the National Capital Region (NCR).<sup>51</sup> In the period following September 11, 2001, the local jurisdictions in the NCR came together to address the severe interoperability issues that had become apparent in the public safety response following that tragedy. The jurisdictions developed a vision for a crucial new public safety communications network to connect community leaders and first responders across the Washington, D.C. metropolitan area. The goal of the NCR Interoperability Program was the establishment of a fiber optic based digital network and systems interoperability to enhance the region's public safety and emergency response communications. The region needed a communications infrastructure that provided enough bandwidth to sustain current and future high-bandwidth intensive applications, would be flexible enough to address emerging security concerns and provide a wide array of services, would be sustainable from a resource management and cost perspective, and be as independent as possible of commercial network that are vulnerable to traffic saturation exactly when they are needed the most.

NCRnet was built with two key cost-effective efficiencies: first, most of the NCR jurisdictions already had some footprint of government-controlled fiber optic networks in the form of I-Nets built by cable providers under franchise agreements in return for access to public property and public payments. These provided connectivity to local agencies, government offices, public safety sites, schools and libraries, and already had existing support and collocation sites for fiber interconnectivity. Second, the NCR jurisdictions decided to interconnect these existing networks by sharing engineering,

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<sup>51</sup> See NCRnet Case Study, *supra* note 36.

construction, and equipment procurement costs, and thereby enabling data interoperability that would have been otherwise prohibitively expensive.

**6. Government anchor networks demonstrate the efficiencies of shared construction scenarios.**

Many of the government anchor networks in operation were built through the economically efficient mechanism of shared construction, in which agencies and organizations agree to build cooperatively and simultaneously, viewing cooperation as win/win rather than seeking to preclude competition and the emergence of new networks. The network that serves the City of Seattle, Washington and its partners, for example, was made affordable by the agreement of numerous public entities that, in the event that one of the partners planned to build fiber plant, the others would have the option of contributing funds to build additional capacity in this shared infrastructure.<sup>52</sup> Each partner agencies operates its own network services over the shared physical infrastructure, but only one physical network was built to enable these many functional networks. The end result has been a robust, high-bandwidth infrastructure that realizes economies of scale in both construction and maintenance.<sup>53</sup>

Shared regional infrastructure represents another example of the efficiencies possible with local government anchor networks. The OpenCape regional Middle Mile open access network was designed to offer efficiencies in both capital outlay and operating costs for anchor institutions and private Last Mile providers.<sup>54</sup> OpenCape's extensive long term contact with regional stake holders has ensured their needs were included in the network design. None of these stake holders alone could build the

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<sup>52</sup> A case study of the Seattle, Washington municipal network is attached hereto as Appendix 7 (hereinafter "Seattle Case Study").

<sup>53</sup> See *id.*

<sup>54</sup> See OpenCape Case Study, *supra* note 33.

infrastructure they need, but their needs can be addressed within a comprehensive regional Middle Mile project. For example, OpenCape will provide to the Commonwealth of Massachusetts infrastructure in the southeast part of the state for the planned state-wide, government service network.<sup>55</sup> Similarly, OpenCape is negotiating with the regional power provider, NSTAR, for access to poles in exchange for fiber strands that would enable NSTAR to develop and expand smart grid applications.

Similarly, the emerging One Maryland network is a 10-jurisdiction network of community networks covering eight counties and two cities (Baltimore and Annapolis) in central Maryland.<sup>56</sup> One Maryland planners intend to build fiber optics to 866 community anchors across 45 percent of the geography of Maryland, serving tens of thousands of government workers, students, library users, and educators.<sup>57</sup> The network will deliver 100 Mbps to 10 Gbps to each anchor.<sup>58</sup> All the jurisdictions will be interconnected for purposes of public safety and interoperable communications as well as for realizing economies with respect to shared applications and services. One Maryland planners estimate that, in the aggregate, the network partners will realize operational savings of \$40 million in the first full year of operations relative to current costs for leased circuits.<sup>59</sup> The total estimated capital expense for One Maryland is \$120 million—a price-tag that would be far higher but for the efficiencies of shared planning, engineering, construction, and equipment procurement.<sup>60</sup>

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<sup>55</sup> *See id.*

<sup>56</sup> *See* NATOA *ex parte* notice, Docket No. 09-51 (September 16, 2009).

<sup>57</sup> *Id.*

<sup>58</sup> *Id.*

<sup>59</sup> *Id.*

<sup>60</sup> *Id.*

The OneCommunity network in Ohio further demonstrates the power of shared construction -- how many local governments act as partners, enablers, and facilitators of creative, community-driven public-private partnerships in broadband.<sup>61</sup>

OneCommunity is a non-profit collaboration of public, private, and non-profit institutions that work together to share resources and enable efficiencies through aggregation over the OneCommunity fiber network. OneCommunity's anchors include local governments, educational institutions at all levels, health care institutions, and community non-profits. The OneCommunity collaborative footprint crosses urban, suburban, and rural areas of northern Ohio.

**7. Government anchor networks reach deep into communities and neighborhoods, aggregate the demand of key anchor institutions and government facilities, and can serve as a platform for Last Mile deployment to homes and businesses.**

Local government fiber networks represent the opportunity to realize yet another key efficiency in that they can, while meeting all the high-bandwidth needs of anchor institutions, also serve as an open platform for Last Mile deployment, both public and private. By their nature, government networks to anchor institutions will reach deep into neighborhoods that house schools, libraries, public health facilities, and government facilities such as water towers and fire stations. Their anchor institution users create sufficient aggregated demand to sustain the networks financially. By their nature, fiber optics are capable of supporting many, many other users and many, many service providers so long as the networks are engineered to provide adequate security for governmental uses.

Only a few local government networks currently implement Last Mile capabilities. The 57 fiber-to-the-home networks mentioned earlier include service to

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<sup>61</sup> A case study of the OneCommunity network is attached hereto as Appendix 14.

anchor institutions.<sup>62</sup> And many local communities also use their fiber infrastructure to enable wired or wireless services that meet the needs of the most vulnerable in the community. The City and County of San Francisco, for example, provides free broadband access to over 3,000 residential units within public housing developments, as well as low-cost broadband service to various community anchor sites.<sup>63</sup> San Francisco's Department of Technology views these pilots as an incremental step that demonstrates the potential for what the city can do for all residents of San Francisco.<sup>64</sup> Similarly, Palm Beach County, Florida offers free wireless to school children around some of its neighborhood schools.<sup>65</sup>

But most existing local government anchor institution networks are not presently enabled to offer consumer end services or to lease capacity to Last Mile providers to provide such services. Many local government networks are contractually precluded from offering commercial services or enabling commercial providers, under the initial agreements that led to their deployment. However, the commitment of local governments to meet community needs for connectivity are apparent from the non-commercial uses to which many of these networks have been put – for example, most of them offer free wireless connectivity in and around libraries, which, in the current economic environment, serve as job search centers, educational entities, and civic hubs for workers seeking employment, children doing online homework and research, and citizens interacting with their government. Local governments report long lines at

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<sup>62</sup> See Fiber-to-the Home Council Study, *supra* note 17.

<sup>63</sup> See the “Comments of the City and County of San Francisco on National Broadband Plan Public Notice #7” (filed Nov. 6, 2009) (hereinafter “San Francisco Comments”). Also, a case study on the City of San Francisco's municipal network is attached hereto as Appendix 8.

<sup>64</sup> See San Francisco Comments.

<sup>65</sup> See Palm Beach County Case Study, *supra* note 43.

libraries for use of Internet-enabled computers and laptops, and families parked in library parking lots at all hours to utilize free wireless connectivity.<sup>66</sup>

Commenters suggest that the Commission can facilitate deployment of Last Mile broadband services by dealing with the barriers local government networks face in facilitating deployment of additional capacity in the middle and second mile. Then local governments can serve as active participants in assisting Last Mile deployment. Local communities are highly incented to enable private and public deployment of Last Mile technologies in the most cost-effective way possible. The Open Cape and One Maryland networks, for example, include provision for open access to additional fibers on the government networks that are dedicated for Last Mile providers to use in the middle and second miles. Similarly, the FLRTDC project, located in Ontario County, New York, has demonstrated that low-cost access to a community-based, non-profit fiber backbone has spurred development and investment of last-mile solutions, as well as competitive access throughout the County.<sup>67</sup> Even during construction, much of the FLRTDC fiber has already been leased.

**8. Government anchor networks enable appropriate architecture and security—attributes essential for local government internal communications.**

Government anchor networks realize long-term savings relative to leased commercial services. Just as importantly, they also enable local governments to avoid the operational, security and design limitations of leased services with respect to performance, availability and capacity – and thereby avoid constraints on governments’

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<sup>66</sup> See, e.g. Ed Ernstes, “Computers to help unemployed arrive at Nappanee library,” WSBT News, <http://www.wsbt.com/news/local/38908354.html>.

<sup>67</sup> See Ontario County Case Study, *supra* note 47.

capabilities to meet their own needs for applications and data exchange in support of day-to-day operations.

Government networks offer substantial functional and technical advantages over leased services from commercial carriers. A network built upon leased network services obtained from a service provider cannot provide the control and management that is available in a City-owned and operated network. Leased network services are in essence a “black box” in terms of control and management. The City is forced to rely on the provider (usually the phone company) to maintain and operate the core equipment of a leased service (these tasks include configuring the equipment, monitoring the hardware and physical infrastructure, and performing routine maintenance). Depending on the network, the technical advantages of government networks to meet government needs relative to leased carrier services include:

**Reliability:** Government networks frequently demonstrate higher system reliability and availability (uptime) because they are engineered for public safety purposes and include multiple layers of redundant architecture that positively impact system availability. Most government fiber networks use fiber rings to the premises with their fiber traveling through physically redundant cable pathways.

The availability of a communications link is derived from the probability of a failure within the network between two points. In a leased circuit network, the end user is not aware of all of the potential risks to availability of the network. Several key factors that affect availability and cannot be determined by the local government include:

- Physical redundancy in the plant;
- Physical redundancy in the building entrances;
- Physical redundancy in the networking equipment;
- Ensuring network equipment is properly configured and regularly tested to take

- advantage of hardware and link redundancy;
- Redundancy for power and HVAC;
- How many facilities the circuit crosses between endpoints;
- Whether the plant is located underground or aerial;
- Who has access to the core networking equipment and plant;
- How old or well maintained the core equipment is;
- How the system is monitored and maintained; and
- The single points of failure in the communications link.

Many of the factors can be approximated or relative numbers may be obtained from the leased circuit provider; however for critical government services such as public safety, the approximations and availability estimates from leased network services may not meet the availability requirements of a critical traffic network. In the case of physical architecture issues, such as the physical routes of cabling, approximations are not sufficient, and detailed maps are usually considered proprietary and confidential to a commercial provider.

**Control:** Government-owned fiber optics enable localities to maintain end-to-end control of the entire network, providing flexibility, offering a minimum quality of service, and enabling design and restoration choices in which the local community's needs always come first. Operating their own fiber enables local governments to closely manage assets, select their own priorities, and allocate resources for restoration to ensure that government priorities, including public safety, are reflected in responses to fiber design and repair.

Using carrier services works very well for many local governments, but for those who choose to operate their own networks, they prefer to be able to design a network that reduces risks and is centered on their own needs. In an emergency situation, carriers do not automatically make choices that prioritize the community—because carriers have

other interests to address as well, including those of other customers and its shareholders. For example, on September 11, 2001, Verizon lost connectivity to hundreds of thousands of residential and business customers in Lower Manhattan because it lost significant network facilities in and near the World Trade Center.<sup>68</sup> Restoration could not be performed quickly; some customers lost service for weeks. By comparison, the City's own fiber network served key facilities citywide with redundantly routed fiber optics. As a result, only the City I-Net connection to the World Trade Center was lost, and its other facilities throughout the City (including Lower Manhattan) continued to operate.<sup>69</sup> The City's I-Net architecture proved superior to Verizon's for purposes of survivability of City sites and internal government communications.

**End-to-end Security:** Local governments can achieve greater security on their own networks because they own and control all fiber and electronics. In this way, government networks afford governments more control over physical and electronic security than do carrier networks. In the area of physical plant, where a carrier is the provider, the physical security of fiber, switches, and management system serving the community are controlled by the carrier. The community cannot modify practices or increase security without carrier approval. In contrast, government network systems are documented and under the end-to-end control of the community. Electronics at the various sites are locked and only accessible to the community. All hub sites and the associated fiber terminations and electronics are under the control of the community. In the event of a security alert or regulatory change (such as more strenuous HIPAA requirements), the

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<sup>68</sup> "Attacks Expose Telephone's Soft Underbelly," Simon Romero, *New York Times*, October 15, 2001.

<sup>69</sup> See Letter to FCC from NY Congressional Delegation Dated Dec 20, 2006, available at [http://weiner.house.gov/news\\_display.aspx?id=358](http://weiner.house.gov/news_display.aspx?id=358) (last visited November 6, 2009).

community can rapidly increase its level of physical security at facilities and make changes as needed.

With respect to electronic plant, carriers, rather than the community, determine the procedures and practices that limit access to the network. The configuration of the network is under the control of the carrier's operations department, which has access to administrative passwords and access to network switches. In contrast, in a government network, all management, control, and provisioning of electronics is performed by government or contractors according to government security standards. The government is able to control access to all electronics and perform screening of its own staff and contractors.

Implementation of network security on a leased circuit typically occurs at the edge of the network. Many leased networks use end-to-end encryption to securely transmit data over networks that share a core network with public users. Frequently, the provider of a leased circuit will dictate what types of end-to-end security are allowed on a leased circuit (IP managed services, for example). On a government-owned fiber network, the community can control end-to-end security throughout the network infrastructure. The government operator can offer layered protections that make the network robust and secure.

#### **B. Local Government Provision of Broadband Spurs Private Investment and Economic Development**

Local government authority and involvement in broadband deployment is beneficial to our nation's communities. Local governments must respond to their citizens' demands for broadband services. The experience of local governments across the country has been nearly

universal: municipal broadband deployment stimulates private sector investment and has a positive effect on the local economy.

One illustration of this pattern can be found in Lake City and Hinsdale County, Colorado. The area's service provider, in response to customer concerns, had promised an expansion and improvement of broadband starting with the 2010 budget and in future years. The municipality decided to conduct a study to look into its broadband options and looked into the possibility of leasing capacity for the development of a municipal network. This step, alone was sufficient to spur action on the part of the service provider. Immediately, the improvements and expanded capacity budgeted for 2010 (at the earliest) were moved up to 2009. At the time of this filing, Lake City and Hinsdale County have seen the installation of a DS-3 circuit and expects broadband speeds of 10 mg soon. The service provider has also begun the expansion of broadband service to parts of the County that previously were without broadband. Additionally, the service provider plans to offer a free wireless hub in a park in Lake City. These improvements are underway years before the service provider initially planned to undertake them and all because the local governments decided to look into the development of a municipal broadband network. As far as costs, the municipalities spent less than \$15,000 to inspire approximately \$100,000 in investment by the service provider in Hinsdale County.<sup>70</sup>

Municipally-deployed broadband networks have also spurred significant private sector investment across the country. Data that has been collected on this issue shows that this results in expanded broadband access and the installation of more sophisticated infrastructure in communities where there are municipal broadband networks. Additionally, these communities have seen decreased service rates and improved customer services. Communities who have

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<sup>70</sup> This information is according to Michelle Pierce, the Town Manager of Lake City, Colorado in a conversation in November 2009.

experienced a private sector response similar to that of Hinsdale County, Colorado include (but are not limited to): Scottsboro, Alabama; Alameda, California; Dalton, Georgia; LaGrange, Georgia; Glasgow, Kentucky; Murray, Kentucky; Spencer, Iowa; Windom, Minnesota; Morgantown, North Carolina; Salisbury, North Carolina; Wilson, North Carolina; Lebanon, Ohio; Wadsworth, Ohio; Kurtztown, Pennsylvania, Jackson, Tennessee; Provo, Utah; and Tacoma, Washington.<sup>71</sup>

Data also shows that municipal broadband networks also positively impact local economies. In an April 2005 study, entitled “Broadband and Economic Development: A Municipal Case Study From Florida,” George S. Ford and Thomas M. Koutsky concluded that “broadband infrastructure can be a significant contributor to economic growth. . . [and] efforts to restrict municipal broadband investment could deny communities an important tool in promoting economic development.”<sup>72</sup> The study “quantif[ied] the effect on economic development resulting from a community’s investment in a broadband network” by looking at Lake County, Florida who, in 2001, developed a municipal broadband network (and provided access to the network to private businesses).<sup>73</sup> In comparing Lake County to similar communities in Florida who did not have municipal broadband networks, the study found that Lake County had “experienced a 100% - a doubling – in economic growth relative to its Florida peer counties” since the deployment of the municipal network.<sup>74</sup> The study points out that this doubling

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<sup>71</sup> See Letter from Catharine Rice, Associate, Action Audits, LLC to Tonya Rideout, Acting Executive Director, NATOA (Nov. 5, 2009), attached hereto as Appendix 9.

<sup>72</sup> George S. Ford and Thomas M. Koutsky, “Broadband and Economic Development: A Municipal Case Study from Florida,” Applied Economic Studies (April 2005), at 1, available at <http://www.aestudies.com/library/econdev.pdf>.

<sup>73</sup> *Id.* at 4.

<sup>74</sup> *Id.* at 15.

occurred despite the fact that these other counties “no doubt” had private broadband networks during the evaluation period.<sup>75</sup>

Commenters believe that the hypothesis generated by this study is critically important when determining the role of local governments in the National Broadband Plan. The study concluded by hypothesizing that the reason for the massive economic growth experienced by Lake County (and not by peer counties without municipal networks) was because of the different deployment incentives of communities and private-sector providers.<sup>76</sup> Private firms are incentivized to increase profits; on the other hand, municipal networks are deployed with the public benefit as the primary incentive.<sup>77</sup> This difference in incentives was visible to business owners in Lake County and the economic and technological benefits of municipal broadband networks have been repeated in communities across the country.

**C. The National Broadband Plan Must Include Strong Measures to Protect Public Broadband Initiatives From Unfair Barriers of All Kinds, Including State Legislation, Frivolous Lawsuits, and Anticompetitive Incumbent Behavior.**

As seen above, local governments have undertaken a wide range of broadband initiatives that have not only lowered the cost and improved the quality of government services, but have also fostered economic development, educational opportunity, public safety and homeland security, affordable modern health care, environmental sustainability, energy efficiency, digital equity, and quality of life of their communities. They have done so in many different ways, using a variety of technologies, involvement models, partnering arrangements, and funding mechanisms. The common feature of these initiatives is that they are driven by, and highly responsive to, local conditions and needs.

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<sup>75</sup> *Id.* at 16.

<sup>76</sup> *Id.*

<sup>77</sup> *See id.*

Local governments do not undertake these projects lightly and not for purposes of profit. Rather, local governments are generally conservative and risk-averse; they undertake these projects out of economic necessity to bring the benefits of broadband to their communities. Before embarking on a community broadband initiative, local officials typically ask the established carriers to meet local requirements or at least to work with the local government to do so together. Not only does this make practical sense, but political realities dictate that local governments give the carriers such an opportunity. Unfortunately, the carriers almost always decline, particularly in rural and high-cost areas where they cannot economically meet local requirements.

This pattern is reminiscent of a century ago, when electric systems were first deployed and private power companies built first in their most lucrative markets. More than 3,000 unserved local communities, believing that their economic vitality and quality of life was at stake, stepped forward to establish and operate their own electric utilities (sometimes despite fierce opposition from power companies). The communities that did so typically survived and thrived, while many other communities that waited for the private power companies to get around to them languished or even became “ghost towns.”<sup>78</sup>

Today, hundreds of local governments are convinced that affordable access to advanced communications services and capabilities is essential to ensure success in the emerging knowledge-based global economy. Many have already developed their own communications utilities, and numerous others are eager to do so.<sup>79</sup> Unfortunately, their efforts have sometimes

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<sup>78</sup> Jim Baller, “The Essential Role of Consumer-owned Electric Utilities in Developing the National Information Infrastructure: A Historical Perspective,” <http://www.baller.com/library-art-history.html>.

<sup>79</sup> As previously discussed, 57 public entities have developed fiber-to-the-home networks. Nearly all of these networks that have been successful. Fiber-to-the-Home Council, “Municipal Fiber to the Home Deployments: Next Generation Broadband as a Utility Municipal Utility” (updated October 2009), <http://www.baller.com/pdfs/MuniFiberNetsOct09.pdf>.

been received by incumbent providers with efforts that have the effect of halting or delaying public broadband initiatives.

First, some incumbents have sought to push local decision makers and the public into abandoning such initiatives.<sup>80</sup> Early in the last century, private power companies mounted massive campaigns of misinformation to tout their services and discredit community initiatives; invested heavily in misleading media advertising; subsidized advantageous research by supposedly independent experts favoring their views; and enlisted industry executives and employees to disparage municipal electric systems.<sup>81</sup> Franklin Delano Roosevelt denounced these efforts as “a systematic, subtle, deliberate and unprincipled campaign of misinformation and propaganda, and if I may use the words 'of lies and falsehoods.’”<sup>82</sup>

Where such efforts at the local level have failed to discourage community broadband initiatives, some incumbents have lobbied state legislatures to prohibit or effectively prohibit local government public communications initiatives. In recent years, such efforts have usually failed, as many state legislators have come to understand the connection between robust broadband connectivity and the well-being of their communities, their states, and the Nation. Unfortunately, this awakening has occurred only after numerous states enacted barriers to public communications initiatives. Most of these measures remain on the state law books because they have been difficult or impossible to remove at the state level.

Appended as Appendix 10 is a chart describing 18 state barriers to public communications initiatives. While the barriers differ from state to state, they all have a single purpose and effect – to block or significantly delay public entities in deploying advanced

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<sup>80</sup> Many of these efforts are documented on the Community Broadband page of the Baller Herbst website, <http://www.baller.com>.

<sup>81</sup> *Id.*, citing R. Rudolph and S. Ridley, *Power Struggle: The Hundred Year War Over Electricity*, at 48-49 (1986)

<sup>82</sup> *Id.*

communications networks. The barriers do so either by prohibiting specified activities outright or by imposing “level playing field” requirements that actually make it practically impossible for local governments to undertake the ventures. Rather than create competitive equality, the barriers subject local government to prohibitively time-consuming and expensive procedural and substantive burdens that private entities need not meet -- and cannot meet. Unless and until these barriers are removed by federal action, countless communities in the states in question will be deprived of the advantages that communities in other states enjoy.

In addition, some carriers have then tried to limit community initiatives through litigation. For example, Bristol, Virginia; Cedar Falls, Iowa; Chattanooga, Tennessee; Glasgow, Kentucky; Hawarden, Iowa; Lafayette, Louisiana; Laurinburg, North Carolina; Monticello, Minnesota; Morganton, North Carolina; Niceville, Florida; North Kansas City, Missouri; Portland, Oregon; Reedsburg, Wisconsin; Truckee-Donner, California; the UTOPIA project, Utah; and numerous other local governments have had to waste countless hours and dollars on disruptive litigation before the courts, public service commissions, bond commissions, and other agencies. While the carriers have lost the great majority of these cases, they have nevertheless benefited from them in other ways, including by driving up the costs of public communications initiatives and by deterring untold numbers of communities from engaging in similar projects for fear of being dragged into protracted – though frivolous -- litigation

Finally, some incumbents have engaged in a wide range of direct anticompetitive practices to destroy public communications projects in the field. These include predatory pricing; targeted rate discrimination; denying access to critical content; denying access to poles,

ducts and other infrastructure; blocking access to potential customers, particularly in multi-dwelling units; and a variety of other tactics.<sup>83</sup>

As Senator John McCain stated on the Senate floor at the time that he introduced legislation that simultaneously would preempt state barriers to public communications initiatives and provide safeguards to the private sector,<sup>84</sup>

Many of the countries outpacing the United States in the deployment of high-speed Internet services, including Canada, Japan, and South Korea, have successfully combined municipal systems with privately deployed networks to wire their countries. As a country, we cannot afford to cut off any successful strategy if we want to remain internationally competitive.

I recognize that our Nation has a long and successful history of private investment in critical communications infrastructure. That history must be respected, protected, and continued. However, when private industry does not answer the call because of market failures or other obstacles, it is appropriate and even commendable, for the people acting through their local governments to improve their lives by investing in their own future. In many rural towns, the local government's high-speed Internet offering may be its citizens only option to access the World Wide Web.<sup>85</sup>

If America's communities are to achieve their full potential, the National Broadband Plan must include strong measures to protect public broadband initiatives from barriers of all kinds. The Commission should state in the Plan that Congress should enact the Community Broadband Act, ensure that local governments have access to all benefits (or their equivalent) that are available to private networks, and take such other steps as may be necessary to protect local governments from frivolous lawsuits and anticompetitive practices. The Commission should

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<sup>83</sup> NATOA documented dozens of examples of such practices in a report presented to the Senate Judiciary Committee's Subcommittee on Antitrust, Business and Competition, and Consumer Rights, [http://www.baller.com/pdfs/bh\\_anticmp\\_report.pdf](http://www.baller.com/pdfs/bh_anticmp_report.pdf). Many of the same practices are still occurring today.

<sup>84</sup> During the last Congress, versions of the Community Broadband Act were introduced in both the Senate (S.1853) and the House (H.R.3281). NATOA strongly supported these measures.

<sup>85</sup> Statement of Senator John McCain, Cong. Record S.7299, September 23, 2005, available at [http://frwebgate.access.gpo.gov/cgi-bin/getpage.cgi?dbname=2005\\_record&page=S7299&position=all](http://frwebgate.access.gpo.gov/cgi-bin/getpage.cgi?dbname=2005_record&page=S7299&position=all).

also do everything possible within its current authority to protect local governments from barriers to entry and anticompetitive practices.

**V. LOCAL GOVERNMENT PROPOSES THE FOLLOWING PLAN TO ENHANCE AND EXPAND MIDDLE MILE AND SECOND MILE NETWORKS.**

The National Broadband Plan represents an unprecedented opportunity to unleash the power of localism on a national scale. As shown above, many communities have enjoyed remarkable success in deploying and facilitating broadband networks within their communities—where instituted, the resulting networks provide a wide range of services efficiently and cost-effectively, and quickly become essential to local government operations. Unfortunately, too many local governments have been unable to share in this success for a variety of reasons. The new federal Plan should address these lessons learned and identified problems, and establish a policy that will promote the nationwide deployment of broadband networks on a community-by-community basis. This section of the Comments describes the detailed prescriptions the Commenters believe the Plan should include.

The Commenters believe the appropriate federal policies, to be elucidated in the Broadband Plan, can effect real change. Properly articulated, the Broadband Plan can accelerate the deployment of Middle Mile and Second Mile networks. These can then become open platforms available for all forms of Last Mile providers to reach the unserved and underserved general public. The participation of local and regional governmental entities in these networks is essential. The Plan should adopt concrete proposals that defend and advance this idea. In particular, the Plan should encourage rather than stifle local authority and initiative, and it should do so by recognizing the current “best practices” and the resulting benefits to the public of community-based networks. In particular, the Plan needs to instruct state governments that limiting local authority in this area is shortsighted and counter-productive. The Commenters

have long opposed federal preemption of local authority, and the Commenters continue to believe that federal preemption of local and regional authority is usually fundamentally bad policy.<sup>86</sup> Too often federal preemption is used to advantage one economic player over the community of local interests which the advantaged player wants to ignore. However, in some cases, federal policy must be implemented on a uniform basis to bring the benefits of that policy to all citizens. When privileged players are using state and local processes to frustrate the national purpose or to gain unfair advantages over other citizens, federal preemption is necessary to advance the public interest.<sup>87</sup> But preemption is only one tool available to the Commission, and is often the bluntest of instruments. The Commenters believe the Plan should also identify and highlight state and local policies that have succeeded, demonstrate how those policies can advance the interests of communities at the state and local level, and in this fashion encourage the states to adopt such policies as their own.

**A. The Plan Should Adopt Policies To Preserve Existing Local Networks and To Enable Their Expansion.**

The Plan should establish policies and promote programs that both preserve existing anchor institution networks and enable their expansion. The Plan should focus on how these networks are financed, and how they are affected by existing federal and state legal requirements.

**1. The financing of networks.**

The Plan should address the financing of networks in a variety of ways. NATOA has documented the failure of the FCC's near total reliance on market forces to spur broadband

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<sup>86</sup> See *infra* Part VI.

<sup>87</sup> See, e.g., Community Broadband Act of 2007, S. 1865, 110th Cong. (2007).

deployment.<sup>88</sup> As NATOA put it, as long as communities are not getting the services and capabilities that their citizens desire and believe they need:

[T]he benefits that accrue to the greater society from broadband exceed the economic returns to the broadband service providers. As a result, when market failure results in underinvestment, government intervention is required to ensure that all areas of the country are served.<sup>89</sup>

NATOA urged that so long as these markets experience under-investment, the FCC must take various steps including “[f]inding new mechanisms to encourage deployment of broadband networks to reach unserved and underserved, probably through government subsidized Middle Mile and Last Mile mechanisms that can offer access and speed on a wholesale basis to any and all service providers.”<sup>90</sup> The Plan should begin by considering various methods to address the financing of local networks.

*First*, the FCC should consider three steps related to its universal service rules:

1. The Commission is currently engaged in a comprehensive review of the universal service program, with particular emphasis on broadband services;<sup>91</sup> that review should ensure that local governments can obtain universal service support for local broadband networks.
2. In addition, either as part of the pending reform effort or separately, the FCC should call for revisions to the e-Rate program so that local networks used for educational purposes are eligible to receive universal service support. Under the current program, wide area networks built by states, schools, or libraries are ineligible for universal service discounts.<sup>92</sup> If necessary, the Plan could call on Congress to revise the underlying statute, 47 U.S.C. § 254, to correct this.
3. Finally, the FCC has recognized that state telecommunications networks may secure discounts on behalf of eligible schools and libraries.<sup>93</sup> Local anchor

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<sup>88</sup> See NATOA Comments, Docket No. 09-51 at 16-20 (June 8, 2009).

<sup>89</sup> *Id.* at 19.

<sup>90</sup> *Id.* at 20.

<sup>91</sup> See *In re A National Broadband Plan for Our Future*, Notice of Inquiry, GN Docket 09-51, at ¶ 39 (April 8, 2009).

<sup>92</sup> *In re Federal-State Joint Board on Universal Service*, 13 FCC Rcd. 2372 ¶ 193 (1997); 47 C.F.R. § 54.518.

<sup>93</sup> *In re Federal-State Joint Bd. on Universal Service*, 13 FCC Rcd. 2372 at ¶ 183; 47 C.F.R. § 54.519; *In re Federal-State Joint Bd. on Universal Service*, 16 FCC Rcd. 571, 573 ¶ 7 (2000) (finding that “a carrier offering its

institution networks offer many of the same services as statewide networks; accordingly, the FCC's rules should be amended to allow local networks that serve eligible schools and libraries to secure comparable discounts, even without a change in the statute.

*Second*, the Plan should encourage the use of innovative public-private financing models to facilitate joint ventures between local Middle Mile networks and Last Mile providers. For example, in Ontario, New York, the Finger Lakes Regional Telecommunications Development Corp. is currently developing a 180-mile fiber network that interconnects key Middle Mile entities throughout Ontario County. The network will be available on an open access basis to Last Mile providers. Ontario County provided startup funding for the project through a loan of \$2.5 million and advance payments for services, and the project will be completely self-sustaining through fiber lease payments from numerous sizable users. This low cost access to the fiber backbone has already spurred development and investment of last-mile solutions, as well as competitive access throughout the County.<sup>94</sup> Such projects – adapted to local conditions – should be encouraged and made possible throughout the country.

Many local governments cannot participate in a project similar to Ontario County, or even one that is exclusively a government operation because of state law restrictions on the availability of credit facilities for “public purposes”. In many cases, states deny local governments the authority to offer “proprietary” rather than “governmental” services.<sup>95</sup> Also, state laws often restrict the uses of funds borrowed by local governments.<sup>96</sup> While these Comments do not contain a detailed description of all of the state and local bond law issues and

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services only to a legally defined class of users may still be a common carrier if it holds itself out indiscriminately to serve all within that class”).

<sup>94</sup> See NATOA *ex parte notice*, Docket No. 09-51 (October 16, 2009).

<sup>95</sup> This is a common problem in Virginia and other “Dillon Rule” states where a local government must get explicit state legislation to pursue the project. See, e.g., *Marcus Cable Assocs., LLC v. City of Bristol*, 237 F. Supp. 2d 675 (W.D. Va. 2002). In other states, local governments are prohibited from engaging in “proprietary” activities. See, e.g., *City of Phila. v. Rendell*, 888 A.2d 922 (Pa. Commw. Ct. 2005).

<sup>96</sup> See McQuillin, *Municipal Corporations*, §§ 39:11, 39:12 (3d ed. 2005).

formulations, it is sufficient to note that the Broadband Plan should call on each state to create a borrowing mechanism that can be used by local governments to build government anchor institution networks. And these networks should be allowed to service public, non-profit, and private anchors, as well as open to use by commercial Last Mile providers. In summary, today, state public financing and procurement laws are often too rigid and narrowly drawn to permit innovative arrangements to develop in response to local needs.

*Third*, federal guaranteed loans should be made available for these local networks. Under the American Recovery and Reinvestment Act of 2009 (the “Recovery Act”),<sup>97</sup> NTIA and RUS are currently deciding whether to award grants to a number of local government Middle Mile applicants. For example, the OpenCape project in Southeast Massachusetts has applied to NTIA for a \$32 million grant to produce a Middle Mile network that delivers multiple points of interconnection for Last Mile providers. The Plan should call on Congress to enact a special federal financing mechanism for eligible local governments and public/private joint ventures to build urban and non-rural anchor networks. This can be similar to the loan programs currently available through the Rural Utility Service. These federal guaranteed loans would be available to fund the capital and start-up costs of anchor institutions that have sustainable business plans. In addition, the NTIA should be able to provide federal grant support to local governments for trained personnel, operating costs, and capital replacement costs. This support will enable local governments to both preserve and expand existing networks.

*Fourth*, the Plan should encourage state and local governments to self-finance anchor institution networks by using right-of-way user fees and franchise fees. Of course, to do so, a local government must be able to obtain compensation for use of its property. Contrary to the claims of the private companies who would use public rights-of-way for free, charging rent for

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<sup>97</sup> The American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat. 115.

use of the public rights-of-way is good public policy. It fosters more, not less, broadband deployment.<sup>98</sup> The City of Portland's Integrated Regional Network Enterprise ("IRNE") provides a good example.<sup>99</sup>

## 2. Regulatory reform

The Plan should also call for changes to federal, state, and local regulations. Through these changes, the Plan should encourage all facility network providers that occupy state and local rights-of-way to make a portion of their excess capacity available for public uses and enter into joint ventures with local anchor institution networks.

### a) *State Policies*

The Plan should recommend changes to state regulations and laws to encourage local governments' ability to roll-out anchor institution networks. The Plan should identify and highlight the kinds of state law provisions that promote network deployment by local entities. Many states allow local governments to require rents for the use of local rights-of-way; to negotiate agreements with providers that fit the needs of the community; to enter into

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<sup>98</sup> The public rights-of-way have two critical characteristics: (i) they are limited; and (ii) they require management and oversight. Because the rights-of-way are a scarce good, they are susceptible to overuse by self-interested market participants. See Garrett Hardin, "The Tragedy of the Commons", *Science*, Vol. 162, No. 3859 (December 13, 1968), pp. 1243-1248, available at <http://www.sciencemag.org/cgi/content/full/162/3859/1243>. The public rights-of-way also require careful planning and oversight to eliminate potential negative externalities. Through a market based fee and local oversight, local governments ensure that the rights-of-way are put to their optimal use.

In this respect, the public rights-of-way are akin to the FCC's licensed spectrum, which Congress has directed the FCC to auction for competitive bids. 47 U.S.C. § 309(j). The public rights-of-way are fundamentally different from unlicensed wireless spectrum that, due to advances in technology, may have very little practical limits or need for central oversight.

<sup>99</sup> IRNE was financed through the City's franchising authority over the rights-of-way for telecommunications and public utilities. The City required any telecommunications carriers who wanted to place conduit in city streets for their network to build additional conduit for the City as a condition of receiving a franchise and permit. The incremental cost of this was construction was minimal, particularly compared to the potential cost of providing the capacity as a stand-alone project at a future date. See Case Study of the City of Portland, attached as Appendix 11.

partnerships with public or private entities; and to deploy networks and/or to provide services to the public.<sup>100</sup> The Plan should highlight these policies.

Unfortunately, existing state laws sometimes impede local government deployment. First, certain state laws limit a local government's ability to control its rights-of-ways, and to negotiate with facilities providers for dedicated capacity and facilities for public use.<sup>101</sup> Similarly, a number of states have enacted statewide cable franchising laws that reduce a local government's negotiating leverage, and limit public, educational and government ("PEG") and I-Net requirements.<sup>102</sup> The Plan should call on state governments to revise these laws, and to grant local governments full authority to manage the rights-of-way; to require dedicated fiber for Middle Mile networks; and/or to mandate financial contributions combined with overlashing/joint trenching, co-location, and pole access.

Second, as discussed in the preceding section, certain state and local legal requirements restrict what services can be provided over a local network or impose procedural or substantive conditions that make it difficult or impossible for local governments to engage in communications activities that benefit their communities. The Plan should call on the states to revise these prohibitions and to expressly authorize local governments to provide service to both governmental entities and the general public. The Plan should recommend incentives to encourage states to make the needed corrections.

Third, many incumbent local exchange carriers contend they possess ancient (dating to the immediate post-civil war period of the 1870's) and perpetual authority to occupy taxpayer

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<sup>100</sup> See, e.g., Laws of Maryland 1916, ch. 456, § 5, now Md. Code Ann. of 1957, Art. 25A, § 5(B); N.Y. Transp. Corp. Law § 27; Or. Rev. Stat. Ann. § 221.515.

<sup>101</sup> See, e.g., Cal. Pub. Util. Code § 7901; Mich. Comp. Laws Ann. § 484.3108; *City of Va. Beach v. Hay*, 258 Va. 217, 221 (1999) (municipal powers limited under Dillon's Rule).

<sup>102</sup> See P. Glist, *et al.*, Practising Law Institute, Cable/Video Franchising January 2009 Edition, *Cable Television Law 2009: Competition in Video, Internet & Telephony*, Vol. 1, at 851 (2009).

owned rights-of-way without governmental permission. This usually reflects a misreading of state law. The confusion arises because certain states conferred a *corporate* franchise on telephone companies that empowered the corporations to operate within the state’s jurisdiction. But these corporate franchises did not confer the right to occupy local property for free. For example, in *Pensacola Tel. Co. v. W. Union Tel. Co.*,<sup>103</sup> the Supreme Court ruled that a Florida law granting a telegraph company the “exclusive privilege and right of establishing and maintaining lines of electric telegraph” was preempted by the federal Post Roads Act. As a result, the Court concluded that “corporations organized under the laws of one State for constructing and operating telegraph lines shall not be excluded by another from prosecuting their business within its jurisdiction.”<sup>104</sup> This *corporate* power is distinct from a perpetual property right to use local property, as the Supreme Court has confirmed.<sup>105</sup> Despite this, the issue has arisen in various Section 253 cases:

The fact that Ameritech prevailed before the district court in its contention that state law prohibits the City from subjecting it to the franchise fee charged others does not mean that the City is thereby discriminating in Ameritech's favor. Possibly, if Ameritech thus enjoys a state-mandated freedom from such fees, its competitive position is strengthened, and it might be able, in theory, to undercut its competition; if it did so, the result might be a barrier to entry by newcomers. But this would be a different issue, and TCG has not alleged that this has occurred.<sup>106</sup>

The Plan should urge the Commission to challenge such claims and support state and local governments that assert no providers have such perpetual rights.

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<sup>103</sup> 96 U.S. 1 (1877).

<sup>104</sup> *Id.* at 9.

<sup>105</sup> *City of St. Louis v. W. Union Tel. Co.*, 148 U.S. 92, 100 (“It is a misconception, however, to suppose that the franchise or privilege granted by the act of 1866 carries with it the unrestricted right to appropriate the public property of a state.”); *id.* at 99 (“Now, where there is this permanent and exclusive appropriation of a part of the highway, is there in the nature of things anything to inhibit the public from exacting rental for the space thus occupied?”).

<sup>106</sup> *TCG Detroit v. City of Dearborn*, 206 F.3d 618, 625 (6th Cir. 2000).

b) *Federal Policies*

The Plan should also address how anchor institution networks are affected by federal policy. The FCC's recent cable franchising orders were enacted as a means to facilitate competitive entry into local cable markets.<sup>107</sup> But the FCC has undermined other important policy interests, including broadband deployment.<sup>108</sup> In particular, the FCC's rules have severely limited the ability of local governments to deploy and expand broadband networks by capping the public, educational and government ("PEG") and I-Net requirements that a new entrant must provide.<sup>109</sup> The Plan should change this. It should recognize that I-Nets are essential building blocks for local anchor institution networks; and should explicitly recognize that local governments have the authority to require I-Nets of communications providers.<sup>110</sup>

The Plan should also call on Congress to revise Section 224, 47 U.S.C. § 224, to allow local governments to gain access to poles and other facilities on the same basis as commercial providers. Indeed, local governments should pay the lowest available rates; this is eminently fair and reasonable, because utility poles and conduits are so often located in rights-of-ways owned or controlled by the local government.

The Plan should also urge the FCC and the courts to continue to properly interpret Section 253 of the Communications Act, 47 U.S.C. § 253. Section 253 provides that "[n]o State or local statute or regulation, or other State or local legal requirement, may prohibit or have the effect of prohibiting the ability of any entity to provide any interstate or intrastate

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<sup>107</sup> *In re Implementation of Section 621(a)(1) of the Cable Communications Policy Act of 1984 as amended by the Cable Television Consumer Protection and Competition Act of 1992, Report and Order and Further Notice of Proposed Rulemaking*, FCC 06-180, MB Docket No. 05-311, 72 Fed. Reg. 13189, 22 FCC Rcd. 5101 (March 21, 2007); *Second Report and Order*, FCC 07-190, MB Docket No. 05-311, 72 Fed. Reg. 65670, 22 FCC Rcd. 19633 (November 23, 2007).

<sup>108</sup> Local governments continue to challenge the premise and accuracy of the information the FCC relied on in *First* and *Second Orders*, *Id.* See *NATOA et al.*, Petition for Reconsideration and Clarification, MB Docket No. 05-311 (Dec. 21, 2007).

<sup>109</sup> 22 FCC Rcd. 5101 at ¶¶ 109-120.

<sup>110</sup> See Discussion of I-Nets, *supra* Section IV-A.

telecommunication service.”<sup>111</sup> The statute also expressly protects “the authority of a State or local government to manage the public rights-of-way or to require fair and reasonable compensation from telecommunications providers, on a competitively neutral and nondiscriminatory basis.”<sup>112</sup> Certain carriers have urged the courts and the FCC to find that a “prohibition” of the ability to provide service can be established with only the most minimal of showings. The courts and the FCC have repeatedly rejected these efforts.<sup>113</sup> Most recently, the Solicitor General, in a brief joined by the FCC, confirmed that the Eight Circuit and Ninth Circuit had properly rejected claims brought by Level 3 and Sprint that were based on a misreading of Section 253.<sup>114</sup>

But the baseless claims continue. Time Warner Telecom of Oregon and Qwest Communications Corp. recently argued that Section 253 barred the City of Portland from using IRNE to provide telecommunications service to public schools and other governments. The district court rejected the claim, finding that Section 253 does not apply at all because IRNE does not “regulate[ ] . . . or impose[ ] legal requirements on plaintiffs.”<sup>115</sup> The Ninth Circuit also held that Section 253(a) does not preempt the City’s in-kind requirements.<sup>116</sup> Most recently, Level 3 filed a Petition for Declaratory Ruling urging the FCC to use Section 253 to preempt contracts that Level 3 itself (or, more accurately if legally irrelevant, its predecessor-in-interest) entered into with the New York State Thruway Authority (“NYSTA”) nearly a decade ago.<sup>117</sup> These

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<sup>111</sup> 47 U.S.C. § 253(a).

<sup>112</sup> 47 U.S.C. § 253(c).

<sup>113</sup> *Level 3 Commc’ns v. City of St. Louis*, 477 F.3d 528 (8th Cir. 2007); *Sprint Tel. v County of San Diego*, 543 F.3d 571 (9th Cir. 2008) (*en banc*); *In re Cal. Payphone Ass’n*, 12 FCC Rcd. 14191, 14208-10 ¶¶ 37-42 (1997).

<sup>114</sup> Brief for the United States as Amicus Curiae, Case Nos. 08-626, 08-759 (S. Ct. May 2009).

<sup>115</sup> *Time Warner Telecom of Oregon, LLC v. City of Portland*, No. 04-1393-PA, slip op. at 16 (D. Or. Mar. 8, 2006).

<sup>116</sup> *Time Warner Telecom of Oregon, LLC, v. City of Portland*, No. 06-36023, slip. op. at 4 (9th Cir. Apr. 30, 2009), *petition for cert. filed* Sept. 8, 2009 (No. 09-309).

<sup>117</sup> Level 3 Petition, Docket No. 09-153 (July 23, 2009).

contracts granted Level 3 additional rights to access and use NYSTA's longitudinal rights-of-way and the network on that property.

To provide more certainty to state and local governments as they deploy broadband networks, the FCC should put an end to these baseless Section 253 claims. In 1999, the FCC declined to provide such guidance when the state of Minnesota asked the FCC to declare that its exclusive agreement with a developer to construct a fiber optic transport network would not run afoul of Section 253.<sup>118</sup> However, the FCC indicated that “depending on how the Agreement is implemented, the potential competitive effects that fuel our concerns may be largely or wholly ameliorated.”<sup>119</sup> The FCC should confirm that a local government does not “prohibit” the ability of any entity to provide service simply by deploying its own network.

**B. The National Broadband Plan Should Adopt Policies To Enable the Deployment of New Local Networks.**

The Plan should also adopt policies to enable the deployment of new local networks. To do so, the FCC must recognize why local government networks similar to those discussed in these comments have not yet been replicated in every community across the country.

Commenters submit that, in addition to the funding challenges and the state and federal policy barriers discussed above, many local governments often lack the personnel and institutional knowledge to operate and maintain such networks, at least when first faced with the task. The Plan should address this problem by finding ways for new participants to overcome the initial hurdles.

To do this, the Plan should call for the development and funding of Local Broadband Network Institutes, on a state-by-state basis, which would bring together the best local practices

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<sup>118</sup> *In re Petition of the State of Minnesota for a Declaratory Ruling Regarding the Effect of Section 253 on an Agreement To Install Fiber Optic Wholesale Transport Capacity in State Freeway Rights-of-Way*, 14 FCC Rcd. 21697 (1999).

<sup>119</sup> *Id.* at 21700 ¶ 4.

regarding these local networks. These institutes could provide oversight regarding the integration of local networks across jurisdictions, and facilitate interconnection with Last Mile providers. The institutes could also develop model agreements, ordinances, and franchising documents so that local governments would not need draft them on their own. The institutes could also work with state legislatures to address the Plan's calls for policy changes.

**VI. BROADBAND DEPLOYMENT WILL NOT BE ADVANCED BY INFRINGING ON THE AUTHORITY OF LOCAL GOVERNMENT TO MANAGE, AND RECEIVE FAIR AND REASONABLE COMPENSATION FOR THE USE OF, THE PUBLIC RIGHTS-OF-WAY.**

Rights-of-way are essential to wireline communications networks. At the same time, rights-of-way are the most valuable asset owned and controlled by the government.<sup>120</sup> Rights-of-way are limited real estate assets which are must be managed for their highest and best use. Otherwise, they will be mis-used, mis-allocated, and the society will be poorer for mishandling.

The Commenters ask the Commission to keep the following fundamental points in mind as the Broadband Plan is written:

1. There is no relationship between broadband deployment and right-of-way fees. Communities which take the most active role in charging fees and managing the rights-of-way have the most competition.
2. Appropriate right of way management is essential, whether or not the local government chooses to operate its own broadband network.
3. Local Government has no incentive to keep providers out. If there is a real promise of deployment, local authorities will often provide incentives - in the right-of-way and elsewhere.
4. Fair compensation for use of public assets in cash and in-kind furthers the Commission's goal of broadband deployment. If the local government can negotiate guaranteed build-out and in-kind benefits, everyone will benefit.

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<sup>120</sup> TeleCommUnity, "Valuation of the Public Rights-of-Way Asset," *available at*: <http://www.telecommunityalliance.org/images/valuation2002.pdf>.

**A. Right-of-Way Management Requires Balancing of Public and Private Demands.**

Public rights-of-way are essential corridors that provide a vital pathway for transportation, communications, public safety, and economic development in a community. Public rights-of-way accommodate pedestrian and vehicular traffic, street lights, traffic signals and signs, shade trees, water mains, storm and sanitary sewers, gas lines, electric wires, telephone and cable television wires. Management of public rights-of-way is therefore a process of balancing multiple public and private demands on the same property while taking into consideration the preferences of the community. Local units of government are the only entities with sufficient expertise to develop, implement and enforce right-of-way management policies for the benefit of the residents and businesses in a community. A “one size fits all” federal approach to right-of-way management for the sole purpose of accelerating the deployment of broadband services is short sighted and infringes on the crucial role that local government plays in protecting this vital public resource.

For decades public right-of-way management at the local level has effectively and efficiently balanced the need to allow private entities to install new facilities while also protecting existing public and private infrastructure. Recently, local governments have been encouraging broadband service providers to deploy new systems in their communities to meet the growing demand for broadband capacity. Virtually every city in the country desires a fiber-to-the-premise system that will compete to deliver high speed broadband services to businesses and residents at reasonable costs. Local governments recognize that broadband is vital to the economic well being of the community and without adequate broadband facilities the community may be unable to meet the future demands of residents and businesses.

While deployment of fiber-rich broadband systems is a goal shared by all, the disruption and financial impact these system installations can have on public rights-of-way and existing public and private infrastructure is substantial and cannot be overlooked. Right-of-way disruption imposes financial burdens that should not be borne by a local government or its taxpayers but rather by the broadband service provider that stands to profit. Examples of the financial burdens on local government resulting from broadband installations include the:

1. initial disruption caused by system construction;
2. reduced value of the rights-of-way following multiple street cuts;
3. difficulty accessing municipal facilities in an already crowded right-of-way;
4. ongoing maintenance and oversight related to right-of-way occupation; and
5. the added cost of right-of-way replacement given the presence of additional facilities that must be periodically relocated.

Local governments are the only entities that can adequately monitor and ensure rapid, safe and efficient deployment of broadband technologies when they are being installed on a neighborhood-by-neighborhood level in local rights-of-way. Federalization of right-of-way management would not serve the public interest but would eliminate the vital local oversight role of local governments. To protect the health and safety of communities, as well as to protect the existing facilities of local government and other public and private right-of-way users, the Commission must ensure that local governmental authority is not compromised. Local officials must retain the authority to ensure that existing public and private infrastructure in the rights-of-way remains safe and undamaged and that future providers have a fair opportunity to access the right-of-way for the provision of new competitive services.

**B. Local Governments Must be Permitted to Obtain Fair and Reasonable Compensation for the Use of the Public Rights-of-Way.**

Local governments have a duty not to give away public property for private use without just compensation. In the same way that local governments charge rent when private companies use a public building to make a profit, and the federal government auctions spectrum for the use of public airwaves or requires compensation when communications towers are located on federal lands, local governments ensure that the public's assets are not wasted by charging fair and reasonable compensation for use of the right-of-way. The community investment in public rights-of-way is a significant expenditure of taxpayers' funds. Accordingly, local governments have an obligation to manage the rights-of-way as trustees for the public. There is a fiduciary duty to protect the public's investment and to ensure that the use of municipal rights-of-way for private purposes provides a fair return to taxpayers.

As fiduciaries for the public, local officials must ensure the public is compensated when private entities use public land. Local governments should receive fair and reasonable compensation above these direct costs for the use of a public asset by private, profit-seeking entities. In other words, local governments should receive the market value for the use of the right-of-way. Utilities such as gas, electric and water use the right-of-way but are limited to a regulated rate of return on the services offered to residents as established by a state regulatory commission. Private users of the right-of-way have no regulated rate of return but are free to charge whatever the market will bear for the services offered over their systems. Unlike utilities, not all residents and businesses in a community will choose to purchase a private user's services.

If the local government is not charging the market value of the occupation of the right-of-way, the taxpayers would then be essentially subsidizing the shareholders of private companies.<sup>121</sup>

Communities that do the best job of fulfilling these fiduciary duties also achieve the most competitive results. In an important study, submitted as expert testimony in a lawsuit challenging Portland's right-of-way fees, economist Alan Pearce, Ph.D., analyzed the City of Portland's telecommunications market against the markets in various other similarly situated cities, including Charlotte, North Carolina; Cleveland, Ohio; Denver, Colorado; and Kansas City, Missouri. Portland charged providers for the use of its rights-of-way, and required carriers to make "in-kind" contributions. Many of the other cities that Dr. Pearce analyzed did not impose any such right-of-way compensation requirements. Yet Dr. Pearce found: "An examination of the relative numbers of competitive telecommunications service providers in the comparable cities clearly demonstrates that the city of Portland has a relatively large number of competitive providers. . . ."<sup>122</sup>

Indeed, there is no empirical evidence that right-of-way fees influence the decision to deploy or not to deploy broadband networks. For one reason, the fees are relatively insignificant compared to the total costs of the companies obtaining their own easements from the abutting property owners. Second, the fees represent a small percentage of the construction and operating costs. Notwithstanding claims to contrary,<sup>123</sup> there is no evidence that right-of-way fees are exorbitant, or in excess of the true value conveyed to the provider. The information available to

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<sup>121</sup> See Report of Ed Whitelaw, attached hereto as Appendix 12, at 1 ("Charging a fee to access the City's ROW ensures that the ROW will be used efficiently. The closer the fee approximates the relevant market price, the more likely the ROW will be used in an economically efficient manner, which is a fundamental criterion by which economists evaluate the performance of a market and overall social welfare.")

<sup>122</sup> Expert Report of Alan Pearce, Ph.D. ("Pearce Report"), *Time Warner Telecom of Oregon, LLC v. City of Portland*, CV 04-1393 (D. Or.), attached hereto as Appendix 13.

<sup>123</sup> Commission Meeting Slides from Open Meeting, 50, Sept. 29, 2009, <http://www.fcc.gov/openmeetings/092909slides.pdf>

local government is directly contrary.<sup>124</sup> And, where the fees are managed and imposed in a consistent manner, they are a cost of doing business that is predictable and certain.

### **C. Local Government Management of the Rights-of-Way Does Not Adversely Impact Broadband Deployment.**

The Commission already has ample evidence before it establishing that local right-of-way and zoning requirements do not have any appreciable adverse effects on landline or wireless broadband deployment or adoption. As the Commission's own data and the arguments of industry in this proceeding make clear,<sup>125</sup> there has been considerable broadband deployment in most, if not all, of our nation's metropolitan urban and suburban areas, while broadband deployment in our nation's less populous, more rural areas, lags considerably behind. Yet it is those very same metropolitan areas where right-of-way compensation and management requirements, as well as local zoning requirements, tend to be most rigorous. In most rural areas, by contrast, local right-of-way and zoning requirements tend to be far more lenient and, in many cases, non-existent. The conclusion is obvious: Any further preemption of local right-of-way and zoning requirements, beyond the case-by-case adjudication that has occurred pursuant to Sections 253 and 332(c)(7), would do nothing to promote broadband deployment in the areas that need it. It would instead merely provide the industry with windfall protection from local laws that other industries must comply with, while leaving rural areas no better off in terms of broadband deployment than they are now.

This same pattern – greater broadband deployment in areas with more rigorous right-of-way and zoning requirements and lesser broadband deployment in areas with less rigorous right-

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<sup>124</sup> See Pearce Report, *supra* note 122.

<sup>125</sup> See, e.g., Verizon Reply Comments, *A National Broadband Plan for Our Future*, DN 09-51 ("NBP"), at 5-9 (filed July 22, 2009); Comcast Reply Comments, *NBP*, at 3-12 (filed July 21, 2009); FCC National Broadband Plan, *September Commission Meeting: 141 Days Until Plan Is Due*, Slides 41 & 44 (Sept. 29, 2009).

of-way and zoning requirements – also proves that other cost and demand factors play a far greater role in broadband deployment and adoption than local right-of-way and zoning requirements and thus that the Commission would better achieve its goals by focusing on those other cost and demand factors rather than paying heed to the industry’s self-serving pleas for special and privileged protection from local laws.

Because, as noted above, preemption of local right-of-way or zoning requirements is likely to yield no benefit at all in terms of broadband deployment or adoption in those areas of the nation (primarily rural) that are in most need of help. Such preemption would serve only to harm the vital interests of localities and their residents that are served by such requirements. Similarly, further preemption of local zoning and land use laws for the supposed purpose of promoting broadband deployment would serve only to undermine the important and uniquely local interests served by land use laws, and do grave injury to our system of federalism, without providing any genuine offsetting benefits in terms of broadband deployment or adoption.

#### **D. Local Franchising Authority**

Local franchise build-out authority has been critical to the extensive deployment of cable infrastructure that exists today. The cable industry has consistently claimed that cable’s broadband infrastructure is capable of delivering service to the vast majority of American citizens.<sup>126</sup> This widespread availability is the direct result of local authority to manage the rights of way and to require the build-out of cable systems throughout their community not just in the most affluent areas..

Quite simply, local authority over broadband deployment is a necessary policy to ensure broadband access to all Americans, not just the wealthy. Again, local experience with cable

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<sup>126</sup> See the study conducted by the National Cable & Telecommunications Association, available at <http://www.ncta.com/StatsGroup/Availability.aspx> (citing Cable High Speed Internet Availability in U.S. Households at 92%).

franchising is instructive on the issue. The 1984 Cable Franchise Policy and Communications Act,<sup>127</sup> provided local governments with the authority to protect local taxpayers by requiring reasonable build-out of cable plant to “all households in the franchise area.”<sup>128</sup> By insisting that cable operators build-out cable plant throughout the community, local governments ensured that cable modem service provided over such networks would be available at the homes of millions of Americans.

Contrary to the industry’s empty assertions,, local authority to require build-out through franchising has led to the successful deployment of more advanced technology to more citizens than any other mechanism. For DSL, the regulatory push for build-out came from state Public Utility Commissions. But the experience was similar to local governments pushing cable operators for build-out of cable networks. Even though the mechanisms used for DSL build-out were different than those used for cable build-out, the result was the same. Like cable broadband, most Americans now have DSL available for use in their homes and businesses.

When build-out has not been required, broadband deployment has been limited to densely populated urban areas and wealthy suburbs. This practice has been common place when local authorities have not been permitted to require build-out. Reasonable investment planning incents a private provider to maximize its return on invested capital. If the heavy capital investment also has declining cost characteristics as usage grows over time, then there is little threat of competitive entry and exit. As a result, the investor can maximize return on invested capital by NOT building the entire market, including parts of the market that might have a positive return on capital. In simple terms—if the investor can capture 80% of the potential revenues with 20% of the investment otherwise required to build the entire market, there is no economic incentive to

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<sup>127</sup> 47 U.S.C. § 541(a)(4)(A). Reasonable exceptions exist for very low population density areas.

<sup>128</sup> *Id.*

build-out the rest of the market. This results in bypass of poorer, minority, and rural areas that would otherwise be provided service if build-out was a regulatory requirement in return for the privilege of serving the initial 20%.

The clearest, but certainly not the only, example of this behavior has been AT&T's deployment of its U-Verse service. A study of AT&T's video build-out practices in Michigan was conducted by MI-NATOA.<sup>129</sup> In a study released earlier this year titled "The Ten Disappointments of Cable Deregulation in Michigan,"<sup>130</sup> MI-NATOA found that "[m]any communities that issued a video franchise to AT&T nearly two years ago are still waiting for AT&T's build-out to be complete." The report vividly examined the slow build-out in one township over the course of 20 months after the franchise was issued.<sup>131</sup> Two months after the franchise was issued only 5 percent of the community had build-out. Six months after the franchise was issued, only 20 percent had build-out; and, a full twenty months later only 35 percent had build-out. AT&T's actions are just the most recent illustration of our point that only local governments can be trusted to look out for the best interest of all of their citizens.

#### **E. Taxation**

We note that the Public Notice does not raise any questions about state and local taxes, and we believe that the Commission was wise not to do so. As we pointed out in Reply Comments in this docket,<sup>132</sup> there is no evidence that state and local taxes have had any discernible adverse impact at all on broadband deployment or adoption, and there is considerable evidence to the contrary. Moreover, any federal preemption of such state and local tax authority

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<sup>129</sup> NATOA's state chapter in Michigan, <http://www.mi-natoa.org>.

<sup>130</sup> Available at <http://www.makecablebetter.org>.

<sup>131</sup> See "The Ten Disappointments of Cable Deregulation in Michigan, at 5, chart 2, available at [http://www.makecablebetter.org/FINAL\\_The\\_Ten\\_Disappointments\\_of\\_Cable.pdf](http://www.makecablebetter.org/FINAL_The_Ten_Disappointments_of_Cable.pdf).

<sup>132</sup> See, pp. 20 through 31 and Appendices B through E of NATOA's Reply Comments dated July 21, 2009.

would have dire fiscal consequences for state and local government budgets that are already stressed to the breaking point.

**F. The Commission Should Preserve State and Local Land Use and Zoning Authority Over Wireless Siting.**

State and Local authorities are in the best position to make reasoned decisions about wireless facility siting. The Commission should support local authority to conduct a meaningful review of a wireless facility application as no other entity can be responsive to the needs and interests of the residents and businesses in the community.

Meaningful review must include the ability to review technical aspects of an application to assure compliance with public safety requirements, and the ability to receive input from affected community members regarding issues such as aesthetics and property values. Accepting industry arguments for strict time limits or other federal preemption of state and local zoning authority would force local governments to render decisions without input from those individuals who would be most affected by an application for wireless facility siting.

Requiring action on wireless facility applications within a specific time frame would hinder local governments' ability to compile a written record to support application approval or to fully explore alternatives to address concerns raised by the public. The ability to prepare a record of "substantial evidence" to support a local decision requires time. The amount of time may vary depending upon the size and level of sophistication of the local government. The accuracy and thoroughness of such a record cannot be sacrificed for the sake of private commercial interests. Nor should the concerns and interests of local residents and businesses be sacrificed simply because a wireless provider has determined that a particular location best fits its commercial needs without input from the community.

It also would be inappropriate to preempt “state” zoning authority, which controls the rights delegated to local government. Preempting each state’s regulatory process and replacing it with a federal zoning process would be in direct contravention of long held principles of land use law. The United States Supreme Court has specifically counseled against interfering in the relationship between a state and its subdivisions in an area such as land use absent a clear signal from Congress allowing such interference.<sup>133</sup> Congress has already determined that local governments are to treat wireless services providers like any other land use applicant.<sup>134</sup> The Commission should refrain from policies that would limit or affect local authority over the placement, construction and modification of wireless facilities.

The Commission should preserve state and local land use and zoning authority over wireless siting by maintaining the balance struck by Congress in the 1996 Act. Courts have repeatedly held that the language and legislative history of §332(c)(7) reflect Congress’ decision to reject a national approach allowing states and local governments to remain free to make siting decisions. As Justice Breyer, joined by Justices O’Connor, Souter and Ginsburg, observed:

Congress initially considered a single national solution, namely, a Federal Communications Commission wireless tower siting policy that would pre-empt state and local authority. . . . But Congress ultimately rejected the national approach and substituted a system based on cooperative federalism. . . . State and Local authorities would remain free to make siting decisions. They would do so, however, subject to minimum federal standards - both substantive and procedural - as well as federal judicial review.<sup>135</sup>

The Commission should preserve the balance struck by the 1996 Act, which allows for wireless facility siting applications to be assessed on a case-by-case basis against each particular

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<sup>133</sup> See *Gregory v. Ashcroft*, 501 U.S. 452 (1991).

<sup>134</sup> See text and legislative history of § 332(c)(7).

<sup>135</sup> *City of Rancho Palos Verdes v. Abrams*, 544 U.S. 113, 128 (2005) (Breyer, J., joined by O’Connor, Souter & Ginsburg, JJ., concurring) (Citation to 1996 Conference report omitted) (emphasis added).

locality's own general land use and zoning application procedures. While the timing and standards may vary slightly, requests will be determined community-to-community based on each local jurisdiction's procedures for handling similar non-wireless land use or zoning applications. Accepting the industry argument to usurp local zoning authority would improperly transform the Commission into a federal grantor of local zoning applications, clearly in conflict with the 1996 Act as well as the Tenth Amendment.

## **VII. CONCLUSION**

In conclusion, a National Broadband Plan must put our nation on the path towards development of next generation broadband networks to all Americans so that all our communities can serve their residents more effectively and compete in a global economy. As we have demonstrated local governments are well positioned to play a critical role in the National Broadband Plan and bring America back to the forefront of broadband leadership. Local governments use broadband for internal services, citizen engagement, and economic development. But, local governments are more than just users of broadband services; they also deploy broadband networks and are innovators in the use of broadband technology. Local governments are in the best position to spur the development of middle-mile and second-mile infrastructure. The National Broadband Plan should recognize local government broadband efforts and adopt policies that will enhance our ability to contribute towards solving America's broadband deficit. We look forward to continuing to work with the Commission on the development of this plan.

Respectfully submitted,

The National Association of Telecommunications Officers and Advisors

The National League of Cities

The United States Conference of Mayors

The National Association of Counties

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## **APPENDIX 1**

**“Binghamton, New York: Alvarion Submission for NATOA  
Community Broadband Awards 2009”**



## The City of Binghamton, NY

Alvarion's video surveillance solution enables improved public safety and security

“ *Alvarion's high-performance and cost-effective wireless solution has answered all of Binghamton's security needs and enabled us to substantially improve public safety throughout the city.* ”  
Sergeant Michael Whalen, Crime Prevention Project Manager,  
Binghamton Police Department

### About The City of Binghamton

The City of Binghamton, located in the southern tier of New York in the US, is the county seat of Broome County and the principal city and cultural center of the Greater Binghamton region. Situated at the confluence of the Susquehanna and Chenango rivers, Binghamton is approximately 11 square miles in area and boasts a population of 47,380. The Binghamton Police Department (PD) is constantly seeking ways to reduce crime in order to enhance public safety and security for its citizens.

### About Our Partner Integrated Systems

Integrated Systems is a New York State contractor offering consulting and implementation services that incorporate an array of Wide Area Network technologies. The company has deployed wireless broadband networks throughout New York and its designs provide blueprints for the voice, video and data needs of counties and local governments throughout the state.

### The Challenge

As part of their plan to improve public safety, Binghamton PD increased police presence on both foot and mobile patrols. After the city received a government grant of almost half a million dollars, they decided to deploy a video surveillance network in neighborhoods and business areas and sought a high-performance, cost-effective, easy-to-deploy and scalable video surveillance network.

This network was to be deployed in an environment which includes an urban setting with a dense mature tree canopy and had to support both the licensed 4.9 GHz and license-exempt 5.4 GHz frequency bands.



Binghamton  
Street Surveillance

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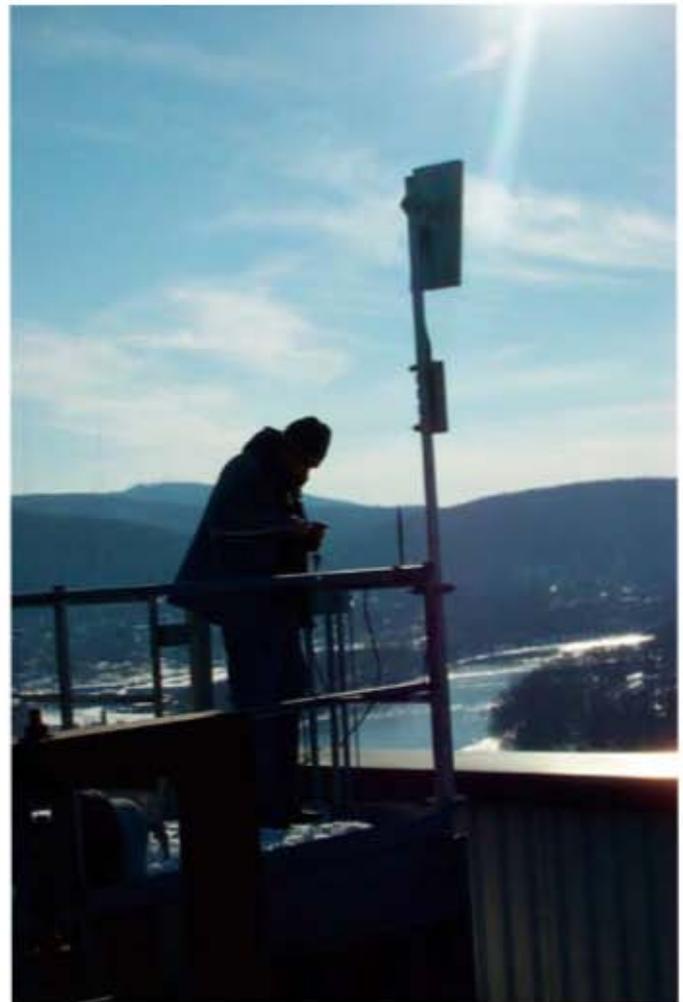
## The Solution

Integrated Systems, who were selected to implement the network, created a Point-to-Multipoint (PTMP) RF model to enable Binghamton PD to better understand their solution. The company then defined bandwidth, throughput and storage requirements and conducted a propagation and microwave path analysis to support topographic overlays and spectrum analysis.

Integrated Systems selected Alvarion's BreezeACCESS VL product line to build the network because it is carrier-class, reliable, cost-effective and provides a variety of advantages including security, support for a range of frequencies and high-availability for Integrated Systems designed networks already deployed in New York. The PTMP network supports several IP-based video cameras that are deployed in locations around the city where crime rate is high. Images are then transmitted back to a control center and can also be viewed from any police workstation with privilege. In addition, the network features real time remote monitoring through SNMP and real time support via VPN from Rochester, as well as centralized recording and archiving.

## The Result

The impact of this video surveillance network has been significant and Binghamton PD has reported a substantial decrease in criminal activity. Within six months total crime rate dropped 6% and car thefts went down by 26% in comparison to the previous year. Furthermore, Alvarion's flexible and scalable network can be expanded to enable additional services as the need arises and as city budgeting allows.



*Alvarion Antenna*

## [www.alvarion.com](http://www.alvarion.com)

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## About Alvarion

Alvarion (NASDAQ: ALVR) is the largest WiMAX pure-player with the most extensive WiMAX customer base and over 250 commercial deployments around the globe. Committed to growing the WiMAX market, the company offers solutions for a wide range of frequency bands supporting a variety of business cases. Through its OPEN WiMAX strategy, superior IP and OFDMA know-how, and ability to deploy end-to-end turnkey WiMAX projects, Alvarion is shaping the new wireless broadband experience.

## **APPENDIX 2**

### **“Case Study of OpenCape, Massachusetts Network”**

## OpenCape: Regional Public and Commercial Middle-Mile Network

The OpenCape project<sup>1</sup> in southeast Massachusetts presents a model that combines public interest, ownership, and control with licensed private operation. This model is well suited to regions where some broadband services are available, but broadband is not ubiquitous, and anchor institution needs are not met due to a lack of capacity or high cost.

The non-profit 501(c)(3) OpenCape Corporation represents the interests of the region and will own the network. Its board is composed of anchor stake holders from the county, towns, public safety, healthcare, K-12 and higher education, research institutions, and economic development interests. The for-profit RCN Metro Optical Networks (RCN) will be licensed to operate the OpenCape network under a 25 year indefeasible right to use (IRU). RCN will pay OpenCape both a flat fee and a percentage of RCN's gross

revenues. OpenCape will use the revenues it receives from RCN to address its operating costs, to replace, repair, and expand the network over time, and to aid anchor institutions in developing applications that will benefit the region.

OpenCape will consist of a core fiber backbone on Cape Cod with extensions to two major regional network connection centers in Providence and Brockton, numerous fiber optic laterals extending off of the backbone, a high capacity optical transport system, a microwave radio overlay, and a regional collocation center. All of these elements combine to provide a robust, high capacity communications infrastructure. Fiber optic based services will range from traditional bandwidth based offerings to dedicated wavelengths of light to dark fiber leases. The OpenCape collocation center will serve as the focal point of network operations and provide leased collocation space for public and private organizations in the region.



The cost to construct the OpenCape system is \$40 million. OpenCape Corporation has applied to the National Telecommunications and Information Administration (NTIA) under its authority to grant funds under the "Broadband Technology Opportunities Program" (BTOP) for \$32 million. OpenCape has secured commitments for \$8 million in matching funds from the Massachusetts Broadband Institute (\$5 million), RCN Metro Optical Networks (\$2 million), and Barnstable County (\$1 million).

<sup>1</sup> NATOA thanks Dan Gallagher of OpenCape for this case study.

**Benefit** – The OpenCape network will reduce the barriers to entry for last mile providers by providing a middle mile solution that delivers multiple points of interconnection, at speeds suited to the specific provider, at rates that allow them to operate in a competitive market place over time across the entire region.

OpenCape also provides the technologies, speeds and redundancy required of a varied anchor institution community and other enterprises at costs significantly lower than are available today at commercial rates, with a further 15% discount for non-profits, and 25% discount for government anchor institutions.

OpenCape will connect over 70 anchor institutions to the network using laterals as part of its initial build-out. The OpenCape path was specifically selected to permit many additional anchor institutions the ability to rapidly obtain service from the network. In addition, the OpenCape network will support expansion of services into the communities of the South Coast where unemployment in Fall River and New Bedford is nearly 15 percent.

**Partners** – The many anchor institutions of the region, such as the world-class research institutes of Woods Hole, regional medical facilities, public colleges, school districts, municipalities, and libraries have participated fully in the definition of need and the development of solutions. Barnstable County has partnered with OpenCape and identified the network's construction as a top priority for meeting goals such as the creation of a regional umbrella service model for towns and school districts in the region. OpenCape's ongoing interactions with executive departments of the state government are also ensuring that the Commonwealth's direct interest in building a statewide network are addressed.

**Viability** – Comprehensive support across a broad spectrum of stake holders, three years of extensive work on the project, and financial analysis, clearly indicate the viability of this model. It is widely supported throughout the region and the state. One hundred percent of the towns and school districts on Cape Cod and the Islands have submitted letters of support for the effort. Seed funding was provided by Barnstable County, the John Adams Innovation Institute, the Massachusetts Broadband Institute, Woods Hole Oceanographic Institution, and Cape Cod Community College. The Cape legislative delegation successfully increased the Broadband Bill Incentive Fund by \$5 million in the Massachusetts legislature that will be used as a portion of the match in the BTOP application. The federal legislative delegation has provided letters of support, as well as essential liaison with federal agencies such as the Army Corps of Engineers.

**Sustainability** – A comprehensive market analysis, business plan, and financials have been developed by professionals that clearly indicate the long term viability of OpenCape. Essential to the long term sustainability of the system is the inclusion of a profit driven operating partner, a capital replenishment plan, and mechanisms to ensure an open access competitive network. OpenCape, and in turn its operating partner, RCN Metro Optical Networks (RCN), recognize that a sustainable business model for

OpenCape is in large part dependent on expanding market. Attracting new last mile providers and aiding incumbents in the expansion of services, across a broad range of technology options, is key to OpenCape's sustainability.

**Scalability** – The OpenCape network is designed to be easily upgraded and expanded. Fiber optic based services will range from traditional bandwidth based offerings to dedicated wavelengths of light to dark fiber leases. The core equipment can be in-service upgraded to support both a larger number of wavelengths and higher data rates. By building laterals using fiber optic cable instead of copper lines the project is ensuring that there is ample expansion capability at every location served. The microwave backup system for public safety is also rapidly upgradeable with the swap of end point equipment. The regional collocation center is integral to the network and is designed to provide services in a modular manner with the quick swap of equipment and rapid patching to create wide area networks and aggregated services.

**Capital Costs** – OpenCape specifically selected its operating partner, RCN Metro Optical Networks (RCN), in advance of submitting its BTOP application because there is great advantage to planning the network with an experienced builder and operator of middle mile networks. This proved essential in designing and estimating the cost of building and operating the network. Prices were determined by canvassing several vendors with whom RCN has had experience with in the past.

**Financials** – OpenCape developed a business plan that included financials for both the non-profit OpenCape Corporation and its licensed operating partner. In this model the non-profit owner must understand the financials of the licensed partner as well as its own financials. A third party professional firm was contracted to develop these financials for both capital and operating budgets.

**Efficiencies** – The creation of a regional middle mile open access network offers efficiencies in both capital outlay and operating costs for anchor institutions and private last mile providers. OpenCape's extensive long term contact with regional stake holders has ensured their needs were included in the network design. None of these stake holders alone could build the infrastructure they need, but their needs can be addressed within a comprehensive regional middle mile project. For example:

- The Commonwealth of Massachusetts is planning to create a state-wide network for all government services it provides. OpenCape will provide the southeast Massachusetts portion of that network.
- The regional power provider, NSTAR, seeks to develop and expand smart grid applications. OpenCape is negotiating pole rights with NSTAR in exchange for fiber strands.

Operating costs are also reduced significantly for both commercial and public entities. A simple two tiered pricing model for middle mile broadband services - on-Cape and off-Cape - was developed. The pricing is approximately 50% less than the currently available middle mile services offered on Cape Cod. These prices will attract last mile

providers to Cape Cod and allow them to develop a sustainable, long term business model. Anchor institutions and other enterprises will also benefit substantially from these lower rates. In addition to these highly reduced commercial prices, there is a 15 percent discount for non-profit organizations, and a 25% discount for government anchor institutions.

**Building Blocks** – A large capacity middle mile network in the region offers opportunities for continued growth and expansion. For example, OpenCape is analyzing undersea fiber to Martha's Vineyard as a follow on expansion of the OpenCape network.

## **APPENDIX 3**

**“Case Study of the District of Columbia Network”**

## DC-NET: District of Columbia Anchor Network

DC-NET<sup>1</sup> was completed in 2007 and serves as a metropolitan-area network to provide data and voice services for the use of the District of Columbia Government and public educational institutions. By the end of FY2009, DC-NET has 267 lit sites with fiber, including most District government sites. This marks an increase from 135 lit sites in 2007. It currently provides:

- High-speed data network transport and interconnection services;
- Full-featured wireline voice service; and
- Network and application deployment consulting services.

DC-NET is responsible for providing the highest standard of network reliability and for responding to the needs of District agencies. The network was designed to maximize its reach to all District facilities, reliability, and flexibility to serve the diverse, separate needs of agencies.

In order to provide these services, DC-NET owns and operates the following:

- Outdoor fiber optic cable plant;
- Network electronics and management systems;
- Voice switches and management systems; and
- Telephones.

DC-NET has internal staff that plan, design, install, operate, and maintain systems and provide help desk support. DC-NET also maintains contracts with the private sector for tasks it has determined are better managed by contractors, such as fiber optic construction, fiber optic maintenance, and specialized professional services.

DC-NET bills the entities it serves for services according to published rates and fees.

- **Benefit.** DC-NET offers the District both cost and functional/ safety benefits that commercial carriers cannot offer because of its singular focus on public safety, education, and other applications. Its fiber optics enable the District to maintain end-to-end control of the entire network, providing flexibility in adding and upgrading sites and services and providing a minimum quality of service throughout the network. DC-NET can cost-effectively add new sites to diversely routed fiber optic rings because of widespread existing fiber infrastructure, business processes, and its focus on District government and school customers. The District can achieve security on the network, because it owns and controls all fiber and electronics. Densely constructed fiber optic rings and more than 30 redundant hub sites throughout the District provide the basis for a highly reliable service.
- **Partners.** DC-NET serves more than 76 District agencies. Its partners include:
  - Department of Health (DOH);
  - DC Public Schools;
  - DC Public Libraries;

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<sup>1</sup> NATOA thanks Tegene Baharu of DC-NET for this case study.

- Office of Unified Communications (OUC);
  - Metropolitan Police Department (MPD); and
  - University of District of Columbia (UDC).
- **Security and Control of Infrastructure.** The District can assure security on the network because it owns and controls all fiber and electronics. DC-NET systems are documented and under the end-to-end control of DC-NET. Electronics at the site are locked and only accessible to DC-NET. All hub sites and the associated fiber terminations and electronics are under the control of DC-NET. In the event of a security alert or regulatory change (such as more strenuous HIPAA requirements), the District can rapidly increase its level of physical security at DC-NET facilities and efficiently make necessary changes.
  - **Reliability.** Densely constructed fiber optic rings and more than 30 redundant hub sites throughout the District provide the basis for a highly reliable service. DC-NET offers the District demonstrably higher uptime than does Verizon because DC-NET's multiple layers of redundant architecture improve system availability. DC-NET connects all of its customers using fiber rings to the premises. Almost all of DC-NET's fiber travels through physically redundant cable pathways. Network electronics have redundant optical electronics, redundant processors, and redundant power supplies at the customer premises. At all DC-NET backbone locations, electronics are powered by UPS hardware that provide battery backup. Where available, DC-NET electronics are also powered by backup generators at user premises. In 2007, its first full year of operation, DC-NET demonstrated an almost perfect record of availability. In fact, over the course of the year, the backbone experienced no outages, and only four sites lost their connection to the network in a total of three data outages. By way of comparison, Verizon commits to no more than an average of seven hours outage per site per year. But DC-NET delivered an average of only 15 minutes outage per site per year in 2007. In 2007, of the 135 lit sites (i.e., those with active electronics), 114 were connected with redundant electronics, redundantly routed fiber paths or both, enabling fail-safe operation in the event of an electronic or fiber outage. For these reasons, DC-NET is uniquely positioned to meet redundancy and reliability requirements set by many Homeland Security initiatives.
  - **Sustainability.** As a facilities-based fiber optic service provider, DC-NET has significant resources to maintain and repair the network and to add facilities to the network. Because the District owns the fiber optic capable, it retains control to restore disrupted services, flexibility to design its network to minimize risks, and capability to cost-effectively offer customized services. Its resources include:
    - Three full-time engineers and six technicians on staff dedicated to outside plant;
    - Outside contractors to handle construction of new routes and repair of fiber damage in the public right of way;
    - An outside contractor for fiber maintenance;
    - The right to add overhead aerial cables by lashing its cables to Comcast cable strand;

- The right to add underground cables by using capacity in Verizon conduit or in conduit used by the District of Columbia;<sup>2</sup>
- Comprehensive as-built documentation of all existing DC-NET physical plant; and
- Documentation of DC-NET, District of Columbia Department of Transportation (DDOT), Comcast, and Verizon pole lines and conduit.

DC-NET pricing is designed to result in neutral operating income, thereby minimizing the cost of maintaining the network. In fact, DC-NET's annual revenues meet or exceed costs, in part because of concerted efforts over the past year to reduce operation and maintenance expenses. DC-NET's expenses are at or slightly below projected revenues collected from the District Agencies. For FY2008, the realized operational revenue was \$10.6 million and the operations and maintenance costs were \$7.6 million. For FY2009, revenue is estimated at \$12 million and operational and maintenance costs are estimated at \$8.3 million.

- **Scalability.** DC-NET represents an infrastructure asset with a lifetime of decades that is almost endlessly upgradeable and capable of supporting any number of District applications and innovative communications initiatives. Because DC-NET currently uses only a small fraction of its potential network capacity, it can readily scale with the District's needs simply by upgrading electronics. Its benefit to the District will increase with time as the District's communications needs increase. Moreover, increased demand can be accommodated rapidly; because of its broad reach, DC-NET can add service to a new District facility within five days if the facility is near fiber and within 15 to 20 days if it is not near fiber.

DC-NET offers tremendous flexibility and security owing to its control of fiber optics. DC-NET selects the quantity of fiber and route for each cable and constructs spare fiber for future use. It has detailed as-built documentation of each fiber route. With available staff and contractors, it can quickly extend fiber to new sites and has the flexibility of selecting a route that is optimized for adding new District facilities as needed. It can optimize its routes and hub site selection for the survivability of District sites in an emergency, particularly those sites most critical for emergency response.

- **Technological Configuration and Architecture.** The DC-NET cable plant is 100 percent fiber optic. It extends to approximately 310 miles across the District connecting more than 200 buildings and serving approximately 76 District agencies. DC-NET manages a 10 Gbps core fiber ring connecting three data centers and OC-48 SONET MPLS city-wide backbone of 7 metro rings (including a public safety wireless ring), 16 hub sites, and 25 distribution rings with an average of 20 sites per ring. Every location in the District is within one mile of existing DC-NET fiber rings, and most locations are no more than a few blocks from existing DC-NET fiber.

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<sup>2</sup> DC-NET Staff reports the terms of using Verizon conduit is in District of Columbia Code 34-1921.05

Standard site design provides 1 Gbps (Gigabit Ethernet)<sup>3</sup> symmetrical connectivity with the capability to increase data speed to 10 Gbps using standard off-the-shelf electronics. Further, minor customization and re-configuration of fiber plant can provide hundreds of Gbps to any given location, making it possible for any location in the District to become a data center, public safety center, technology center, or media facility.

- **Future Plans.** DC-NET has opportunities to expand, not only by serving more entities, but also by expanding the services and customer service it offers existing customers. Many DC-NET subscribers view DC-NET as an alternative to private voice and T1 data services. DC-NET must educate its partners about the total breadth of its capabilities, services, features and benefits in order to fully leverage its potential. DC-NET is in the midst of an aggressive expansion to the District's schools. Once expansion is complete, DC-NET may seek to expand its footprint to federal agencies, non-profits, hospitals, libraries, or other institutions that may not violate commercial use restrictions.

A substantial portion of DC-NET's fiber conduit and utility pole attachments was obtained through agreements with Comcast, RCN, and Verizon,<sup>4</sup> which include use restrictions. Because of these restrictions, DC-NET is used to meet public, educational and governmental communications needs, but the District does not currently lease fiber to the private sector.

### Network Efficiencies

DC-NET connects all of its customers using fiber rings to the premises.<sup>5</sup> Almost all of DC-NET's fiber travels through physically redundant cable pathways.<sup>6</sup> Network electronics have redundant optical electronics, redundant processors, and redundant power supplies at the customer premises. At all DC-NET backbone locations, electronics are powered by UPS hardware that provide battery backup. Where available, DC-NET electronics are also powered by backup generators at user premises. Such physical redundancy would be cost-prohibitive with a private vendor.

The density of DC-NET fiber rings and their location is a key technical advantage. No location in the District is more than one mile from existing DC-NET fiber rings, and 267 locations already fully functioning sites. Most unserved locations are within a few blocks of DC-NET

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<sup>3</sup> One gigabit per second equals approximately one billion (1,000,000,000) bits per second. The capacity is greater than 600 T1 circuits, 15,000 standard telephone circuits, or the service currently provided by 80 cable modem connections or 60 Verizon FiOS connections.

<sup>4</sup> Fiber obtained through the Comcast cable franchise agreement is used to create a portion of the DC-Net backbone.  
<sup>5</sup> Some of the auxiliary FEMS or MPD locations are connected over fiber spurs rather than rings. Some DCPS sites are temporarily connected over fiber spurs while ring construction is completed.

<sup>6</sup> Some DCPS locations are temporarily connected over rings that travel over collapsed routes for the last few blocks to the location. Locations served by underground fiber routes have collapsed routes from the street into the premises.

fiber. Because of this density, there is relatively low incremental construction cost to connect a new site to a ring and configure it with redundant electronics.

Indeed, DC-NET can cost-effectively and efficiently add new sites to diversely routed fiber optic rings because of widespread existing fiber infrastructure, business processes, and singular focus on District government and public school customers. It can connect a new facility within three to four days if there is fiber in proximity and within 15 to 20 days if fiber is not nearby. By contrast, Verizon indicated in discussions with the District that it can add services within 30 to 60 days for sites with fiber on premises and where TLS service exists at the local wire center (CO or POP). For other locations, Verizon requires that a site survey be performed, with time (and cost) to implement the service dependent on fiber availability to the site and determined on a case-by-case basis.

Costs of DC-NET construction are \$15,000 to \$25,000 per mile for aerial construction and \$40,000 to \$50,000 per mile for underground construction. The agency is simply responsible for the cost of purchasing and installing the equipment and the ongoing operational cost. In contrast to private vendors, there is no external monthly recurring charge for the service.

In order to obtain a comparable service to DC-NET from a private vendor, a District agency would need to purchase a customized service of two separate MPLS connections of the required speed to each site, plus pay the cost of construction of two separate fiber routes, with one of the two routes traveling to a second more-distant central office. Depending on fiber availability, the District would likely need to pay tens or hundreds of thousands of dollars per site for construction, in addition to the monthly recurring service charge for the service.

By avoiding these costs, the District realizes annual savings from DC-NET of \$5.25 million, based on current usage. This savings will grow as the communications needs of District agencies grow. The savings arise from a combination of voice and data services, along with avoided costs for the operation of the public safety radio network, data center interconnection, and other critical communications.

DC-NET not only provides cost-effective, rapid expansion, but it also allows partners to select the appropriate bandwidth for their needs. For instance, Verizon TLS only provides basic TLS at speeds of 10 Mbps or higher. More significantly, the TLS EVPL comparable to DC-NET is currently only available at 100 Mbps. This capacity exceeds the demand at most DC-NET sites. By contrast, DC-NET provides data service with tunnels and QoS at data speeds from 2 Mbps to 1000 Mbps. A lower speed data service enables the agency to purchase a more economical service and expand to higher speeds as needed. Because it controls both ends of the fiber, DC-NET can use any equipment and immediately upgrade capacity or add new services. With a modular upgrade, DC-NET can upgrade any one of its backbone fiber pairs to 320 Gbps -- over a hundred times faster than widely available commercial service offerings.

DC-NET can work with its clients to customize their service. It can configure sites with specialized electronics or fiber routing – or potentially to simply provide dedicated dark fiber. In this way, DC-NET saves customers money by allowing them to purchase the bandwidth they need – and easily upgrade service as demand grows. One example of customization is the establishment of the Wireless Ring to interconnect District public safety wireless operations. The Wireless Ring enables public safety agencies to operate a dedicated infrastructure that is in many ways operationally separate from other agencies, and is tailored to meet the mission critical needs of public safety communications.

In short, DC-NET enables not only long-term savings relative to leased commercial services, but also enables the District to avoid the limitations of leased services with respect to performance, availability and capacity. The demands of public safety applications alone weigh strongly against the use of leased services, regardless of cost. Taking cost into account, however, a District-owned fiber infrastructure is the most cost-effective approach for meeting internal District networking needs in the long-term.

## **APPENDIX 4**

**“Case Study of the National Capital Region Network”**

## **NCRnet: Regional, Interoperable Fiber Optics for Public Safety and Homeland Security**

NCRnet<sup>1</sup> is a fiber optic telecommunications network – established under a regional National Capital Region Interoperability Program (NCRIP) – that interconnects the existing institutional networks of local jurisdictions in the National Capital Region (NCR). NCRnet takes advantage of the existing Government and Institutional fiber that local jurisdictions have negotiated with cable or fiber carriers and their own high capacity networks to form a highly secure and reliable network that serves public safety officials in the NCR.

In the period following September 11, 2001, the local jurisdictions in the NCR came together to address the severe interoperability issues that had become apparent in the public safety response following that tragedy. The jurisdictions developed a vision for a crucial new public safety communications network to connect community leaders and first responders across the Washington, D.C. metropolitan area.

The goal of the NCR Interoperability Program was the establishment of a fiber optic based digital network and systems interoperability to enhance the region's public safety and emergency response communications. The region needed a communications infrastructure that provided enough bandwidth to sustain current and future high-bandwidth intensive applications, would be flexible enough to address emerging security concerns and provide a wide array of services, would be sustainable from a resource management and cost perspective, and be as independent as possible of commercial network that are vulnerable to traffic saturation exactly when they are needed the most.

Fortunately, the region was blessed with local jurisdictions that had acquired a significant footprint of government-controlled fiber optic networks forming their local I-Nets. These provided connectivity to local agencies, government offices, public safety sites, schools and libraries, and already had existing support and collocation sites for fiber interconnectivity. The NCR jurisdictions decided to take advantage of this invaluable resource and interconnect their networks, thereby providing the required infrastructure for data interoperability that would have been otherwise prohibitively expensive.

Through NCRIP, the region applied for funding from the federal Department of Homeland Security's (DHS) Urban Area Security Initiative (UASI). Funding was awarded and was later supplemented with additional UASI grants and most recently the Commerce Department's Public Safety Interoperable Communications grant. The result was NCRnet—a collaborative work of 21 jurisdictions in three states in the Washington, D.C. metropolitan area.

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<sup>1</sup> NATOA thanks Adriana Umberger of Prince George's County, Maryland for this case study.

## **Partners**

NCRnet is an emerging communications infrastructure designed to support the existing and future public safety and first responder communications requirements between the following entities:

- Local governments in the NCR, including both counties and municipalities
- Regional first responder groups
- Regional first responder applications
- Regional first responder databases
- The State of Maryland
- The Commonwealth of Virginia
- The District of Columbia
- Federal first responders, coordinating authorities, and data

In order to meet the requirement of connecting these entities, the network was designed to interconnect at nodes that maximized co-location opportunities and leveraged the footprints of the existing entity networks as much as possible. Here, the significant investments the local jurisdictions had made in building out their fiber-optic based networks played a crucial role and key hub sites were chosen at jurisdictional facilities to leverage the local support and resources necessary.

## **Reliability**

A network serving first responders and government officials, both on a day-to-day basis and in times of emergencies, must be reliable. A private network solution of a dark fiber architecture and network redundancy optimizes the reliability of the network, while attempting to minimize upfront and long-term costs.

The hub site locations chosen and the existing network investments allowed for cost effective design of redundant fiber routes to all major jurisdictions, ensuring continuity of service in case of fiber cuts.

NCRnet maintains 24x7 active network monitoring with on-site network troubleshooting during normal business hours. Under the network's UASI FY2009 funding, NCRnet will be migrating to a full 24x7 network operations to support the emergency responder applications that will run over NCRnet.

As of October 2009, NCRnet meets or exceeds 99.9% network availability over the past year of operations.

To further strengthen reliability, NCRnet will be implementing a failover design so critical applications can run on alternative application transports – such as Internet or dedicated leased lines – in case of NCRnet connectivity failure.

### **Scalability**

To meet the need to support a wide variety of applications, current and future, dark fiber is superior to alternatives such as leased lines. Dark fiber is the most flexible transmission medium, as it allows simple electronic upgrade to support new network technologies and emerging applications. Currently, NCRnet is mostly a gigabit network, but additional bandwidth or segmentation of traffic for performance management is simply a question of installing electronic upgrades at the hub sites, and does not require additional construction or redesign of the physical architecture.

### **Security**

The interconnection network needs to be secure to protect applications, users, the jurisdictional networks, and to enable compliance with federal and state regulations regarding public and private data. By relying on the existing private government networks, the design is able to leverage the internal network practices and policing of the interconnecting jurisdictions as well as the physical access policies at jurisdictional hub sites. And by using a private infrastructure that is entirely in jurisdictional control, the Partners are able to add layers of additional security on NCRnet as needed without worrying about the practices and policies of third party providers.

### **Sustainability**

Since 2004, NCRnet has received \$11.9 million dollars of federal grant funding under the Urban Area Security Initiative (UASI) and Public Safety Interoperable Communications (PSIC) grants. The NCR partners have also invested significant time and resources into the implementation and operations, including in-kind fiber optic and electronics contributions and staff resources.

Without these federal seed funds, this project would not have been possible. Going forward, the overall price tag for the maintenance of this infrastructure is effectively managed exactly by the ability of them to use largely existing fiber already covered by their own agreements with carriers, by leveraging existing local networks that do not require additional administration, and by the choice of electronic solutions that minimize the cost burden of maintaining the electronics servicing the interconnections.

## **Network Efficiencies**

In order to satisfy the bandwidth, performance, and security requirements regarding application needs, there are really only two realistic options. The Partners could either lease circuits from existing telecommunications providers or construct a fiber optic network.

Leasing circuits eliminates the need for the jurisdiction to own and operate a data network. It also avoids the addition or management of contract staff to operate and maintain the network. In addition the upfront cost of circuit leasing is lower than constructing private fiber, and the time to deployment is often less when working with leased circuits. Leasing, however, has critical disadvantages that make it much less desirable for emergency support services. Specifically:

- Leased services do not offer total control and management over a communications link
- The availability of a leased circuit may not be accurately assessed due to the lack of knowledge of a leased provider's proprietary network and its physical infrastructure
- Network security is the responsibility of the provider between end points

As part of the design of NCRnet, a business case analysis was conducted and it was demonstrated that leased services offer less functionality and higher overall costs relative to constructing a private fiber optic network offering far greater functional advantages. In fact, even under the most conservative scenario, which would relax some of the bandwidth assumptions, *the cost of a private fiber network would be recouped in just eight years relative to the inferior leased services.*

## **Technological Configuration and Architecture**

NCRnet operates as carrier transport network providing IP transport service for application traffic between jurisdictions. Application hosting and support is provided by participants of NCRnet, and therefore NCRnet only operates at the physical and network layers. The main technical features of the network which have been designed to leverage a maximum of Partner infrastructure and expertise and minimize capital and recurring costs are:

- **Physical Layer**
  - NCRnet co-located at jurisdictional hub facilities
  - Same jurisdictional access policies restrict NCRnet plant and equipment
  - Access is jurisdictionally controlled
  - Equipment configuration and access governed by industry best practices
  - All traffic over NCRnet runs on dedicated links
- **Network Layer**
  - Peering design demarcates NCRnet from jurisdictional networks between firewall/Extranet Router and NCRnet Router
  - Firewall configuration managed by each Jurisdiction and serves as gate in and out of NCRnet

- Ensures only authorized (Partner Jurisdiction) traffic is allowed
- Creates an “intranet” cloud of trusted jurisdictional partners
- No intermingling or interconnection with 3<sup>rd</sup> party networks

### **Benefits**

Once interconnected, the Partner Jurisdictions achieve significant benefits as a result of the NCRnet architecture, benefits which would not have been possible without the existing jurisdictional fiber infrastructure or the ability of the Partners to maintain their private networks and expand them where needed:

- Private fiber network controlled by local jurisdictions and first responders
- Interconnection between jurisdictional infrastructures leverage existing I-Net investment governance and help desk processes
- Enables enhanced and more robust regional communications such as the successful operation of two-way video and audio conferencing between connected NCR jurisdictions
- Able to transport - at a regional level - data, video, and audio over a fiber optic high-capacity network
- Any application already hosted and transported on a jurisdictional network connected to NCRnet is a candidate for cross-jurisdictional exchange
- 24x7 network monitoring and alerting of the jurisdictionally dedicated NCRnet links to be migrated to a full 24x7 network management environment

## **APPENDIX 5**

**“Case Study of the Palm Beach County, Florida Network”**

## **Palm Beach County: Regional Public Middle-Mile Network with Statewide Interconnection and Free Wireless Last Mile to Vulnerable Communities**

Since its inception, the data network owned and operated by Palm Beach County, Florida<sup>1</sup> has grown from several hundred devices connected in ten buildings to its current state of over 13,000 devices interconnected in 300 plus buildings, including the delivery of public wi-fi in libraries, courthouses and the County-owned airport, among others, and covering some 600 miles of plant.

In recent years, the County has taken the lead in leveraging its network to interconnect schools, colleges, municipal governments, public safety, healthcare and non-profit organizations, which helps drive down costs for all the agencies involved and reduces the burden on taxpayers. The logical next step was to expand this idea to the state level.

After becoming the first county in the State of Florida to have a direct fiber interconnect to the Florida LambdaRail for Internet and Internet2 access, Palm Beach County has become the aggregator for FLR service to all government, education, and non-profit entities both within the County and to neighboring counties. This design is now referred to as the “Palm Beach County Model.”

By assisting other local and regional entities with interconnection to the FLR, Palm Beach County is providing the means for substantial savings on telecom costs for these entities. As a result, this statewide network is growing, connecting more and more local governments, universities and other institutions and realizing even more of its potential.

**Benefit** – Increased ultra high-speed connectivity at a reduced cost to all participating agencies.

**Partners** – The Palm Beach Broadband consortium, including Palm Beach County, South Florida Water Management District and The School District of Palm Beach County, among others, The PBC League of Cities, Martin County, St. Lucie County, several Palm Beach County municipalities and the state universities already on the FL LambdaRail network

**Viability** – This project takes available connectivity to a whole new level for participating partners at a reasonable cost through the leveraging of existing resources among the partners.

**Scalability** – The basic concept, now known as the “Palm Beach Model,” can be easily applied to add on additional partners across the state. As the County expands its network, as it is looking to do for the remote Glades area pending federal funding, interconnection to the FLR is an extremely valuable added benefit to any location where fiber can be routed.

In addition, through an extensive collaborative effort between a number of public agencies, dozens of low-income families have been provided wireless high-speed Internet service and a refurbished computer to access it—all at no cost to them.

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<sup>1</sup> NATOA thanks David Frye of Palm Beach County for this case study.

Palm Beach Broadband was formed in 2006 by six Florida charter organizations – Palm Beach County government, Palm Beach County School District, Florida Atlantic University, Palm Beach Community College, South Florida Water Management District, and Palm Beach County Education Commission. Since then, additional taxpayer-supported organizations have begun to participate, including the local health care district and multiple municipalities located in Palm Beach County.

Among the coalition's first initiatives were two successful Digital Inclusion Projects, which were completed in the cities of West Palm Beach (Pleasant City school neighborhood) and Delray Beach (S.D. Spady/Village Academy neighborhood). Both of these projects targeted families with school age children who participated in the subsidized school lunch program, who could not afford the luxury of Internet service or, in most cases, a computer at all. A plan was developed by the coalition to install a wi-fi antenna on the roof of the closest neighborhood school building to serve these families and provide computers for their use at no cost.

## **APPENDIX 6**

**“Case Study of the Ontario County, New York Network”**

## **Finger Lakes Regional Telecommunications Development Corp. (Ontario County, NY): Middle Mile Public-Private Partnership**

In 2004, a countywide telecommunications study in Ontario County<sup>1</sup> defined telecommunications within Ontario County as segmented and diverse, and rife with issues relative to telecommunications infrastructure, including the availability of redundant, reliable and affordable connectivity, competition, and more. During the study, focus groups representing education, public safety, healthcare, business, economic development, and municipalities each cited the diverse telecommunications culture as a major negative issue to doing business in the County. Furthermore, it was discovered that technology-based businesses were considering relocating due to the lack of diversity, redundancy, competition and in general, access to broadband.

**Open Access Model:** The County considered many options to rectify the issues, but chose the development of an Open Access fiber backbone to provide consistency throughout the County. The countywide project called for the installation of 180-plus miles of fiber cabling to interconnect key middle-mile entities throughout the County, including county facilities, town and village offices, schools, colleges, healthcare facilities, fire stations, public safety facilities, communications towers, larger industries and economic development sites (current and anticipated).

The governance of this fiber backbone is managed by a Local Development Corporation (LDC) established by the County Board of Supervisors. The LDC named Finger Lakes Regional Telecommunications Development Corporation (FLRTDC) as responsible for all aspects of the project. FLRTDC is managed and supported by a Board of Directors, qualified consultants and contractors.

The basic premise of the fiber backbone is that it would directly address and resolve the fragmented nature of the telecommunications culture within the County — and potentially the Finger Lakes Region as a whole as it expanded into neighboring counties. The fiber backbone would provide a consistent foundation for all carriers, incumbent and competitive, to expand and provide services. In addition, the creation of public-private partnerships with the carriers and service-providers has proven to be a tremendous strength of the Open Access model. Low-cost access to the fiber backbone has spurred development and investment of last-mile solutions, as well as competitive access throughout the County. It should also be noted that, early on, the project's business plan showed that potential revenues from the project would be very capable of meeting operating costs as well as the repayment of debt. The projected cost of the project is \$7.5 million for the entire 180 miles of fiber.

**Assumptions and principles:** FLRTDC was incorporated on October 25, 2005. The Board of Directors began meeting in January 2006. FLRTDC received New York State Public Service Commission certification as a “Common Carrier” in 2006. Not-for-profit (501(c)(3)) certification was received in 2006. The construction and leasing of the fiber backbone is well underway with an anticipated completion date of December 2010. Sixty miles completed and being leased. The project was designed using the following assumptions and principles:

- Fiber to be open to everyone to lease
- Fiber will touch all municipalities (to include police, fire and communications towers)
- Public-private partnerships with the carriers and service providers are crucial

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<sup>1</sup> NATOA thanks Edward Hemminger, Chief Executive Officer of FLRTDC, for this case study.

- Backbone dark fiber infrastructure only, no services (thus no competition with the private-sector service providers)
- FLRTDC will manage the infrastructure with private-sector contractors building, operating and maintaining the infrastructure
- Costs not subsidized by taxpayer funds

### **Countywide Public-Private, Middle-Mile Backbone Network**

As described, Ontario County has developed a 180-mile, middle-mile Open Access fiber backbone running throughout the County with regional connections to three additional neighboring counties. This fiber backbone — which is developed in partnership with many local service providers and enterprise entities — is seen as the foundation to the 21<sup>st</sup>-century, technology-led economic development strategic plan of the County.

- **Benefit** – The middle-mile fiber backbone provides the foundation for critical, high-bandwidth telecommunications services. It also encourages competition, thus driving telecommunications costs down. The fiber provides a significant advantage for our economic-development recruitment and retention goals as we pursue our technology-led economic development strategic plan.
- **Partners** – Ontario County created the local development corporation (LDC). The LDC has partnered with numerous telecom providers, as well as the local community college and private businesses. These partnerships ensure that globally competitive telecommunications service is available to our businesses, governments and educational organizations, as well as our public safety and healthcare communities.
- **Viability** – Although it requires a considerable infrastructure investment, the costs for leasing the dark fiber, per participating organization, are lower than the current market price. In addition, dark fiber — other than the LDC’s fiber — is only available in a very small area of the County. Furthermore, because the not-for-profit LDC will own the network, the monthly rates are very attractive and conducive to the use and expansion of the fiber backbone.
- **Sustainability** – The Open Access model for dark fiber provides a very sustainable model. Carrier and service providers — who, for “return on investment” reasons, have not made commitments to build infrastructure into the more rural areas of the County — are finding it viable to justify the leasing of this infrastructure. This, in turn, has enabled them to invest in last-mile solutions, further penetrating services into underserved and unserved areas. Revenues from the lease of the fiber are anticipated to cover the operations and maintenance of the fiber for the foreseeable future.
- **Scalability** – The fiber backbone has proven to be very scalable and cost-effective. Incumbents, service providers, and enterprise users are driving the expansion of the fiber backbone deeper into the rural areas, as well as into neighboring counties, making this a true regional initiative. Each of the five surrounding counties — Wayne, Livingston, Yates, Seneca and Monroe counties — are developing independent business plans to integrate with, or expand, the fiber project into their communities. Among other components, each must demonstrate sustainability and public benefit.

### **Facts and Figures**

- Capital Expenditures
  - Total cost of the project was estimated at \$7.5M for approximately 180 miles of dark fiber
  - As of today, the anticipated cost of the project is \$5.6M
    - We take every opportunity to partner with local telephone providers to lease dark fiber, thus reducing our project costs.
- Anticipated Annual Operating Expenditures

- The corporation operates with no employees. All operating tasks are provided by local contract support.
- We anticipate our annual O&M to ramp to \$400,000 across the following categories:
  - CEO support contract (provided by Ontario County as part of its contract)
  - Legal, CFO and Management support contracts
  - Mark and Locate contract
  - Fiber Maintenance contract
  - Lease of dark fiber contract (thus reducing our build costs)
  - Public Relations and Marketing Contract
  - Pole Attachment Fees
- Capacity Offered
  - Since we offer dark fiber, the capacity is as great as the equipment installed on the fiber. The fiber has been tested and will support virtually any level of capacity available today. Most users are running gigabit services today.
- Annual Revenues projected to ramp to nearly \$1 million over five years with existing first-year revenues at greater than \$225,000. Some of the existing revenues are:
  - CLEC revenues, \$40,000 per year
  - Cellular company revenues, approximately \$168,000 per year
  - Education Revenues, \$25,000 per year
  - Healthcare revenues, \$6,000 per year
  - Additional customer and revenues being developed
- Cost Savings
  - The County has and will realize a significant reduction in telecommunications costs over 20 years by pre-purchasing connectivity around the entire ring (\$1M for 12 strands for 25 years).
  - Cellular and service providers are realizing savings as much as 66 percent over prior costs, which are being reinvested into new technologies and better services countywide.
- Demand Aggregation
  - The business plan is based on the aggregation of demand model, which was used to justify moving forward.
  - It is anticipated that we may enter into agreements with the towns and villages to aggregate their technology needs (networking and computer support), as well as their Internet access.
- Community Benefits
  - Technology-led economic development will make the entire community stronger with competitive wages and comfortable workplaces
  - FTTx providers are considering using the fiber backbone to offer fiber and triple-play — and potentially quintuple-play — services to County residents, which will reduce monthly telecom costs and the development of higher capacity services
  - Creating a globally competitive environment will enhance all aspects of the community including cultural, business, residential, and more. The County has already seen a number of new technology-based jobs relocating into the County as a direct result of the development of the Open Access fiber backbone.

## **APPENDIX 7**

**“Case Study of the Seattle, Washington Network”**

## **Seattle: Shared Fiber for High Bandwidth Connectivity to Anchors**

The City of Seattle<sup>1</sup> was one of the first cities in the nation to deploy fiber connections to facilitate internal communications. In 1986 it established a six mile fiber connection between its downtown offices and the Seattle Center to serve City voice needs and electrical substations. Building on the success of this effort, in 1995 the City planned a 1 ½ mile fiber connection between its downtown Municipal Building and the City's Emergency Operations Center (EOC). When other public agencies learned about the City's plans they inquired about participating in the project and sharing costs since portions of the City's fiber route would pass near their locations that required high speed communications services but were not being served by the private sector. At the time the commercial sector did not provide dark fiber connections.

A Model Fiber Share agreement was adopted in December of 1995 for the purpose of promoting government efficiency and establishing principles for fiber sharing among other public agencies. The Model agreement defines the roles, responsibilities, general terms and conditions and procedures for shared fiber projects among participating public agencies. The City of Seattle's Department of Information Technology (DoIT) was designated as the lead agency for 100% of the fiber share projects. DOIT plans and constructs fiber to locations based on the needs of partners and obtains all relevant permits.

Participation in any fiber project is voluntary. When a project is proposed, an email is sent or a meeting is held to determine who else may want to participate and share the costs. As a general principle partners share costs proportionately based on their ownership share of the active fiber strands in any deployment. Any special configuration, such as a routing change to accommodate a particular entity, is paid for in whole by that entity. Building entrance costs are borne by each customer. Participating agencies must pay DoIT their pro rata share within 30 days of receipt of billing. If subsequent to project completion another participating public entity wants to purchase excess fibers, they reimburse other paying parties for their pro rata share of the total project cost.

DoIT keeps track of the specific project participants, costs and other details and allocates costs proportionally based on the amount of fiber strands from each participant. The current fiber network extends 485 miles consisting mostly of 192 count fiber. Since 1995 the partners have spent approximately \$20 Million in fiber and construction costs. It is important to note that the savings and efficiencies are such that no bonds were used to finance construction. Participating agencies were able to finance the shared construction out of their operating budgets.

### **Partners**

The partnership includes the following City of Seattle departments: Information Technology, Transportation; Seattle Police Department; Parks; Public Utilities; City Light; Fleets and Facilities; Seattle Center; Seattle Public Libraries; and the City's EOC. It also includes the following public agencies: Seattle Public Schools; WA State Departments of Information and Department of Transportation; State General Services Administration; Washington GIS; University of Washington; Seattle Community College District; King County ; National Oceanic

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<sup>1</sup> NATOA thanks Tony Perez of the City of Seattle Department of Information Technology for this case study.

and Atmospheric Administration; General Services Administration; US Coast Guard; Port of Seattle; City of Edmonds; State EOC; and the Pierce County EOC.

### **Benefits**

- Today partnership members (anchor institutions and government agencies) control how they meet their communications needs. For example by connecting at the physical layer with dark fiber they can continue to save and use their legacy systems and control the timing of their evolution to all IP networking.
- In addition to control of their communications needs the partners receive flexible access to massive amounts of connectivity at very low cost.
- The network is extremely reliable and secure
- The partnership has been an enabler that has allowed them to do things they could not have done because they received low cost high-speed connectivity. It is simply not cost effective and at times not possible to purchase 40 Gbps connections from private companies.
- The partnership has resulted in opportunities for extensive collaboration on other issues such as sharing of data storage facilities.
- When the Seattle Public Schools (SPS) did not have sufficient funds to participate in a planned project the partners agreed to route fiber to school facilities anticipating that the schools would ultimately receive the necessary funds. When SPS finally received funding through a special levy it reimbursed partners for their proportional share of the costs.
- We are using partnership fiber to provide backhaul for the City's free public Wi-Fi locations

### **Sustainability**

The partners view the partnership as a long term strategic investment. The large and increasing number of public fiber partners ensures payment of the approximately \$500k annually in pole attachment fees, conduit lease and maintenance expenses. Participating agencies include their proportional share of the costs within their budgets.

### **Viability**

The partnership has a proven track record and has been an unqualified success. There is simply no economical way to purchase connections like 40 Gbps economically from private providers. The relatively low costs and the flexibility and control allowed by physical layer connections continue to attract increased interest from other public organizations. In addition the Eastside cities of Bellevue, Redmond, Kirkland and other jurisdictions are currently in discussions about replicating the model.

### **Scalability**

One of the greatest benefits cited by fiber partners is the ability to access almost unlimited bandwidth on demand and at very low costs since the infrastructure is in place. This positions partners to meet any future communications needs that may arise. For example the City of Seattle plans to use some of its excess capacity to support a 700 MHz radio system for first responders. In addition the physical network is continually expanding based on the needs of the individual partners.

## **APPENDIX 8**

**“Case Study of the San Francisco, California Network”**

## **San Francisco: Fiber to City Anchors and Free Wireless to Low Income Communities**

The City and County of San Francisco's Department of Technology ("DT")<sup>1</sup> has established a Community Broadband Network ("CBN") to provide broadband access via City fiber to low income communities. The network is currently providing free wired and wireless access to over 3000 units within public housing developments, as well as broadband access for several anchor community sites. This network is small prototype of what a fully-deployed fiber network could provide to residents of San Francisco.

Historically, the City's fiber network had been used to serve only other City departments. Beginning in 2004 under the direction of Mayor Gavin Newsom, the City launched its Digital Inclusion Initiative. The Digital Inclusion Initiative relies on collaboration of a wide range of community based organizations, public agencies commercial vendors and DT. This initiative seeks to leverage city assets, including over 90 miles of fiber plant, to provide broadband access, hardware, training and content—key elements necessary to bridge the digital divide.

### **The Community Broadband Network Model**

DT's Community Broadband Network (CBN) uses unique strands of City fiber, which are physically separate from the City fiber network used for City purposes. DT has deployed a fiber ring that connects to the Internet at a San Francisco data center. At the data center the fiber connects to DT's community fiber switch.

DT has extended this fiber network to 12 low income housing developments in San Francisco and currently provides wireless or wired broadband access at 3000 low income housing developments. Wired access is provided at locations with pre-wired CAT-5 cable to the units. At other locations, DT staff install wireless radios and associated hardware. For ISP service, we partner with the Internet Archive, a national non-profit based in San Francisco. Speeds from the core fiber switches are around 100mbps. Residents of the wired housing developments receive broadband service at speeds ranging from 45 to 50 mbps, while residents with WiFi service obtain speeds of 2 to 15 mbps, all at no charge to the resident. At several developments, broadband is also available in community computer rooms, providing an access option for residents without a personal computer.

DT is also working on innovative projects beyond community broadband. This includes working with the California Academy of Science on webcam for the Farralon Islands. The islands are about 30 miles off the coast. DT installed a set of wireless radios on DT towers to deliver bandwidth to the island. In addition to a webcam that is used by scientist at the Academy the network is providing VOIP service to the National Park Rangers and others who manage the Island. The radios are connected to the community fiber network. DT has taken advantage of fiber that has been brought into public housing

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<sup>1</sup> NATOA thanks Chris Vein and Barry Fraser of the City and County of San Francisco for this case study.

sites for community cameras and other public safety uses. When we bring fiber to projects, we always deploy additional strands for future use.

- **Benefit** -- This network model provides free broadband Internet to residents of low income housing developments by connecting the housing sites to the City fiber network. In addition, anchor institutions are beginning to derive benefits from the network. For Example, San Francisco's Department of Public Health ("DPH") is working with DT and the University of California San Francisco ("UCSF") to connect health clinics via City fiber. At several sites clinicians at community clinics are able to connect to video medical interpretation services located at San Francisco General Hospital.
- **Partners** -- DT is working with partners throughout the City on expanding broadband access. This includes neighborhood groups, tenant associations at public housing sites and other City departments. As described above, we partner with a nonprofit group to obtain Internet access and hardware for network installation. We have also worked with commercial vendors, such as Meraki, to extend the network at reduced cost.
- **Viability** – The network model is based on multiple network uses, which ensures that the network will remain viable regardless of the status of any one class of user. As described above, the City deploys fiber infrastructure for multiple purposes with surplus fiber available for community use. When DT brings fiber through a neighborhood for public safety, health clinics or for other City needs, additional fiber is deployed. This allows the cost of deployment to be spread among many users.
- **Sustainability** – Again, because the network is built for multiple purposes and has drawn the interest of a high number of public, private and nonprofit partners, we believe that this model will be sustainable over the long term. Anchor tenants such as Housing Agency, DPH, UCSF, and SF General Hospital have achieved initial success and will attract additional institutional partners.
- **Scalability** – The core network could be expanded to a City-wide network at lower cost due to the multi-user efficiencies described above. In addition, additional public housing developments and institutional partners can be added to the network at low costs.

Most importantly, we believe that the fiber network can be deployed City-wide in a way that would allow it to serve as the "middle mile" for a fiber to the premises network that would provide fast broadband service to all San Franciscans. Such a network could serve as the backbone for last mile deployment, either by a commercial provider leasing the core network, by a public-private partnership with the City, or, if no last-mile partners come forward, by a municipally-owned network service.

## **APPENDIX 9**

**“Letter from Catharine Rice to NATOA”**



## *Action Audits, LLC*

November 5, 2009

Tonya Rideout  
Acting Executive Director  
NATOA  
2121 Eisenhowere Avenue  
Suite 401  
Alexandria, VA 22314

Re: FCC NBP Public Notice #7 "Contribution of Federal, State, Tribal and Local Governments to Broadband"; GN Docket Nos 09-47, 09-51, 09-137

Dear Ms. Rideout:

Over the last nine years, our firm has researched and worked with municipalities interested in deploying broadband systems. This letter responds to a specific question generated by NATOA's Policy Committee on whether municipal broadband deployment stimulates private sector investment. From our nine years of research, we respond as follows:

Municipal broadband deployments stimulate private sector investment. Typically when municipalities begin offering (or even planning) broadband service in their communities, the incumbent providers decrease service rates, improve customer service, increase service offerings and improve the reach and sophistication of their infrastructures, sometimes by buying the municipality's system. Communities who have experienced these private sector responses include, but are not limited to: Glasgow, KY, Murray, KY, Scottsboro, AL, Alameda, CA, LaGrange, GA, Dalton, GA, Jackson, TN, Lebanon, OH, Wadsworth, OH, Provo, UT, Spencer, IA, Tacoma, WA, Kutztown, PA, Windom, MN, Morganton, Wilson and Salisbury, NC.

Secondly, municipally-deploy broadband systems are a significant private-sector economic stimulant – all the equipment, video, broadband and telephone services provided over the system are purchased from the private sector. For this reason, North Carolina saw companies such as Alcatel-Lucent, Intel, Cisco, and even Google, defending the right of their municipalities to enter the broadband marketplace when the telecommunications incumbents sponsored legislation to eliminate that right through state legislation in 2007 and 2009.

Sincerely,

Catharine Rice  
Associate

Franchise Fee, Technical Audits and General Telecommunication Administration  
101 Pocono Lane; Cary, North Carolina 27513-5316; Phone: 919.467.5392

## **APPENDIX 10**

### **“State Barriers to Public Communications Initiatives”**

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## **STATE RESTRICTIONS ON COMMUNITY BROADBAND SERVICES OR OTHER PUBLIC COMMUNICATIONS INITIATIVES**

1. Alabama authorizes municipalities to provide telecommunications, cable, and broadband services, but it imposes numerous restrictions that collectively make it very difficult for municipalities to take advantage of this authority. For example, Alabama prohibits municipalities from using local taxes or other funds to pay for the start-up expenses that any capital intensive project must pay until the project is constructed and revenues become sufficient to cover ongoing expenses and debt service; requires each municipal communications service to be self-sustaining, thus impairing bundling and other common industry marketing practices; and requires municipalities to conduct a referendum before providing cable services.<sup>1</sup> (*Alabama Code § 11-50B-1 et seq.*)
2. Arkansas expressly prohibits municipal entities from providing local exchange services. (*Ark. Code § 23-17-409*)
3. Colorado requires municipalities wishing to provide cable, telecommunications, or broadband services to hold a referendum before doing so, unless the community is unserved and the incumbents have refused to provide the services in question in response to a request by the community. (*Colo. Rev. Stat. Ann. § 29-27-201 et seq.*)
4. Florida by imposes price-raising ad valorem taxes on municipal telecommunications services, in contrast to its treatment of all other municipal services sold to the public. (*Florida Statutes §§ 125.421, 166.047, 196.012, 199.183 and 212.08*). In addition, since 2005, Florida has subjected municipalities to very requirements that make it very difficult for capital intensive communications initiatives, such as fiber-to-the-home projects, to go forward. For example, Florida requires municipalities that wish to provide communications services to conduct at least two public hearings at which they must consider a variety of factors, including “a plan to ensure

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<sup>1</sup> While municipalities sometimes prevail in such referenda, they are time-consuming and burdensome, making public communications initiatives much more difficult than private initiatives. Moreover, in most cases, the incumbent communications providers vastly outspend municipalities and dominate the local news through their control of the local cable system. For example, in a referendum on a public fiber-to-the-home initiative in Batavia, Geneva, and St. Charles, Illinois, the incumbents acknowledged spending more than \$300,000 in opposition to the initiative, whereas the cities were not permitted to spend any funds to support the initiative, and the local citizen advocates had less than \$5,000 available to do so.

that revenues exceed operating expenses and payment of principal and interest on debt within four years.” Since fiber-to-the-home (FTTH) projects, whether public or private, often require longer than four years to become cash-flow positive, this requirement either precludes municipalities from proposing FTTH projects or invites endless debate over whether a municipality’s plan is viable. (*Florida Statutes § 350.81*)

5. Louisiana requires municipalities to hold a referendum before providing any communications services, requires municipalities impute to themselves various costs that a private provider might pay if it were providing comparable services, and suspends any incumbent provider’s franchise and other obligations (e.g., franchise fees, PEG access, institutional networks, etc.) as soon as a municipality announced that it is ready to serve even a single customer of the service in question.<sup>2</sup> The suspension remains in force until the monetary value of the municipality’s obligations equal the monetary amount value of the obligations incurred by the private operators for the previous ten years. (*La. Rev. Stat. Ann. § 45:884.41 et seq.*)
6. Michigan permits public entities to provide telecommunications services only if they have first requested bids for the services at issue, have received less than three qualified bids from private entities to provide such services, and have subjected themselves to the same terms and conditions as specified in their request for proposals. (*Mich. Comp. Laws Ann. § 484.2252*)
7. Minnesota requires municipalities to obtain a super-majority of 65% of the voters before providing local exchange services or facilities used to support communications services. (*Minn. Stat. Ann. § 237.19*)
8. Missouri bars municipalities and municipal electric utilities from selling or leasing telecommunications services to the public or telecommunications facilities to other communications providers, except for services for used for internal purposes; services for educational, emergency and health care uses; and “Internet-type” services. (*Mo. Rev. Stat. § 392.410(7)*) Missouri also prohibits municipalities from providing or supporting the provision of cable services by third parties without first conducting a referendum. (*Mo. Rev. Stat. § 71.970*)
9. Nebraska generally prohibits agencies or political subdivisions of the state, other than public power utilities, from providing any wholesale or retail broadband, Internet, telecommunications

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<sup>2</sup> Municipalities typically have lower costs than private entities and do not seek the high short-term profits that shareholders and investors expect of private entities. As a result, municipalities can sometimes serve areas that private entities shun and can often provide more robust and less expensive services than private entities are willing to offer. Imputed cost requirements have the purpose and effect of preventing municipalities from doing these things, by requiring municipalities to raise their rates to levels at or above the levels that make it uneconomic for private entities to serve certain areas at all or from offering robust or inexpensive services. Imputing costs is also difficult, time-consuming, inexact, and subjective. As a result, the imputed cost requirements give opponents of public communications initiatives unlimited opportunities to raise objections that significantly delay and add to the costs of such initiatives.

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November 6, 2009

Page 3

or cable service. Public power utilities are permanently prohibited from providing such services on a retail basis, and they can sell or lease dark fiber on a wholesale basis only under limited conditions. For example, a public power utility cannot sell or lease dark fiber at rates lower than the rates that incumbents are charging in the market in question. (*Neb. Rev. Stat. Ann. § 86-575, § 86-594*)

10. Nevada prohibits municipalities with populations of 25,000 or more and counties with populations of 50,000 or more from providing “telecommunications services,” as defined by federal law. (*Nevada Statutes § 268.086, § 710.147*)
11. Pennsylvania prohibits municipalities from providing broadband services to the public for a fee unless such services are not provided by the local telephone company and the local telephone company refuses to provide such services within 14 months of a request by the political subdivision. In determining whether the local telephone company is providing, or will provide, broadband service in the community, the only relevant consideration is data speed. That is, if the company is willing to provide the data speed that the community seeks, no other factor can be considered, including price, quality of service, coverage, mobility, etc. (*66 Pa. Cons. Stat. Ann. § 3014(h)*)
12. South Carolina imposes significant restrictions and burdensome procedural requirements on municipal providers of telecommunications services. Among other things, the State deprives municipal providers of any of the benefits that municipalities typically enjoy while simultaneously denying municipalities the benefits, including business confidentiality, that private entities typically enjoy. South Carolina also requires municipal providers to impute into their rates all costs that private entities would incur, including income taxes. Thus, even though a municipal provider would actually have little or no profits, it would have to raise its prices to include the profits that a hypothetical private entity would obtain, as well as the taxes that such an entity would pay on these profits. Obviously, such estimates would be highly subjective and would result in costly, protracted challenges by the incumbents. (*S.C. Code Ann. § 58-9-2600 et seq.*)
13. Tennessee bans municipal provision of paging and security service and allows provision of cable, two-way video, video programming, Internet and other “like” services only upon satisfying various anti-competitive public disclosure, hearing and voting requirements that a private provider would not have to meet. (*Tennessee Code Ann. § 7-52-601 et seq.*)
14. Texas prohibits municipalities and municipal electric utilities from offering telecommunications services to the public either directly or indirectly through a private telecommunications provider. (*Texas Utilities Code, § 54.201 et seq.*)
15. Utah imposes numerous burdensome procedural and accounting requirements on municipalities that wish to provide services directly to retail customers. Most of these requirements are impossible for *any* provider of retail services to meet, whether public or private. Utah exempts municipal providers of wholesale services from some of these requirements, but experience has shown that a forced wholesale-only model is extremely difficult, or in some cases, impossible to make successful. (*Utah Code Ann. § 10-18-201 et seq.*)

16. Virginia allows municipal electric utilities to become certificated municipal local exchange carriers and to offer all communications services that their systems are capable of supporting (except for cable services), provided that they do not subsidize services, that they impute private-sector costs into their rates, that they do not charge rates lower than the incumbents, and that comply with numerous procedural, financing, reporting and other requirements that do not apply to the private sector. (*VA Code §§ 56-265.4:4, 56-484.7:1*). Virginia also effectively prohibits municipalities from providing the “triple-play” of voice, video, and data services by effectively banning municipal cable service (except by Bristol, which was grandfathered). For example, in order to provide cable service, a municipality must first obtain a report from an independent feasibility consultant demonstrating that average annual revenues from cable service alone will exceed average annual costs *in the first year of operation*, as well as over the first five years of operation. (*VA Code § 15.2-2108.6*) This requirement, without more, makes it impossible for any Virginia municipality other than Bristol to provide cable service, as no public or private cable system can cover all of its costs in its first year of operation. Moreover, Virginia also requires a referendum before municipalities can provide cable service. (*Id.*)
17. Washington authorizes some municipalities to provide communications services but prohibits public utility districts from providing communications services directly to customers. (*Wash. Rev. Code Ann. §54.16.330*)
18. Wisconsin generally prohibits non-subscribers of the cable television services from paying any cable costs. Further, it requires municipalities to conduct a feasibility study and hold a public hearing prior to providing telecom, cable or internet services. It also prohibits "subsidization" of most cable and telecom services and prescribes minimum prices for telecommunications services. (*Wis. Stat. Ann. § 66.0422*)

## **APPENDIX 11**

**“Case Study of the Portland, Oregon Network”**

## **Portland: Integrated Regional Network Enterprise (IRNE) Case Study**

The Integrated Regional Network Enterprise (“IRNE”) is a fiber optic telecommunications network designed to carry all voice, video and data communications traffic for the City of Portland (“City”). In addition, IRNE provides high speed data transmission to other state and local government agencies. The IRNE is a high-capacity, highly reliable design that costs less and offers more than conventional telecommunications services available in the region.

Before the advent of IRNE, the City spent over \$8 million dollars annually on private telephone services to serve roughly 7,000 telephone extensions. The City also had a limited (\$100,000) data communications budget, which provided T -1 services at major city buildings (like the 911 Center) but only 56 Kbps Frame Relay services at most other locations. The City’s limited budget prevented it from providing high-speed broadband service to most of its buildings, notwithstanding a growing demand.

Meanwhile, the City was investing in a variety of separate telecommunications projects. For instance, the Department of Transportation was building a fiber optic network to connect traffic signals, the Bureau of Environmental Services was investigating the use of fiber for SCADA controls, and the Office of Cable Communications and Franchise Management was negotiating with the region’s cable company to provide a fiber optic institutional network (the INET), as contemplated by the Cable Act of 1984.

In response to these growing needs - and limited resources - the City launched IRNE in 2002. IRNE is a collaborative effort that capitalizes on the City’s varied telecommunications projects. It brings together municipal, county and State ITS fiber investments to create a redundant loop fiber system around the City that can be used for many purposes. By establishing a public sector-owned shared communications backbone, IRNE leverages funds, expertise and infrastructure. In this way, the \$14 million dollar IRNE reduces costs for both phone lines and high-speed Internet connections.

## **History**

In the 1990s, the Oregon Department of Transportation (“ODOT”), the City of Portland’s Office of Transportation (“PDOT”), and the regional transit system, TriMet, entered into intergovernmental agreements to share their respective communications infrastructure in the Portland area to better coordinate their traffic information and control system. At about the same time, the City of Portland was reviewing its own more general communications needs. It determined that it could dramatically increase its communications and telecommunications capacity if it joined in a general partnership with the transportation agencies that were already cooperating. Putting the transportation communications infrastructure together with other available or obtainable infrastructure would allow the City to create a sophisticated high-speed, redundant fiber optic communications system. In addition to “voice service”, the real advantage to such a joint infrastructure project would be the vast increase in data transport capacity, speed, and security for the region’s governmental agencies. The City Council made the financial decisions necessary to create the regional system, including the sale of bonds. It sought and received a certificate from the Oregon Public Utility Commission to operate as a telecommunications carrier. It entered into an “interconnection” agreement with the local incumbent phone company (Qwest Corporation, an affiliate of plaintiff QCC), to connect the system to the larger regional and national public telecommunications network. The City Council ultimately allocated \$14 million in public funds to build and “light” the Integrated Regional Network, IRNE.<sup>1</sup>

- The physical facilities used by IRNE were obtained in several ways. Of the segments of conduit and aerial runs connecting the various nodes of IRNE, by segment count approximately 43% were built by the City itself, 38% were built by other public

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<sup>1</sup> IRNE is not a separate legal entity from the City. For instance, the Oregon PUC granted the City, “doing business as IRNE,” a certificate to operate a telecommunications carrier.

entities (especially the State of Oregon and TriMet), 5% were built by the City in cooperation with other public entities, and 3% were constructed by the City in cooperation with private telecommunications providers. Finally, about 11% of the IRNE conduit infrastructure, by segment, was dedicated to City use by “in-kind” contributions of various City telecommunications franchisees. Each such franchise provides that partial payment of the franchise fee can be made “in-kind,” providing duct to the City along routes being constructed by the private firms in City streets. The incremental cost of this construction was minimal, particularly when compared to the potential cost of providing the capacity as a stand-alone project at a future date.

### **IRNE Today**

The bulk of IRNE’s communications traffic is generated by the City itself. The system meets most of the City’s communications needs, both voice and high-speed data. But, under a series of intergovernmental agreements (“IGA’s”), the City also provides high-speed data communications services to other governments, including: the State of Oregon, Port of Portland, Cities of Hillsboro and Sherwood, Portland Public Schools (“PPS”), Multnomah County, Multnomah Educational Service District (“MESD”), and the Metropolitan Service District (“Metro”). The City also leases “dark fiber” to Portland State University and the United State Army Corps of Engineers.

The IRNE network links various government offices, including law enforcement and emergency services, using secure, high-speed technology. These agencies can share critical information, such as law enforcement files, efficiently and securely. IRNE assets help connect transportation agencies, allowing better traffic control and response to emergencies.

None of the City’s “outside customers” obtain all their telecommunications services from the City. Instead, the City provides them a special, high-speed data transmission capacity called “Ethernet” service. For instance, IRNE connects the State Office Building, Portland Public Schools, Multnomah Educational Service District, and Metro to a downtown location, called the Pittock Block, where they can easily connect to the Internet using whatever Internet service provider they wish. It connects Multnomah County and the Port of Portland to the 911 Emergency Center and to the downtown Portland police headquarters and County office buildings. IRNE also provides a

dedicated, secure fiber infrastructure system to the cities of Hillsboro and Sherwood allowing them and five other Washington County law enforcement agencies to connect directly to the City of Portland's crime data computer.

The IRNE system currently allows governmental agencies to communicate at speeds up to 155 megabits per second (mbps) and has the capacity to serve full gigabit (1000 mbps) per second. A typical fast DS-1 line, often used for Internet connections, runs at 1.5 mbps. The City's customers all attest to the high quality and cost effectiveness of the IRNE system.

**Viability.** Although it required a considerable (\$14 million) infrastructure investment, the costs per participating organization are low, given the large number of partners that benefit from the network.

**Reliability.** The private network solution of loop architecture and redundancy optimizes the network architecture for public-safety grade reliability so the network is engineered for zero downtime. Such redundancy would have been cost prohibitive if the City had to rely exclusively on leased data circuits. This reliability facilitates the City's growing reliance on e-government and electronic learning technologies.

**Sustainability.** The historic government practice of implementing network solutions without an over-all architectural strategy created a proliferation of dissimilar devices, network management strategies, replacement cycles and applications platforms which were very costly and regularly abandoned. By unifying these efforts into a single, integrated network, IRNE has enabled a coherent solution.

### **IRNE Future Plans**

Portland is in the process of overlaying a 10 Gbps ring that will connect major City locations to increase non-SONET bandwidth. The City is also expanding its partnerships within its governmental fiber cooperative (Cooperative Telecommunications Infrastructure Consortium, "CTIC") to include additional counties in Oregon as well as exploring the possibility of interconnecting its fiber networks with several partners in Washington State (Washington Department of Transportation, Clark County, and the City of Vancouver) to enable further benefit for public safety agency cooperation.

### **Comcast Corporation's Institutional Network**

The City's IRNE is inter-connected to another regional fiber network, called the Institutional Network or I-Net. The I-Net is owned and operated by Comcast Corporation and provides communications for local governmental and educational institutions. The I-Net was built pursuant to provisions of the federal Cable Communications Policy Act, 47 USC § 521 *et seq.* That law confirmed the right of local communities to include in their cable franchises a kind of "in-kind compensation" from cable companies – the provision of institutional networks. 47 USC § 531(b), (f). The Portland metropolitan I-Net is provided by Comcast under cable franchises issued to Comcast by Multnomah County and the cities of Portland, Fairview, Gresham, Wood Village, and Troutdale.

The I-Net capital cost, borne by Comcast, was over \$6 million, with another \$4 million in upgrades planned through 2010. The I-Net currently connects over 270 public facilities and serves over 20 public agencies. These include eight school districts (all of the County's K-12 institutions, totaling 272 sites), a regional educational service district, four local governments, the county libraries (17 sites), two community colleges (at eight sites), the Housing Authority of Portland, the State of Oregon and one large, non-profit, social service organization. The I-Net provides a wide range of public benefits, including data and phone connectivity at more than two dozen County-run free and low-cost health, human service and dental clinics. I-Net produces these wide-ranging public benefits at a fraction of the cost that might be expected with leased facilities and commercial services.

Prior to the availability of I-Net services, most of the public agencies used Qwest or Verizon for their data services. The State of Oregon has a current service contract with *Qwest/Verizon* (the telecommunications providers for the Portland area) that public agencies can access. Through this contract, Qwest provides 10 Mb. Service for approximately \$1,300 per month (or \$15,600 annually), per site. By comparison, I-Net users pay \$616 per month (\$7,400 annually), per site for 400 Mb service per site. Thus, I-Net provides 40 times the speed at one-half the cost of a private lease.

Comcast provides network facilities, infrastructure, transport operations and maintenance for the I-Net. *See* web site of Mount Hood Cable Regulatory Commission, [http://www.mhcr.org/content.asp?n=ine&s=inet\\_about](http://www.mhcr.org/content.asp?n=ine&s=inet_about). Through a contract between Portland and Comcast, the City provides customer service for INET users. The City has designated its telecommunications staff, which operates IRNE, to provide the I-Net services.

### **Synergy: the Interconnection of IRNE and Comcast's INET**

The I-Net itself only connects I-Net users – that is, it connects one school to another school or one governmental office to another governmental office. To enhance service to all users of IRNE and I-Net, Comcast and the City agreed to interconnect the two networks. The interconnection allows transmissions to originate on one network and terminate on another, in effect extending the reach of both.

I-Net users also realize significant cost savings because the City uses the same staff to support both networks (i.e., IRNE and I-Net). The dual management of both networks preserves resources that would otherwise have to be invested in technicians, tools, and fiber equipment. In return for I-Net services, its users paid a total of about \$1.055 million to Comcast and the City last fiscal year, .

Interconnection of the two networks expands opportunities for their users. For instance, most of East Multnomah County's public schools are connected to each other and to the Multnomah Educational Service District by the I-Net. MESD itself is connected, by IRNE, to the downtown "teleco hotel" at the Pittock Block. From there, MESD pays private Internet service providers to connect it and all its schools to the Internet. The result is that the schools of East Multnomah County can all have a very high-speed Internet connection at relatively low cost. Portland Public Schools, too, are all connected to each other by the I-Net. PPS headquarters is then connected to the Pittock Block by IRNE and then on to the Internet by private firms.

**Summary** IRNE is reliable and scalable with demonstrated efficiencies. IRNE is an engineering collaboration among public sector agencies leveraging multiple sources of funds and telecommunications plans to form a well-engineered and well-executed network architecture and service operation. This collaboration has led to dramatic network efficiencies, providing very high-bandwidth at relatively low cost for public agencies.

## **APPENDIX 12**

**“Report of Ed Whitelaw”**

Note: this excerpt excludes approximately 60 pages of qualifications and prior testimony.

# Report of Ed Whitelaw

September 1, 2005

Prepared for

The City of Portland

by

## **ECONorthwest**

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## **I. INTRODUCTION**

My name is Ed Whitelaw. I am a professor of economics at the University of Oregon, where I have taught since 1967. I am also president of ECONorthwest (ECONW), which provides analysis in economics, finance, planning and policy evaluation for businesses and government.

In the matter of Time Warner Telecom of Oregon, LLC (TWT) and Qwest Communications Corporation (QCC) v. the City of Portland (City), the City retained ECONW to evaluate and express an opinion on the prices that the City charges TWT and QCC for using the City's rights-of-way (ROW), and to consider and express an opinion on the Plaintiffs' claims regarding the City's Integrated Regional Network Enterprise (IRNE). The prices are set in the franchise agreements between the City and TWT and QCC. This matter has been brought under the Telecommunications Act of 1996.

I received a Ph.D. in economics from the Massachusetts Institute of Technology. I have testified on economic matters in administrative, legislative and Congressional hearings, and in courts in the Pacific Northwest and elsewhere. A copy of my vita and a table of my prior testimony is attached hereto as Exhibit A. ECONW bills my time at a rate of \$375 per hour. No part of this compensation depends upon the outcome of this matter.

Throughout this report, I use "we," "our," and "us" to refer to my ECONW colleagues and me. In their work on this matter, my colleagues have worked under my direction. In this report, I summarize my opinions and the current bases for those opinions, based on the information we have reviewed so far. As we review additional information I may revise the opinions expressed in this report, add additional opinions, or both.

In preparing this report, I have relied on my general training, experience and knowledge regarding economic value and market prices of goods and services, including municipal ROW. We have examined documents produced in this case, reviewed other publicly available information relevant to the case, and interviewed City staff. Appendix B lists the material considered as part of our analysis.

## **II. SUMMARY OF OPINIONS AT THIS TIME**

- Charging a fee to access the City's ROW ensures that the ROW will be used efficiently. The closer the fee approximates the relevant market price, the more likely the ROW will be used in an economically efficient manner, which is a fundamental criterion by which economists evaluate the performance of a market and overall social welfare.
- Valuing ROW using comparable transactions is common practice that helps establish a fair market value for ROW.
- TWT and QCC pay fair and reasonable fees to access the City's ROW, and these fees reflect the relevant market value of the ROW.

- Charging in-kind compensation as part of a fair and reasonable compensation package is common practice. TWT and QCC pay fair and reasonable in-kind compensation.
- For access to its ROW, the City does not require compensation from TWT and QCC that is competitively non-neutral or discriminatory.
- IRNE's use of the City's ROW does not constitute unfair competition or antitrust behavior on the part of the City.
- The City holds IRNE to the same standards as it holds other telecommunications firms that use the City's ROW.
- IRNE does not rely on any of the conduit paid in-kind by the Plaintiffs. Conduit paid-in kind by other telecommunications firms amounts to a miniscule proportion of the total value of IRNE and confers no measurable competitive advantage or disadvantage to the City.
- The intergovernmental agreements (IGA) between the City and other jurisdictions to share fiber and other resources do not constitute anticompetitive behavior. Private entities, including telecommunications firms, share resources for a variety of reasons. Telecommunications firms in the Portland market engage in strategic alliances to share ROW access and construction costs. Plaintiff TWT shares ROW access and construction costs in ways similar to the City's alleged anticompetitive behavior.
- IRNE's operation benefits consumers and competition. We know of no evidence to support the Plaintiffs' claim that IRNE's operation represents an abuse of "monopoly control" of the City's ROW.<sup>1</sup>

### **III. ECONOMIC BACKGROUND**

As I understand the Telecommunications Act of 1996, state and local governments have the authority "to require fair and reasonable compensation from telecommunications providers, on a competitively neutral and nondiscriminatory basis, for use of public rights-of-way . . ." (Sec. 253 (c)). In this section I describe economic concepts relating to compensation for use of ROW and competition.

#### **A. Compensation for Use of Public Resources**

The Telecommunications Act's provision allowing compensation for use of public ROW is consistent with the economic principle of using prices to allocate scarce resources. From an economics perspective, the City's ROW is a scarce resource. In contrast to "free resources," scarce resources do not "exist in such large quantities that they need not be rationed out

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<sup>1</sup> See Complaint for Declaratory Judgment (First). September 28, 2004. In the matter of Time Warner Telecom of Oregon, LLC and Qwest Communications Corporation v. the City of Portland. Page 10, paragraph 18.

among those wishing to use them.”<sup>2</sup> Indeed, congestion in the City’s ROW—both above ground and below—illustrates that the City’s ROW is scarce.

Economic scarcity, however, encompasses more than a constraint on physical capacity. A resource can be scarce in an economic sense even if it can accommodate all users at a given moment in an engineering sense. For example, if the use of a resource by one party imposes costs on other parties, then it is scarce in an economic sense. This conclusion holds whether the affected party is the City, another user of the ROW (a utility, a commuter, a truck driver or anyone else) or a resident (a home owner whose property is affected by utility facilities in the street).

It is because the City’s ROW is scarce that charging for its use makes good economic sense. Economic texts describe a relationship between economic scarcity and economic cost, or opportunity cost:

“Just as scarcity implies the need for choice, so choice implies the existence of cost. ... A decision to have more of one thing requires a decision to have less of something else. It is this fact that makes the first decision costly.”<sup>3</sup>

“It [opportunity cost] concerns the true economic costs or consequence of making decisions in a world where goods are scarce.”<sup>4</sup>

The history of cities throughout the world offers compelling illustrations of economic scarcity, opportunity costs, and efficiency in the development of ROW.<sup>5</sup> Examples of cities in

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<sup>2</sup> Samuelson, Paul A. and William D. Nordhaus. 2001. *Economics*, 17<sup>th</sup> Edition. New York: McGraw-Hill. Page 765. For other authors expressing the same concept, see Hall, Robert E. and Marc Lieberman. 1998. *Microeconomics: Principles and Applications*. Cincinnati, OH: South-Western College Publishing. Page 483; O’Sullivan, Arthur and Steven M. Sheffrin. 2001. *Microeconomics: Principles and Tools*, 2<sup>nd</sup> Edition. Upper Saddle River, NJ: Prentice Hall. Page 2; Parkin, Michael. 1998. *Microeconomics*, 4<sup>th</sup> Edition. Reading, MA: Addison-Wesley. Page 42; Tregarthen, Timothy and Libby Rittenberg. 2000. *Microeconomics*, 2<sup>nd</sup> Edition. New York: Worth Publishers. Pages 3-4.

<sup>3</sup> Lipsey, R., et al. 1990. *Microeconomics*, 9<sup>th</sup> Edition. New York: Harper & Row, Publishers. Page 4. For other authors expressing the same concept, see Nicholson, Walter. 2000. *Intermediate Microeconomics*, 8<sup>th</sup> Edition. Fort Worth, TX: The Dryden Press. Page 17; O’Sullivan, Arthur and Steven M. Sheffrin. 2001. Cited previously. Page 24; Parkin, Michael. 1993. *Macroeconomics*, 2<sup>nd</sup> Edition. Reading, MA: Addison-Wesley. Page 10; Tregarthen, Timothy and Libby Rittenberg. 2000. Cited previously. Page 5;

<sup>4</sup> Samuelson, Paul A. and William D. Nordhaus. 1992. *Economics*, 14<sup>th</sup> Edition. New York: McGraw-Hill. Page 131. For other authors expressing the same concept, see Hall, Robert E. and Marc Lieberman. 1998. Cited previously. Page 18; McConnell, Campbell R. and Stanley L. Brue. 1996. *Economics*, 13<sup>th</sup> Edition. New York: McGraw-Hill, Inc. Page 26; Parkin, Michael. 1998. Cited previously. Page 42; Tregarthen, Timothy and Libby Rittenberg. 2000. Cited previously. Page 5.

<sup>5</sup> For various historical descriptions of the development of streets and rights of way, see Abbott, Carl. 1983. *Portland: Planning, Politics, and Growth in a Twentieth-Century City*. Lincoln, NE: University of Nebraska Press; Baldwin, Peter C. 1999. *Domesticating the Street: The Reform of Public Space in Hartford, 1850-1930*. Columbus, OH: Ohio State University Press. Pages 201-203, 207-208; Barrett, Paul. 1983. *The Automobile and Urban Transit: The Formation of Public Policy in Chicago, 1900-1930*. Philadelphia, PA: Temple University Press. Pages 13-14, 49-50; Bridenbaugh, Carl. 1938. *Cities in the Wilderness: The First Century of Urban Life in America 1625-1742*. New York: Alfred A. Knopf. Pages 153-154, 159, 317; Hood, Clifton. 1993. *722 Miles: The Building of the Subways and How They Transformed New York*. New York: Simon & Schuster. Page 84; Pierce,

which I have observed such scarcity and opportunity costs firsthand include Amsterdam, Berlin, London, Rome, Tokyo, Boston, New York, Chicago, San Francisco, Portland (Oregon), Seattle, Vancouver (B.C.), Lima (Peru), Nairobi (Kenya), and Colonia (Yap).

Occupying space in the ROW precludes the City or others from using that same space now and in the future. That is, the three-dimensional space occupied by a given conduit obviously cannot be occupied by another conduit.<sup>6</sup> Also, depending on the specifics of the use, the installation, the maintenance, and the replacement of any given facility in the ROW may create problems for and impose costs on the City and on other users of the ROW.

As applied to the City's ROW, today's scarcity and the resulting opportunity costs will persist tomorrow. That is, today's scarcity manifests itself in those many locations in which the use of the ROW for one service inhibits the use of the ROW or other properties for other services by the same or other users. Clearly, that scarcity and the associated negative, spill-over effects will persist into the future, unless the City experiences a net decrease in ROW use—a result no one has predicted. The negative effects may include increased excavation or construction costs, increased costs associated with design and planning, costs associated with loss-of-service attributed to construction accidents or other damage to services in the ROW, increased travel time for vehicular traffic on the ROW, and lost revenues for business whose customers are inconvenienced by ROW construction.

Like other real-estate assets, the City's ROW yields value to the users of the ROW. Like other real-estate owners, the City charges for use of its ROW. In an economy based on competition, producers and owners of goods and services with economic value typically do not give them away free. In economic markets, prices serve as signals that help society put its resources to efficient use.<sup>7</sup> Not charging for use of the City's ROW would treat it as if it were a free good with no economic value. "A true 'free good' is one which is not scarce... Examples of free goods are rare and perhaps becoming rarer still—sunshine in the Sahara Desert provides one example."<sup>8</sup>

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Bessie Louise. 1937. *A History of Chicago: Volume I*. New York: University of Chicago Press. Pages 96, 336; Pierce, Bessie Louise. 1937. *A History of Chicago: Volume II*. New York: University of Chicago Press. Page 325; Quaife, Milo M. 1923. *Chicago's Highways Old and New: From Indian Trail to Motor Road*. Chicago, IL: D. F. Keller & Co. Pages 53-54, 60; Thwing, Anne Haven. 1920. *The Crooked and Narrow Streets of Boston: 1630-1822*. Boston: New England Historic Genealogical Society. Electronic Version; Whitehill, Walter Muir. 1968. *Boston: A Topographical History*, 2<sup>nd</sup> Edition. Cambridge, MA: The Belknap Press of Harvard University Press. Page 8.

<sup>6</sup> This concept is distinct from the concept of multiple parties sharing a particular fiber or conduit.

<sup>7</sup> See, for example, Byrns, Ralph T. and Gerald W. Stone, Jr. 1992. *Economics*, 5<sup>th</sup> Edition. New York: HarperCollins. Page 71; Nicholson, Walter. 1998. *Microeconomic Theory*, 7<sup>th</sup> Edition. Fort Worth, TX: Dryden Press. Pages 514-515; Pindyck, Robert S. and Daniel L. Rubinfeld. 2000. *Microeconomics*, 5<sup>th</sup> Edition. Upper Saddle River, NJ: Prentice Hall. Page 590; Samuelson, Paul A. and William D. Nordhaus. 2001. Cited previously. Pages 27, 291.

<sup>8</sup> Pearce, David W. (ed). 1997. *The MIT Dictionary of Modern Economics*, 4<sup>th</sup> Edition. Cambridge: The MIT Press. Page 163.

Free access to the City's ROW would fail to impose any market discipline on potential users of the ROW. For example, a price of zero would send an inaccurate signal of the value of the ROW to potential users. Charging a fee helps ensure that the ROW will be used efficiently, that is, that the ROW will not be misused or wasted. Furthermore, the closer the fee approximates the relevant market price, the more likely the ROW will be used in an economically efficient manner, a fundamental criterion by which economists evaluate the performance of a market and overall social welfare.

## **B. Competitively Neutral and Nondiscriminatory**

As I understand, the Telecommunication Act prohibits compensation for the use of ROW that is competitively non-neutral and discriminatory. As a general matter, a fee is nondiscriminatory if telecommunications providers using the ROW in similar ways, under similar circumstances, pay similar fees. Companies differ. Not all telecommunications providers use the ROW in the same way to access customers. For example, local telephone companies providing service via their own wired facilities make extensive use of ROW to access customers. A wireline company may have hundreds or thousands of miles of fiber in a ROW. Wireless companies, however, do not occupy space in the ROW in the same way. A wireless company may not own any facilities or equipment in the ROW, or place only a minimal amount of facilities in the ROW. One could reasonably distinguish among those providers for the purpose of arriving at compensation for access to the ROW.

In addition, economic conditions change over time. All else equal, providers that enter the market at different points in time face different economic conditions. In a competitive market, such providers would likely face different costs for the resources they use. Likewise, it would not necessarily be either discriminatory or non-neutral for the details of the compensation packages between each of such providers and the City to differ.

While in theory one might posit a single fair and reasonable price for a good, in practice it does not happen. There is a range of prices that a seller could charge without exceeding levels that would be considered fair and reasonable. As I understand, some providers in Portland provide some of their compensation in the form of in-kind payments. As I describe in Section IV, such arrangements are not unusual. In some cases, a municipality may even choose to lease ROW space at no charge in order to obtain other perceived benefits—even when charging something would be fair and reasonable.

## **C. Calculating Fair Market Value Using Comparable Transactions**

Unlike residential or commercial real estate, any given market for a municipal ROW has relatively few transactions and private companies have strong (and reasonable) incentives not to publish the results of their transactions involving ROW. Given these constraints, the study of comparable transactions has become an established practice for valuing ROW.<sup>9</sup>

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<sup>9</sup> See, for example, Fitzgerald, Shawna. 2005. *Review of Fiber Optic Right of Way Pricing*. Prepared for the City of Portland. August 31. Page 6; National Oceanic and Atmospheric Administration (NOAA). 2002. *Final Report: Fair Market Value Analysis For A Fiber Optic Cable Permit in National Marine Sanctuaries*. NOAA, National Ocean Service, National Marine Sanctuary Program. August; U.S. Department of Justice. 2001. *Uniform*

The degree of similarity between the comparable transactions and the ROW at issue helps specify the high and low measures of fair market value.<sup>10</sup> Fitzgerald describes some of the factors to consider when setting rates to access a municipal ROW.

“Several distinctions can be made for the wide range for [ROW] rates, including the level of services and security provided, location, and the date the [ROW] policy or contract was signed. Also, the ability of government organizations to set fees, unfettered by political interference, is another important factor in [ROW] rents. However, the issue that seems to have the greatest impact is the level of sophistication and information held by both buyers and sellers.”<sup>11</sup>

Fitzgerald’s last point on the amount of information available to the two interested parties, speaks to the importance of considering relevant information held by the municipality and by the telecommunications firm or firms. Specific to the case at hand, the City lists the details of its ROW fees on its web site. QCC and TWT can access this information. Knowing what QCC and TWT pay to access other municipal ROW would provide information relevant to the deliberations of the fair-market value to access the City’s ROW. The existing ROW agreements between the City and QCC and TWT also provide relevant information.

#### **IV. THE CITY’S ROW FEES MAKE ECONOMIC SENSE**

As I understand, TWT has access to ubiquitous ROW, i.e., ROW throughout the City, and the City charges TWT 5 percent of gross revenues plus one or two ducts for the City’s use. As I understand further, QCC has access to only a limited section of the City’s ROW, and the City charges QCC approximately \$3 per linear foot plus some ducts for the City’s use. From an economic perspective, based on the information available, I find neither type of fee unfair, unreasonable, discriminatory, or competitively non-neutral. In this section I describe several methods for calculating the value of ROW, and then I describe my evaluation of the City’s ROW fees.

##### **A. A Number of Acceptable Methods Exist for Calculating the Market Value of ROW.**

The appraisal literature describes a number of methods for calculating the market value of ROW. These methods include calculating market value based on similar transactions, which appraisers call “comparables.” I describe four methods.<sup>12</sup>

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*Appraisal Standards for Federal Land Acquisitions.* <http://www.usdoj.gov/enrd/land-ack/yb2001.pdf> accessed August 29, 2005.

<sup>10</sup> Ring, A. 1970. *The Valuation of Real Estate*. Prentice Hall. In, Quan, D. and J. Quigley. 1989. “Inferring an Investment Return Series for Real Estate from Observations on Sales.” *Journal of the American Real Estate and Urban Economics Association*, 17(2); and U.S. Department of Justice. 2001. Cited previously.

<sup>11</sup> Fitzgerald, Shawna. 2005. Cited previously. Page 29.

<sup>12</sup> NOAA. 2002. Cited previously. Pages 7-13.

1. Land-based appraisals: Analysts calculate the value of a ROW based on the value of land adjacent to the ROW. This is sometimes referred to as the “across-the-fence” (ATF) method. A variation on the ATF method acknowledges that because a ROW provides a continuous corridor, a ROW has a higher value than the disparate, unassembled adjacent parcels. This corridor value can exceed the ATF value by a factor of six or more.
2. The willing-buyer-and-willing-seller method: Analysts seek to replicate market negotiations over the value of the ROW. The seller considers his or her costs, including the value he or she could earn from other uses of the land. The buyer considers the income-generating potential of the ROW and the costs of alternative routes.
3. Income-based methods of valuation: Analysts take as given that a variety of assets contribute to a firm’s income or value. A ROW may be one of many income-generating assets from which a firm would expect to earn a reasonable return. The analysts base the market value of the ROW on the return the asset generates for the firm.
4. The comparable-transactions method: Analysts base the market value of ROW on the sales of similar ROW. Information on most ROW transactions between private entities remains confidential. More publicly available information exists on ROW agreements between municipalities and private firms that want access to municipal ROW.

As I describe in subsections B, C, and D, the City’s ROW fees are consistent with generally accepted valuation methods, and they make economic sense.

### **B. A ROW Fee Based on a Percentage of Gross Revenues Is an Accepted Method of Estimating a Fair Market Price for Using ROW**

Imposing a fee that is a percent of gross revenues is a reasonable way to price the ROW. Furthermore, given the information available, it meets the generally accepted standard in economics for efficient compensation in exchange for goods or services, namely, a price that reflects the value of the good or service to the buyers and sellers. ROW, like other real-estate assets, convey value to its users. TWT’s use of the City’s ROW conveys or adds value to TWT.

This method is straightforward and has low transaction costs. That is, both the City and TWT can resolve the amount owed with minimal accounting and auditing. In contrast, calculating a per-foot fee for a provider with access throughout the City would be time-consuming, costly, and generally inefficient. Moreover, a percentage-based fee is convenient because the fee directly tracks the amount of business passing through ROW facilities. Therefore, the fee reflects a reasonable and up-to-date measure of the value TWT receives from using the City’s ROW.

The City’s annual ROW fee charged to TWT is 5 percent of gross revenues. A host of similar transactions demonstrates that the City’s fee is within a range of reasonable fees. For example, I understand that there are approximately eleven other local-exchange carriers

that operate in the City, each of which has an agreement with the City that includes the 5-percent fee that TWT challenges.<sup>13</sup> Moreover, other occupants with ubiquitous access to the City's ROW generally pay 5 percent of gross revenues. Specifically, Northwest Natural, Pacific Power and Light, and Portland General Electric, which also occupy the City's ROW, each pays a 5-percent fee to the City.<sup>14</sup>

In addition, Qwest and other telecommunications carriers pay a 5-percent franchise fee in Fargo, North Dakota;<sup>15</sup> Henderson, Nevada;<sup>16</sup> and Wichita, Kansas.<sup>17</sup> In Salt Lake City, Utah, Qwest pays a 2-percent franchise fee and a 4-percent utility tax.<sup>18</sup> It is not by chance that the City charges a percentage rate in line with percentage rates charged elsewhere. The similarity in rates reflects similarities across urban areas. Such similarities emerge in the field of urban economics, which involves the study of common economic forces affecting urban economies. In that spirit, considering the fees paid by carriers to other municipalities provides meaningful information that can be used to judge the reasonableness of fees paid by carriers to the City.

A 5-percent fee seems easily in line with the percentage rents paid in the retail industry. For example, operators of movie theatres pay an average of between 8 percent and 12 percent of gross receipts. Restaurants pay, on average, between 5 percent and 7 percent. These amounts are usually on top of a base rent, which TWT does not have to pay to the City.<sup>19</sup>

Based on the foregoing information and on my professional knowledge of demand, supply and markets, I conclude that the 5-percent fee imposed in the City's franchise agreement with TWT is neither unfair nor unreasonable compensation for placing facilities in the City's ROW.

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<sup>13</sup> According to information posted on the City's Cable Communications and Franchise Management website (<http://www.portlandonline.com/cable/index.cfm?c=33150>), accessed August 17, 2005, the other local exchange carriers are AboveNet, All-Phase Utility, Electric Lightwave, Inc., Enron Broadband Services, Integrated Regional Network Enterprise, Level 3, MCI Metro, McLeod USA, ONFiber, TCG Oregon, and XO Communications.

<sup>14</sup> The utilities are listed on the City's Cable Communications and Franchise Management website, cited previously. According to Chapter 7.14 of the Portland City Code, electrical and gas utilities pay 5 percent of gross revenues and other utilities pay the City 5 to 7.5 percent of gross revenues.

<sup>15</sup> Fargo City Code. 2000. Article 24-03: Grant of Access and Use of Public Rights-of-Way. Page 24-85.

<sup>16</sup> Henderson Municipal Code. Section 4.05.020(B)(1)(a). [http://municipalcodes.lexisnexis.com/codes/henderson/\\_DATA/TITLE04/Chapter\\_4\\_05\\_BUSINESS\\_LICENSE\\_FEE/\\_4\\_05\\_020\\_Public\\_utility\\_licens.html](http://municipalcodes.lexisnexis.com/codes/henderson/_DATA/TITLE04/Chapter_4_05_BUSINESS_LICENSE_FEE/_4_05_020_Public_utility_licens.html) accessed August 30, 2005.

<sup>17</sup> Wichita City Code. Section 3.93.004: Franchise and License Fees. Subsection 4.2: Franchise Fees. <http://www.wichitago.org/CityCode/Default.htm?code=3980> accessed August 30, 2005.

<sup>18</sup> Torrence, Rachel. Deposition Transcript. November 25, 2002. In the matter of Qwest Corporation v. City of Globe, Arizona. CIV 01-2500. Page 31.

<sup>19</sup> Senn, Mark A. 2000. *Commercial Real Estate Leases: Preparation, Negotiation, and Forms*, 3<sup>rd</sup> Edition. Gaithersburg, MD: Aspen Law and Business. Section 6.06(C).

### **C. A ROW Fee Based on Feet of Installed Conduit Is an Accepted Method of Estimating a Fair Market Price for Using ROW**

Calculating ROW fees on a per-linear-foot basis is another accepted method of estimating the market value for using the ROW. Such a method is especially useful where providers occupy limited portions of the ROW. In a survey of different fee structures used by municipalities to charge for ROW use, Bucaria and Kuhs found that charging based on linear feet of ROW is a fee structure commonly used by municipalities.

“The fact that there are established telecommunications corridor right-of-way rental markets allows some direct rental rate comparisons to be made, often in terms of dollars paid annually per lineal foot of right of way, conduit, or cable.”<sup>20</sup>

“Linear measure for both sales and rental comparison purposes are comparison approach methods. They are well accepted by both industry and property owner representatives. Linear measure data is relatively plentiful. Accordingly, use of this method of market comparison is valid and useful in telecommunications corridor valuation situations.”<sup>21</sup>

Bucaria and Kuhs also note that the rate per linear foot may vary depending on the number of lines of fibers installed and the diameter of the conduit.

Calculating the market value of ROW access using a per-foot fee for providers occupying limited and distinct routes in the ROW has advantages in that it is straightforward and has low transaction costs, facts that seem reasonable for a City to consider in establishing a ROW fee. Because QCC needs access to only a limited stretch of the City’s ROW rather than access to all of the City’s ROW, both the City and QCC can resolve the amount owed with minimal accounting and auditing.

The City’s annual ROW fee to QCC is approximately \$3.00 per linear foot. I understand that there are approximately ten other point-to-point carriers that operate in the City, each of which also has an agreement that includes a \$2-\$3 fee per linear foot with an annual increase based on the consumer price index.<sup>22, 23</sup>

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<sup>20</sup> Bucaria, Charles and Robert Juhs. 2002. “Fiber Optic Communication Corridor Right-of-Way Valuation Methodology.” *The Appraisal Journal*. April. Page 138.

<sup>21</sup> Bucaria, Charles and Robert Juhs. 2002. Cited previously. Page 143.

<sup>22</sup> As I understand, the City’s per-foot fee is nearly the same across all carriers, and it is based on a rate of \$2 per linear foot established in approximately 1990 with subsequent increases tied to increases in the consumer price index. As I understand further, in setting its rate the City considered the value of its ROW and examined rates in cities in the Northwest and in other areas of the U.S. Slight differences in the fees listed in the agreements are the result of the differences in the years in which each agreement was signed. In addition, there may be differences due to the time between the date that the agreements were signed and the date that the agreements became effective. Soloos, David, Assistant Director, Office of Cable Communications and Franchise Management, City of Portland. Personal Interview. August 30, 2005.

<sup>23</sup> According to information posted on the City’s Cable Communications and Franchise Management website (<http://www.portlandonline.com/cable/index.cfm?c=33150>), accessed August 17, 2005, the other point to point

In addition, information on comparable transactions from other areas yields a range of fees from approximately \$1.80 to \$5.00 per linear foot. As I stated in subsection B, when calculating a fee in one area, considering the fees charged in other areas is a valid approach.

Macon, Georgia charges \$4.50 per foot; Savannah, Georgia and Atlanta, Georgia charge \$5.00 per foot; Gainesville, Florida charges \$4.00 per foot;<sup>24</sup> Huntsville, Alabama charges Level 3 \$4.50 per foot for the first five years, increasing \$1.50 per foot the next five years, and increasing an additional \$1.50 per foot the next five years;<sup>25</sup> Burbank, California charges Level 3 \$3.99 per foot;<sup>26</sup> Glendale, California charges Level 3 \$1.80 per foot;<sup>27</sup> Rialto, California charges Level 3 \$2.00 per foot;<sup>28</sup> and San Bernardino County, California charges Williams Communications \$3.00 per foot.

Also, the Fitzgerald Report describes a number of contracts between public entities and a variety of parties for occupying space in the ROW or in other similar resources. Per-linear-foot charges are common when entities want to occupy a finite number of feet. The annual per-linear-foot charges range from less than \$1.00 to over \$100 per foot, where the higher charges are either for the placement of multiple ducts or fibers or for occupying space in resources such as elevated highways or the New York/New Jersey Lincoln Tunnel.<sup>29</sup>

Based on the information that is available to me at this time and on my professional knowledge of supply, demand and markets, I conclude that charging for ROW use based on a fee per linear foot of ROW occupied is an acceptable method of calculating the fee for using the City's ROW, especially in cases such as this where the telecommunications firm occupies a limited portion of ROW.<sup>30</sup> Furthermore, the list of fees above indicates that the

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carriers are Tyco Networks (U.S.), Inc. 360 Networks, AT&T Long Distance, Broadwing Communications, FTV Communications, PT Cable, Sprint Communications, WCI Cable, WilTel, WorldCom Network Services, Inc.

<sup>24</sup> We obtained information on comparator fees in Georgia and Florida from a personal interview staff in the City of Huntsville, Alabama. We acquired information on the comparator fees in California from an appraisal by Jones, Roach & Caringella, June 12, 2003 and other documents where noted. I have excluded the City of Escondido, which was included in the appraisal, as a comparator because it has no annual fee. This suggests either that Escondido's ROW is not a scarce resource or that through ignorance or non-market constraints, Escondido has offered its ROW free of charge. Any of these conditions disqualifies Escondido as a relevant comparator for the dispute at hand.

<sup>25</sup> An Ordinance Respecting the Use of the Public Rights-of-Way in the City of Huntsville, Alabama by Level 3 Communications, LLC. Ordinance No. 00-819. October 12, 2000. Section 8.1.

<sup>26</sup> Encroachment Permit Agreement between Level 3 Communications, LLC and the City of Burbank. October 12, 2000.

<sup>27</sup> Telephone Corporation Encroachment Permit Agreement between Level 3 Communications, LLC and the City of Glendale.

<sup>28</sup> Telecommunications Encroachment Permit Agreement between Level 3 Communications, LLC and the City of Rialto. October 16, 2000.

<sup>29</sup> Fitzgerald, Shawna. 2005. Cited previously. Page 11.

<sup>30</sup> Edsall, Gary, of the City of Glendale. Personal Interview. July 17, 2003; and Goulding, Diane, of the City of Burbank. Personal Interview. July 17, 2003.

City's fee falls in the relevant range of comparable fees. Therefore, I conclude that the fee of approximately \$3.00 per linear foot imposed in the City's franchise agreement with QCC is not unfair, unreasonable, discriminatory or competitively non-neutral.

#### **D. In-Kind Compensation Is Acceptable for the Use of ROW**

The franchise agreements also include in-kind compensation as part of the fee for using the City's ROW. That is, in addition to a monetary payment, both TWT and QCC must provide ducts for the City's use. In an economic sense, the monetary payments and the in-kind payments together comprise the price of using the ROW. From the information we have examined, such complementary transactions within agreements occur frequently. I also understand that they aren't unusual in negotiated agreements between telecommunications companies and municipalities. The ROW agreement between the City of Huntsville, Alabama and Level 3, for example, provides fiber and manholes for the City of Huntsville's use.<sup>31</sup> The Fitzgerald Report describes a number of contracts that incorporate in-kind payments as part of the compensation for use of ROW and other similar resources.<sup>32</sup>

If the City required additional monetary compensation instead of in-kind payments, it could purchase its own duct. It is likely, however, that the in-kind arrangement is comparatively more beneficial to both QCC and TWT. That is, the providers may be able to provide the City with ducts at a lower cost than the monetary fee the City would otherwise require. I conclude that the in-kind duct requirement is part of a reasonable compensation package and is neither discriminatory nor competitively non-neutral.

#### **E. The City's Fees Are Neither Discriminatory nor Non-Neutral**

I do not find that the City's different compensation packages for different types of providers amount to discrimination or bias. As I have described, TWT and QCC use the ROW differently. Even among providers that use the ROW in similar ways, differences from agreement to agreement are to be expected. That is, even within the same market, competitors generally do not face identical economic conditions. Some of the differences in economic conditions stem from differences among the competitors themselves. Other differences stem from the point in time that transactions occur. Based on my review of the fees at issue in this case, I find that providers that use the ROW in similar ways are charged similar fees. I do not find evidence that the fees are discriminatory or non-neutral or that the fees tend to favor or disfavor any competitor over any other.

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<sup>31</sup> An Ordinance Respecting the Use of the Public Rights-of-Way in the City of Huntsville, Alabama by Level 3 Communications, LLC. Ordinance No. 00-819. October 12, 2000. Section 8.7.

<sup>32</sup> Fitzgerald, Shawna. 2005. Cited previously. Attachment A. Fitzgerald lists a number of agreements that include the provision of fiber or duct in New York State, Massachusetts, Wyoming, Kansas, Maryland, New Jersey, Rhode Island, and Wisconsin.

## V. OTHER ISSUES

### A. Competitive Differences

The City's Integrated Regional Network Enterprise (IRNE) provides dial-tone (voice) and data-transmission services to City bureaus, and data-transmission services to jurisdictions in the area (e.g., the Port of Portland, Portland Public Schools, and Multnomah County).<sup>33</sup> As I understand, IRNE does not provide any telecommunications services to residences or private businesses.<sup>34</sup>

The Plaintiffs claim that the City, through IRNE, competes unfairly with QCC and TWT. The Plaintiffs' complaint states, in part,

“[A]s a condition to using the public ROWs, the City has improperly required the Carriers to provide the City with free or below cost use of conduit, fiber and related equipment and facilities. The City in turn is using these same valuable network assets to operate its own telecommunications company in competition with the Carriers — acting through a City entity known as the Integrated Regional Network Enterprise (‘IRNE’).”

“[T]he municipality [City of Portland] is using its control over access to ROWs to unfairly advantage *itself* in its role as a telecommunications provider.”<sup>35</sup> [emphasis in original]

In economics, a competitive advantage, as alleged by the Plaintiffs, does not constitute unfair competition. In fact, many firms, many competitors in the same market, have different competitive strengths and weaknesses. A business is made up of a composite of attributes that affect its performance in a market including: access to capital, raw materials or other inputs; production functions or manufacturing processes; the quality of its labor force; and customer relations. All competing firms in a market have their own unique combination of attributes. Some firms may have better, i.e., less expensive, access to capital. Others may have a better-trained work force. Firms survive by maximizing their strengths and minimizing or mitigating their weaknesses.

The economic literature describes these inherent differences among firms and how they can affect a firm's costs and profits.

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<sup>33</sup> City of Portland's Concise Statement of Material Facts Not In Dispute. April 2005. In the matter of Time Warner Telecom of Oregon, LLC and Qwest Communications Corporation v. the City of Portland. Page 2, paragraph 8.

<sup>34</sup> Defendant's Response To Plaintiffs' First Set of Written Discovery. January 5, 2005. In the matter of Time Warner Telecom of Oregon, LLC and Qwest Communications Corporation v. the City of Portland. Response to Interrogatory No. 17, pages 14-15.

<sup>35</sup> Complaint for Declaratory Judgment (First). Cited previously. Pages 2-3.

“[T]he rate of profit [among firms] may vary ... from unit to unit according to the differences in their capital-structure, particularly the relationship between the ‘owned’ and ‘borrowed’ capital ...”<sup>36</sup>

“There are at least four major causes of lower costs:

- A firm may be more efficient than its rivals. For example, it may have better management or better technology that allows it to produce at lower costs. Such a technological advantage may be protected by a patent.
- An early entrant to a market may have lower costs from having learned by experience how to produce more efficiently.
- An early entrant may have had time to grow large optimally ... so as to benefit from economies of scale. By spreading fixed costs over more units of output, it may have lower average costs of production than a new entrant could instantaneously achieve.
- The government may favor the original firm. The U.S. Postal Service does not pay taxes or highway user fees, which reduces its cost relative to that of competing package delivery services.”<sup>37</sup>

“What factors could lead to a gap between the average costs of established firms and potential entrants? Firms already in the industry may control a crucial input, may be able to borrow investment funds at lower interest rates than potential entrants, or they may have access to superior production technologies, perhaps protected by patents. They may have built plants in the most desirable locations, forcing new firms to ship raw materials or the final product greater distances. Also entrants may have to pay more for scarce inputs, such as raw materials, managerial talent, or research personnel.”<sup>38</sup>

“The first mover advantage within an industry may make it possible to build brand loyalty, profit from early experience,

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<sup>36</sup> Mehta, M.M. 1950. “Measurement of Industrial Efficiency.” *The Economic Journal*, 60(240): 827-831. Page 828.

<sup>37</sup> Carlton, Dennis W. and Jeffrey M. Perloff. 1999. *Modern Industrial Organization*, 3<sup>rd</sup> Edition. Reading, MA: Addison-Wesley. Pages 110-111.

<sup>38</sup> Waldman, D. and Jensen, J. 1998. *Industrial Organization: Theory and Practice*. Reading, MA: Addison-Wesley. Page 110.

gain control over scarce assets and create switching costs that bind consumers to the company.”<sup>39</sup>

In the case at hand, competitive differences arise in part because of the contrasting objective functions between the Plaintiffs, profit-maximizing entities, and the City, a municipal entity that serves the interests of all Portlanders. As I understand, IRNE, as a municipal entity, operates at a competitive disadvantage to the Plaintiffs in a number of areas including:

- Municipal planning, decisionmaking, managing data, allocating funds, etc., take place in an open, public, and time-consuming manner. Private firms operate in relative secrecy and as a result typically can react more quickly to changing conditions.
- Private firms have access to financing options not available to municipal entities, e.g., stock sales.
- Private firms may provide a wide-range of telecommunications services. IRNE provides only dial-tone service to City bureaus and data-transmission services to City bureaus and to a limited number of other jurisdictions in the area.
- Private firms can increase sales through advertising and marketing. IRNE does neither. In fact, as I understand, IRNE takes a passive approach to providing its services. For example, IRNE has no influence over the number of phone lines used by the City’s accounting department. The accounting department makes that determination without input from IRNE.<sup>40</sup>
- IRNE does not provide voice or data service to any residence or business.<sup>41</sup>
- The prices for IRNE’s services to City bureaus cannot increase beyond the rate of inflation.<sup>42</sup> Individual private firms do not face such a constraint on their pricing decisions.

Market participants bring with them their own, unique mix of competitive strengths and weaknesses. The local Portland market for telecommunications services is no different. The Plaintiffs emphasize one of the City’s advantages—it controls the ROW. This advantage, however, does not constitute a barrier to entry or some other form of antitrust behavior. The Plaintiffs ignore the City’s competitive disadvantages, some of which I describe above.

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<sup>39</sup> Jenssen, Jan Inge. 2003. “Innovation, Capabilities and Competitive Advantages in Norwegian Shipping.” *Maritime Policy and Management*, 30(2): 93-106. Page 95.

<sup>40</sup> Gray, Mark, Manager of Communications Operations and Engineering for the City of Portland. Personal Interview. August, 12, 2005.

<sup>41</sup> Defendant’s Response to Plaintiffs’ First Set of Written Discovery. Cited previously. Response to Interrogatory No. 17, pages 14-15.

<sup>42</sup> Smith, Ralph, of the City of Portland’s Office of Finance and Management. Personal Interview. August 5, 2005.

The Plaintiffs' claim regarding the City's competitive advantage ignores the fundamental economic principles that drive competition. Competition does not thrive and grow by *limiting* one party's competitive advantage. Rather than lowering the bar for all sellers of goods or services in a market, competition encourages advantages that benefit the consumer. Such is the case here. As I describe in the last subsection of this report, the City's control of its ROW and the services IRNE provides benefit consumer by providing comparable or superior services at lower rates.

## **B. QCC and TWT Did Not Build IRNE**

The Plaintiffs allege that the City built IRNE using the in-kind payments it received from QCC, TWT, and other telecommunications firms.

“[T]he City has and is using the valuable network assets it extorted from the Carriers [QCC and TWT] and other service providers to operate its own competing telecommunications company.”<sup>43</sup>

“In addition to providing conduit and fiber, the City has used cash received from franchisees to construct the IRNE. ... As a result, carriers have been forced to build their own competitor.”<sup>44</sup>

In previous subsections of this report, I explain the economic rationale for why the in-kind payments made by QCC and TWT to access the City's ROW—a scarce and valuable resource—are economically fair and reasonable. In my research and teaching on the economics of crime, I have never encountered professional economics literature—in either journals or text books—that has equated fair and reasonable pricing with extorting property, funds, patronage or excessive fees.

Based on the information available to us at this time, I find no support for the claim that the Plaintiffs were “forced to build their own competitor.” A small percentage of the conduit used by IRNE came from the in-kind component of payments by some franchisees—but the Plaintiffs were not among them, i.e., they provided none of this conduit.<sup>45</sup> Furthermore, telecommunications firms provided none of IRNE's fiber. To the extent it is relevant, the City provided 89 percent of the conduit (and aerial runs) that constitutes IRNE. The City describes the sources of the conduit that IRNE uses.

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<sup>43</sup> Plaintiff Qwest Communications Corporation's Response to City of Portland's First Set of Interrogatories (Nos. 1-15). January 2005. In the matter of Time Warner Telecom of Oregon, LLC and Qwest Communications Corporation v. the City of Portland. Response to Interrogatory No. 2, page 6.

<sup>44</sup> Plaintiffs' Response to Defendant's Motion for Partial Summary Judgment and Motion for Joinder. May 6, 2005. In the matter of Time Warner Telecom of Oregon, LLC and Qwest Communications Corporation v. the City of Portland. Pages 6-7.

<sup>45</sup> Gray, Mark, Manager of Communications Operations and Engineering for the City of Portland. Personal Interview. August, 12, 2005.

“The physical facilities used by IRNE were contributed by several different sources. Of the segments of conduit and aerial runs connecting the various nodes of IRNE, by segment count approximately 43% were built by the City itself, 38% were built by other public entities (especially the State of Oregon and Tri-Met), 5% were built by the City in cooperation with other public entities, and 3% were constructed by the City in cooperation with private telecommunications providers. Finally, about 11% of the IRNE conduit infrastructure was dedicated to City use by “in-kind” contributions of various City telecommunications franchisees. The City uses no conduit contributed by plaintiffs Time Warner or Qwest to operate IRNE.”<sup>46</sup>

Conduit, of course, is only a fraction of the inputs to the construction, operation and maintenance of IRNE. The inputs, in the conventional economic categories of capital, labor, and technology (i.e., knowledge and its applications), include fiber, switches and other equipment as well as labor ranging from the technical and administrative workers to the construction, operation and maintenance workers. Not incidentally, the City Council authorized the sale of \$11 million in bonds to build IRNE and make it operational.<sup>47</sup> As I understand, the Plaintiffs did not build IRNE or any part thereof. They contributed none of the inputs—the resources—that constitute IRNE.

### **C. The Conduit Paid In-Kind Provides the City with No Measurable Competitive Advantage**

The Plaintiffs claim,

“As a result [of in-kind payments of conduit], the City obtains valuable telecommunications network facilities on terms far below their actual cost, while artificially inflating the costs of other service providers that compete with IRNE. Thus, in those markets the City chooses to enter, private telecommunications carriers are unable to provide services because of the City’s artificially low prices.”<sup>48</sup>

The Plaintiffs’ claim, once again, is wrong. The in-kind payments made by the Plaintiffs, as I state above in Section IV.D, represent a portion of the fair and reasonable compensation to access the City’s ROW. The terms of the exchange between telecommunications providers and the City reflect market rates to access the City’s ROW and do not amount to either a below-cost transaction for conduit or artificially inflating costs to the providers.

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<sup>46</sup> City’s Memorandum in Support of Motion for Partial Summary Judgment. Cited previously. Page 6.

<sup>47</sup> City’s Memorandum in Support of Motion for Partial Summary Judgment. Cited previously. Page 5.

<sup>48</sup> Plaintiff Time Warner Telecom of Oregon, LLC’s Response to City of Portland’s First Set of Interrogatories (Nos. 1-15). January 14, 2005. In the matter of Time Warner Telecom of Oregon, LLC and Qwest Communications Corporation v. the City of Portland. Response to Interrogatory No. 2, page 5.

To put the Plaintiffs' claim in perspective, it helps to consider the actual costs involved. First, IRNE's production function—to use the jargon of economics—involves construction, operation and maintenance. Second, focusing for the moment on construction alone, an analysis conducted by the City's consulting telecommunications engineer shows that the cost of labor and materials to install a 2-inch conduit represents less than 5 percent of the total cost of excavating a trench, installing conduit, and filling in and paving over the trench.<sup>49</sup> As I understand, once a trench is opened, installing one, two, or more, 2-inch conduits represents a small marginal increase in the overall cost of trenching. Third, the conduit provided by other telecommunications companies—none of which is either of the Plaintiffs'—constitutes 11 percent of the total amount of conduit used by IRNE.<sup>50</sup> Fourth, it follows then that telecommunications companies provided, as part of their fair and reasonable payments for the ROW, 0.55 percent (5% of 11% = 0.55%) of the excavation-installation-related construction specific to IRNE's conduit. Fifth and finally, the labor and materials cost specific to conduit accounts for only a portion of the total cost of IRNE; the total cost also includes other construction costs, and the costs associated with operation and maintenance.

The in-kind payments from telecommunications firms amount to a miniscule proportion of the total value of IRNE and confer no measurable competitive advantage to the City. I repeat, for emphasis and clarity, that the Plaintiffs provided none of the conduit paid in-kind that IRNE uses.

I find no support for the claim that private telecommunications firms have not been able to provide services in the dial-tone (voice) and data-transmission market in the Portland area. In fact, as I understand, QCC still earns approximately \$50,000 per year on voice service (telephone) and \$50,000 per year on data-transmission services from the City and other IRNE users.<sup>51</sup> QCC also has a pilot project with Portland Public Schools to provide voice over IP (Internet Protocol) services,<sup>52</sup> and the Port of Portland leases two telecommunication lines from Qwest.<sup>53</sup> For its part, IRNE earns approximately \$83,000 per year on its data-transmission services provided to other jurisdictions.<sup>54</sup> IRNE, however, provides no telecommunications services to any business or residence.

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<sup>49</sup> Analysis conducted by Erik Orton, Project Manager, Sparling: Orton, Erik. *Incremental Cost Analysis*. Received in an email from Terry Thatcher to Ed MacMullan. August 25, 2005.

<sup>50</sup> Gray, Mark. Declaration. April 2005. In the matter of Time Warner Telecom of Oregon, LLC and Qwest Communications Corporation v. the City of Portland. Page 5, paragraph 16.

<sup>51</sup> Smith, Ralph, of the City of Portland's Office of Finance and Management. Personal Interview. August 5, 2005.

<sup>52</sup> Holstun, S. 2005. Interview with Scott Robinson, Chief Technology Officer for the Portland Public Schools. August 3.

<sup>53</sup> Holstun, S. 2005. Interview with Wayne Splawn, Communication Services Manager for the Port of Portland. August 9.

<sup>54</sup> Gray, Mark. Declaration. Cited previously. Page 4, paragraph 14.

#### **D. Sharing Resources Does Not Constitute Anticompetitive Behavior**

The Plaintiffs allege that the intergovernmental agreements (IGA) between the City and each of two other agencies, the Oregon Department of Transportation (ODOT) and Tri-Met, to share fiber and conduit amounts to anticompetitive behavior.

“[I]t appears ... that the IGA [intergovernmental agreements] ordinances with ODOT, PDOT, and Tri-Met allow the City to construct its [IRNE] network and use those network assets for minimal cost. As a cumulative result of these ordinances telecommunication providers are effectively prohibited from providing telecommunication services in the government and educational market.”<sup>55</sup>

“IRNE also receives conduit through IGAs with other government entities that is not available to other competitors.”<sup>56</sup>

The Plaintiffs’ claim, once again, is wrong. Sharing resources does not constitute anticompetitive behavior on the part of the City or the other municipal entities. In fact, economic and business literature describes examples of private, profit-maximizing firms such as the Plaintiffs, sharing resources. Local examples include telecommunications firms in the Portland market—competitors in some cases—sharing the cost of constructing a trench through the heart of downtown Portland.<sup>57</sup> Also, TWT, a Plaintiff in this litigation, shares ROW access and construction costs in ways similar to the City’s alleged anticompetitive behavior.<sup>58</sup>

Private entities, including telecommunications firms, share resources for a variety of reasons. The economics and business literature describes this type of cooperation as strategic alliances.

“Companies, both big and small, are teaming up more today than ever before to enhance their competitiveness in the marketplace and keep pace with the rapid changes of technological innovation.”

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<sup>55</sup> Plaintiff Qwest Communications Corporation’s Second Supplemental Response to City of Portland’s First Set of Interrogatories (Nos. 1, 2 and 4). March 16, 2005. In the matter of Time Warner Telecom of Oregon, LLC and Qwest Communications Corporation v. the City of Portland. Supplemental Response to Interrogatory No. 2, pages 7-8.

<sup>56</sup> Plaintiffs’ Response to Defendant’s Motion for Partial Summary Judgment and Motion for Joinder. May 6, 2005. In the matter of Time Warner Telecom of Oregon, LLC and Qwest Communications Corporation v. the City of Portland. Page 13.

<sup>57</sup> Soloos, David, Assistant Director, Office of Cable Communications and Franchise Management, City of Portland. Personal Interview. August 24, 2005.

<sup>58</sup> Time Warner Telecom Inc. 2004. Form 10-Q. U.S. Securities and Exchange Commission, Washington, D.C. August 9. [http://www.sec.gov/Archives/edgar/data/1057758/000119312504135846/d10q.htm#tx86290\\_6](http://www.sec.gov/Archives/edgar/data/1057758/000119312504135846/d10q.htm#tx86290_6) accessed August 25, 2005. Page 26.

“A strategic alliance is an arrangement between two companies that combine resources to gain additional business ... It involves two companies that pool together expertise and resources to enter new markets, share financial risks and get products and services to market faster.”<sup>59</sup>

“Although firms gain advantages from possessing idiosyncratic resources ... authors in several research traditions argue that interfirm alliances provide a means of pooling resources held by different firms in order to exploit new business opportunities and to increase the efficiency of existing business activities.”

“The alliances include firms operating in the telecommunication, electronics, auto, aerospace, and other sectors.”<sup>60</sup>

“[W]ith the exorbitant cost inherent in deploying a new mobile telecommunication network technology, it does no longer appear to be a safe bet for investors that 3<sup>rd</sup> generation technologies will provide sufficient return on investment. ... [W]e identify the possibility to share risks and costs among several participating parties as a viable strategy for telecommunication operators.”<sup>61</sup>

“A ... method which applies only to reciprocal compensation, is called bill and keep or sender keeps all. The underlying theory is that the number of calls exchanged between two networks should be about equal in both directions, so charging is unnecessary.”<sup>62</sup>

As I understand, eight telecommunications firms<sup>63</sup> plus PGE shared the cost of constructing a trench in the City ROW through the heart of downtown Portland.<sup>64</sup> The trench, known as the “Level3 trench,” provides a local example of telecommunications firms pooling resources

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<sup>59</sup> Isidro, Isabel M. “Small Businesses and the Power of Strategic Alliances.” *International Cyber Business Services*. [http://www.ecomhelp.com/KB/joint\\_venture/kb\\_strategic-alliances.htm](http://www.ecomhelp.com/KB/joint_venture/kb_strategic-alliances.htm) accessed August 8, 2005.

<sup>60</sup> Mitchell, Will, Pierre Dussauge and Bernard Garrette. 2002. “Alliances With Competitors: How to Combine and Protect Key Resources.” *Creativity and Innovation Management*, 11(3): 203-223. Page 204.

<sup>61</sup> Ericsson, Nilo Casimiro, et al. *Strategies for Pooling Resources to Build Future Telecommunication Networks*. [www.itm.mh.se/summerschool/Reports/FinalReportTrack2.pdf](http://www.itm.mh.se/summerschool/Reports/FinalReportTrack2.pdf) accessed August 8, 2005. Page 1.

<sup>62</sup> Jamison, Mark A. (no date). *Incumbent and Entrant Incentives with Network Interconnections: The Case of US Telecommunications*. Working Paper. Page 8.

<sup>63</sup> Level 3, MFN (now known as AboveNet), McLeod, XO, Allphase, PGB (now known as OnFiber), Williams (now known as WilTel), and Adelphia.

<sup>64</sup> Spreadsheet provided by Alan Williams of the Fluor Corporation: Williams, Alan. *Joint Partner Matrix*. Received in an email from Terry Thatcher to Ed MacMullan. August 26, 2005.

in ways that benefit each of them individually. In this case the City, and its residents and businesses, also benefit from a single construction activity, rather than multiple construction projects with associated costs imposed on commercial activity, vehicular traffic and pedestrians.<sup>65</sup>

In another local example of a telecommunications firm benefiting by sharing resources, Electric Lightwave Inc. (ELI) and Northwest Natural Gas Co. (NWNG) developed an agreement to their mutual benefit. ELI paid NWNG a one-time fee of between \$9 and \$12 per linear foot to install fiber optic cable in abandoned or unused gas pipelines in Portland.<sup>66</sup> As I understand, this fee is much less than what ELI would have paid to design, permit, and construct a trench through the City's ROW. NWNG benefits by earning revenue on abandoned or unused pipeline.

Plaintiff TWT alleges in part that the IGA between the City and other municipal entities to share ROW, conduit and fiber amount to anticompetitive behavior. I note, however, that TWT has similar agreements to share ROW access, fiber capacity and construction costs. TWT describes these agreements in their Form 10-Q filed with the U.S. Securities and Exchange Commission.

“We [TWT] benefit from our relationship with Time Warner Cable, ... both through access to local rights-of-way and construction cost sharing. We have similar arrangements with Bright House Networks, LLC ... . We have constructed 23 of our 44 metropolitan networks substantially through the use of fiber capacity licensed from these affiliates.”<sup>67</sup>

I have seen no information that would lead me to conclude that the City engages in anticompetitive behavior by sharing resources through IGA with other municipal entities.

### **E. The City Holds IRNE to the Same Standards as Other Telecommunications Firms**

The Plaintiffs claim that the City holds IRNE to different standards than other telecommunications firms,

“The City does not impose the same ROW terms and conditions on its affiliate IRNE that it does on other telecommunications providers. IRNE is not required to compensate the general public for IRNE's share of the cost of managing the City's

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<sup>65</sup> Soloos, David, Assistant Director, Office of Cable Communications and Franchise Management, City of Portland. Personal Interview. August 24, 2005.

<sup>66</sup> Fiber Optic Cable Construction and Gas Pipeline Use Agreement Between Northwest Natural Gas Company and Electric Lightwave, Inc. April 29, 1991.

<sup>67</sup> Time Warner Telecom Inc. Form 10-Q. Cited previously. Page 26.

ROWs or bear the same burdens associated with ROW use that the City has imposed on IRNE's competitors."<sup>68</sup>

As I understand, IRNE obtained a franchise to use the City's ROW and pays the City 5 percent of gross revenues<sup>69</sup> on services provided under Intergovernmental Agreements (IGAs) with other jurisdictions, e.g., Port of Portland, Portland Public Schools, etc.<sup>70</sup>

I also understand that IRNE provides services in-kind to the City in at least two ways: providing engineering and planning services to other City bureaus, and swapping fiber with other jurisdictions. IRNE provides in-kind services to the City when IRNE technicians work with staff from other City bureaus on projects that involve IRNE resources. For example, the City's Bureau of Environmental Services (BES) connects their pump stations using fiber-optic cable. BES pays for the conduit and fiber, while IRNE technicians provide engineering and planning services.<sup>71</sup>

IRNE also provides in-kind services to the City by swapping fiber with other jurisdictions. Under this arrangement, City bureaus have access to fiber owned by Tri-Met or the Oregon Department of Transportation. These jurisdictions, in turn, have access to IRNE's fiber.

#### **F. By Matching or Underpricing the Competition, the City Does Not Engage in Anticompetitive Behavior**

The Plaintiffs allege that IRNE purposely set prices below that of private providers in order to capture market share.

"In order to gain market share, the City deliberately priced its services to undercut private carriers: ..."<sup>72</sup>

If we assume, for the sake of argument, that the Plaintiffs' allegations are true, as economists we find no cause for concern regarding anticompetitive behavior on the part of the City. Competitors seeking to underprice their competition is what we as a society expect and want from our markets. Wal-Mart is a good example. And Wal-Mart, of course, is hardly unusual.

Underpricing one's competitors is not anticompetitive. We have seen no evidence that the City engages in predatory pricing or other anticompetitive behavior regarding the pricing

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<sup>68</sup> Complaint for Declaratory Judgment (First). Cited previously. Page 9, paragraph 16.

<sup>69</sup> Gray, Mark. Declaration. Cited previously. Page 3, paragraph 8.

<sup>70</sup> City of Portland's Concise Statement of Material Facts Not In Dispute. Cited previously. Page 2, paragraph 8; and Smith, Ralph, of the City of Portland's Office of Finance and Management. Personal Interview. August 5, 2005.

<sup>71</sup> Smith, Ralph, of the City of Portland's Office of Finance and Management. Personal Interview. August 5, 2005.

<sup>72</sup> Plaintiffs' Response To Defendant's Motion For Partial Summary Judgment And Motion For Joinder. Cited previously. Page 9.

for IRNE's services. As I describe in the following subsection, consumers benefit from IRNE's lower prices, which is what we should want and expect from our producers and suppliers, whether they are private or public entities.

### **G. IRNE's Operations Benefit Consumers and Competition**

The Plaintiffs allege that IRNE's operations harm consumers and competition in the market for telecommunications services.

“[T]he City's actions ... harm the public interest in telecommunications competition in the Portland metropolitan area. The City is exploiting its monopoly control over public ROWs to effectively prohibit normal competition in the markets that the City serves through IRNE.”<sup>73</sup>

I find no basis in fact for the Plaintiffs' allegations. Based on our review of the available information and on my professional knowledge of demand, supply and markets, I conclude that IRNE's participation in the market helps promote the public interest and helps protect consumers. IRNE also helps promote competition in the market for telecommunications services in the Portland area.

We must distinguish between the type of “monopoly control” or, more to the point, “the exercise of monopoly control” that violates antitrust laws and harms consumers, from the control that owners have over their property. A homeowner owns his driveway and a factory owner owns her production facility. In these cases, ownership does not constitute anticompetitive behavior in an economic sense, even though the homeowner could lease his driveway to a neighbor and the factory owner could lease her facility to a former competitor. Likewise, the fact that the City controls the ROW does not mean that it exercises monopoly control over the ROW.<sup>74</sup>

The U.S. Federal Trade Commission (FTC) and U.S. Department of Justice (DOJ) describe the necessary (though not sufficient) steps that Plaintiffs should take when making a claim of monopoly power.<sup>75</sup>

- Identify the relevant product, the good or services, at issue

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<sup>73</sup> Complaint for Declaratory Judgment (First). Cited previously. Page 10, paragraph 18.

<sup>74</sup> Not incidentally, the existence of a monopoly in the context of ROW is itself not bad and whether the ROW is owned by the City, another public entity, or a private firm, the monopoly would still exist. For my reasons for these statements, see Baumol, W. J. and A. S. Blinder. 1991. *Microeconomics Principles and Policy*, 5<sup>th</sup> Edition. Fort Worth, TX: Harcourt Brace Jovanovich. Pages 215-216, G-2, G-5; Nicholson, Walter. 1998. Cited previously. Pages 546, 569; O'Sullivan, Arthur and Steven M. Sheffrin. 2001. Cited previously. Page G-3; Samuelson, Paul A. and William D. Nordhaus. 1992. Cited previously. Page 166, 224, 339-340, 735, 742, G-7; Stiglitz, Joseph E. 1997. *Economics*, 2<sup>nd</sup> Edition. New York: W.W. Norton & Co. Pages 351, A10, A15.

<sup>75</sup> U.S. Department of Justice and Federal Trade Commission. 1997. *1992 Horizontal Merger Guidelines [With April 8, 1997, Revisions to Section 4 On Efficiencies]*. U.S. Department of Justice and Federal Trade Commission. <http://www.ftc.gov/bc/docs/horizmer.htm> accessed June 20, 2005.

- Identify the relevant geography, or the area over which the relevant product is traded
- Calculate the market shares of the relevant product in the relevant geography for all market participants

The Plaintiffs have not taken these steps, and their claim of monopoly power, therefore, lacks the necessary analyses and documentation. For example, the Plaintiffs have not identified the relevant product or relevant geography at issue. Even if the Plaintiffs had conducted studies that include these steps, they must, according to FTC and DOJ guidelines, also prove harm to consumers in the form of restricted access to goods or services, or prices for goods and services that exceed the relevant market rates. The Plaintiffs provide no such analysis. In fact, based on the information available to us at this time and on my professional knowledge of demand, supply and markets, I conclude that IRNE's presence in the market for telecommunication services benefits consumers by providing equivalent or superior services at prices equal to or below its competitors.

Comments from IRNE's customers speak to IRNE's superior services and lower prices, relative to its competitors.

#### Multnomah County

"With the greater capacity [available through IRNE], the County was ... able to consolidate data centers and downsize some of their organization, thus saving money."

"Multnomah County chose to contract with IRNE for several reasons including that they were able to purchase more bandwidth for comparable money and IRNE offered greater flexibility in network design and the centralization of data centers."

"The County also believes they benefit from having closer communications with other governmental entities where they can explore common goals. For example, the County is currently looking at IRNE for disaster relief. They are exploring using the Gresham IRNE line to transmit and store data should something happen to the Kelly Building. They believe IRNE will offer even more opportunities in the future."<sup>76</sup>

#### METRO

"METRO chose IRNE over other providers because of the flexibility it offers at the Pittock Hotel and for the stability of the system. ... The fact that IRNE is a governmental entity did

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<sup>76</sup> Holstun, S. 2005. Interview with staff from Multnomah County. August 4.

influence METRO's decision to contract with IRNE. Biedermann [METRO's Director of Information Technology] feels collective endeavors of governmental entities are very important. The collective endeavor of the various entities to operate IRNE keeps them involved with the exchange of information technology."<sup>77</sup>

#### Multnomah Education Service District (MESD)

"After entering into their last contract with Qwest, MESD experienced several problems with Qwest. The first of which, Qwest miscalculated the cost of their services and informed MESD that they were running 25-30% over contract. MESD had an extensive list of repairs that Qwest was either slow to fix or simply never addressed."

"MESD contracted with IRNE over another private provider because: 1) they got greater capacity for less money; 2) the reliability of IRNE is much higher; 3) customer services is much better than Qwest; and 4) it is much easier to work with other governmental agencies who understand the needs of government."

"Harrison [MESD Technology Officer] believes IRNE has benefited the MESD and its public purposes. It has created a partnership with other governmental entities and opened the lines of communication between the cities, counties, libraries and other school districts. Because they share common goals, each entity has done better than they could have done individually."<sup>78</sup>

#### Portland Public Schools (PPS)

"Robinson [Chief Technology Officer for Portland Public Schools] said PPS experienced high failure rates with Qwest, primarily because they have an aging infrastructure."

"Robinson buys from IRNE versus other providers because IRNE offers the bandwidth that PPS needs at an affordable price and because the system is reliable."

"Robinson believes that he could obtain similar services from other providers, but that they would not have the same system architecture and therefore, might not be as reliable. However,

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<sup>77</sup> Holstun, S. 2005. Interview with David Beiderman, METRO's Director of Information Technology. August 3.

<sup>78</sup> Holstun, S. 2005. Interview with Eric Harrison, Multnomah Education Service District's Technology Officer. August 4.

he does not believe he could get the same service for IRNE's prices."<sup>79</sup>

#### Port of Portland

"For purposes of the Port's redundancy needs, Splawn [Communication Services Manager for the Port of Portland] believes there are not a lot of alternatives to IRNE. Qwest is the only private provider that has circuits in the area of the airport, but they have been unwilling to update the circuits to DSL lines."

"The Port primarily contracted with IRNE because they were able to get the redundancy at a reasonable price and they were already a partner in the 800 MHz [radio services for emergency police, fire, and other emergency staff] system. The fact that IRNE is a governmental entity has had the added benefit of helping to expedite things among the agencies."

"Splawn believes the Port benefits from being a part of IRNE in that it has increased interagency cooperation and access to other agencies."<sup>80</sup>

In a deposition taken as part of this case, TWT's vice president and general manager of operations in Portland, Mr. Jon Nicholson, described how IRNE's presence in the market promotes competition and lowers costs for consumers.<sup>81</sup> Mr. Nicholson describes IRNE's beneficial impact on competition and the price METRO paid for their Internet connection:

"[METRO] put out an RFP [Request for Proposals] utilizing an IRNE connection to the Pittock Block,<sup>[82]</sup> which then opened up that opportunity to a lot of other providers who wouldn't have been able to build into them. In the end they went to the lower cost provider [ELI]."

"If IRNE had not provided a connection for Metro to the Pittock Block, then their options for connectivity directly into their site would have been fairly limited as far as those who actually had the capital and the network to be able to build into there."

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<sup>79</sup> Holstun, S. 2005. Interview with Scott Robinson, Chief Technology Officer for the Portland Public Schools. August 3.

<sup>80</sup> Holstun, S. 2005. Interview with Wayne Splawn, Communication Services Manager for the Port of Portland. August 9.

<sup>81</sup> Nicholson, Jon. Deposition Transcript. March 22, 2005. In the matter of Time Warner Telecom of Oregon, LLC and Qwest Communications Corporation v. the City of Portland. Pages 78-82.

<sup>82</sup> As I understand, the Pittock Block houses Internet provider and other telecommunications services.

“As it was, by being in the Pittock Block and by being able to obtain service from IRNE, it opened up the options substantially for them to various players.”

“With their options to go to the Pittock Block as opposed to have to take service at their location, that existing revenue stream went away from me, as well as the future revenue stream that, you know, we would have had a far better shot at if they hadn’t been able to get to the Pittock Block.”<sup>83</sup>

In this case, IRNE’s connection to the Pittock Block’s Internet hotel promoted competition for METRO’s Internet access and helped match METRO with the low-cost provider. But for IRNE’s system, METRO might have continued their relationship with TWT at higher rates.

IRNE benefits the City and the jurisdictions that subscribe to IRNE in ways that QCC or TWT apparently cannot. As described above in the statements by IRNE’s customers, the relationship between IRNE and the jurisdictions that receive data-transmission services from IRNE is not limited to the telecommunications vendor and buyer. As I understand, many of the jurisdictions with which IRNE has Intergovernmental Agreements (IGA) for data-transmission services also work with the City on other projects. IRNE’s communications services facilitate the exchange of information and data between or among jurisdictions working in common on a project. For example, the Port of Portland and the City may utilize IRNE’s data-transmission services as part of their participation in a project on regional transportation. QCC or TWT would have no interest in such a project.<sup>84</sup>



Ed Whitelaw

9/1/05

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<sup>83</sup> Nicholson, Jon. Deposition Transcript. Cited previously. Pages 79-91.

<sup>84</sup> Gray, Mark, Manager of Communications Operations and Engineering for the City of Portland. Personal Interview. August, 12, 2005.

## **APPENDIX 13**

**“Expert Report of Alan Pearce, Ph.D.”**

UNITED STATES DISTRICT COURT  
DISTRICT OF OREGON

**TIME WARNER TELECOM OF  
OREGON, LLC**, an Oregon Limited Liability  
Company, and **QWEST  
COMMUNICATIONS CORPORATION**, a  
Delaware Corporation,

CV 04-1393-MO

PLAINTIFFS,

v.

**THE CITY OF PORTLAND**, an Oregon  
Municipal Corporation,

DEFENDANT.

**EXPERT REPORT OF ALAN PEARCE, Ph.D.  
Information Age Economics, Inc.  
202-466-2654**

**A. INTRODUCTION**

1. I am President of Information Age Economics, Inc. (IAE), a Washington D.C.-based research and consulting firm. I founded IAE in March, 1978, after serving for approximately eight years in senior-level positions with the U.S. Government, first as Chief Economist and Special Assistant to two Chairmen of the Federal Communications Commission (FCC), Dean Burch and Richard E. Wiley, then as Chief Economist of the House of Representatives Telecommunications Subcommittee, under the Chairmanship of Cong. Torbert H. Macdonald and Cong. Lionel Van Deerlin, and finally as Senior Telecommunications Economist and Policy Adviser in the Office of Telecommunications Policy, Executive Office of the President. I attended The London School of Economics

and Political Science, University of London, as both an undergraduate and graduate student, and have a Ph.D. in Business and Telecommunications from Indiana University. My resume, litigation experience, and publications are attached.

2. In connection with the preparation of this report, I reviewed the documents listed in the attached Appendix 2: Reference Materials, along with the amended complaint in this case, Judge Jelderks' decision in *Qwest v. City of Portland* (March 22, 2002), the Ninth Circuit's decision on appeal thereof (October 12, 2004), the Ninth Circuit's decision in *City of Auburn v. Qwest*, as amended (July 10, 2001), and the FCC's decision in the *Pittencrieff* case (October 2, 1997). I worked with Michael F. Carlo, M.B.A. in gathering the information used in this report. Mr. Carlo worked under my direction and supervision.

3. Based on my training and my experience in the telecommunications industry, I was asked to express an opinion on the following issues:

- a. From an economic standpoint, is there reason to conclude that the statutes, regulations or legal requirements challenged by plaintiffs "may prohibit" entry? I conclude that there is no evidence to suggest that the regulations "may prohibit" entry, based on a comparison with other communities of similar size, and on general economic principles.
- b. From an economic standpoint, is there reason to conclude that the City's approach to telecommunications franchising promotes competition? Is there reason to conclude that the existence of the City's IRNE network promotes competition? I answer both questions in the affirmative, based on a comparison of Portland to other Cities, and on data that suggests that

IRNE's entry into the market enhances opportunities for competition. Indeed, an examination of the relative numbers of competitive telecommunications services providers in the comparable cities, listed below in this report, clearly demonstrates that the city of Portland has a relatively large number of competitive providers, representing a significant indication that the city's regulatory policies have not inhibited competitive entry. On the contrary, competitive entry has been enabled by the city's pro-competitive policies. In sum, the City of Portland has fully lived up to the goals and spirit of The Telecommunications Act of 1996.

- c. Is there reason to find that the "in-kind" requirements contained in the Portland franchises are part of a "fair and reasonable" compensation package for use of the rights of way in light of industry practices, and are nondiscriminatory and competitively neutral? I conclude that the "in-kind" requirements are fair and reasonable, and fairly common within the telecommunications industry in transactions where one entity provides a resource (whether rights of way or conduit) to another. In-kind "payments" are not new in the telecommunications-information industry having existed as a common business practice since before World War Two. In-kind merely refers to another form of "payment," for example the performance of "free" services and/or the provision or sharing of facilities. Major telecommunications companies, for example BellSouth, Southwestern Bell, and Verizon, among others, publicize websites that specialize in the sharing of conduits and rights of way, where a variety of

deals and methods of payment can be struck, see Appendix 2 for a list of carrier websites and pole attachment literature. I also conclude that the requirements imposed upon telecommunications providers here are relatively similar, and are both non-discriminatory and competitively neutral. Moreover, the management of the rights of way program does effectively allow for competition while balancing the interests of the taxpayers in the city of Portland.

**B. ASSUMPTIONS UNDERLYING REPORT; TERMS.**

4. I have been asked by the attorneys for the City to assume that all the challenges raised by plaintiffs relate to “statutes, regulations or legal requirements,” within the meaning of 47 U.S.C. § 253, even though I understand that City contends that several of plaintiffs’ challenges raise issues that are not the proper subject of a Section 253 challenge. I have prepared this report consistent with this assumption so that I could address contentions raised by plaintiffs. I have no opinion one way or the other as to the validity of the assumption.

5. I refer to Plaintiff Qwest Communications Corp below as QCC. The term “Qwest” refers to the incumbent local exchange carrier, an affiliate of QCC. I refer to plaintiff Time Warner Telecom of Oregon LLC as “TWTC” or “Time Warner.” IRNE is Portland’s “Integrated Regional Network.”

6. In this report, I summarize my opinions and the current bases for those opinions, based on the information reviewed thus far. As I review additional information I may revise the opinions expressed in this report, add additional opinions, or both.

## C. BACKGROUND

7. Section 253 of the Telecommunications Act of 1996 preempts local laws and regulations that “prohibit” or have the “effect of prohibiting” the “ability” of any entity to provide “telecommunications services,” subject to certain exceptions spelled out in Sections 253(b) and (c). The term “telecommunications services” refers only to transmission services provided on a common carrier basis. The term does not include a wide variety of services that a lay person might consider telecommunications services, such as Internet access service.

8. Neither the Act nor the decisions of the Ninth Circuit tells us precisely what is meant by the terms “may prohibit” or “effectively prohibit.” What is clear is that Section 253 was part of a major rewrite of the nation’s telecommunications laws designed to “promote competition and reduce regulation in order to secure lower prices and higher quality services for American telecommunications consumers and encourage the rapid deployment of new telecommunications technologies.”

9. This overall goal, read together with the plain language of Section 253 suggests that it is important to keep basic economic principles in mind when determining whether a particular requirement may prohibit or effectively prohibits the ability of an entity to provide telecommunications services - at least where there is no direct evidence that a particular plaintiff actually has been prohibited from providing a service. That is because it is easy to confuse the effects of regulation with the effects of a competitive market. In a competitive market, we assume some companies will fail, for a variety of reasons; that is actually a desirable outcome. Likewise, in a competitive market we expect incumbent local exchange carriers like Qwest and Verizon to lose customers to new entrants. The

fact that companies are going out of business or losing customers does not, in and of itself, tell us whether competition is being inhibited by regulation, or fostered.

10. The FCC has suggested that the relevant issue is whether a challenged regulation “materially inhibits or limits the ability of any competitor or potential competitor to compete in a fair and balanced legal and regulatory environment,” See F.C.C. Rec 1735 (October 2, 1997).

**D. APPLYING ECONOMIC PRINCIPLES - WHAT MUST ONE SHOW TO PROVE THAT A POLICY MAY PROHIBIT ENTRY?**

11. One way to approach the Ninth Circuit’s “may prohibit” test would therefore be to consider the basic characteristics of competitive marketplaces, and to adopt tests that are consistent with the operation of those marketplaces.

a. In a competitive marketplace, providers have distinct advantages one over another. Often advantages are accompanied by disadvantages.

Companies that “own” facilities may have advantages over companies that “lease” from them, but the former may require substantial upfront capital that lessees do not require. Not only is it difficult, it is inadvisable to remove these so-called advantages because their removal distorts competition, which rewards the most effective provider of services over the long-term, and results in an efficient allocation of resources. This is true whether the competition is between two private entities, or a public and a private entity. For example, municipalities might have certain so-called “tax-free” advantages but are subject to what might be regarded as serious business disadvantages because they are subject to referendum and voting obligations. In this context, it should be obvious that the FCC’s

reference to a “fair and balanced” *legal and regulatory* environment does not require elimination of economic advantages or disadvantages generally, including those which in a marketplace would flow from control of assets. Policies that involve transactions or behavior similar to that which occurs in competitive markets should not be treated as “prohibitory,” except perhaps in cases where the activity would violate the antitrust laws.

- b. In a competitive marketplace, individual customers will switch from one provider to another, and, over time, may switch several times. The mere fact of switching is not proof that there are barriers to entry. Of course, when Buyer A chooses Seller A over Seller B, Seller B may feel that it is being “prohibited” from providing service, but it is not in any meaningful economic sense. The choice is the necessary result of the marketplace and is precisely what we want to occur. It is for this reason that in antitrust contexts, one cannot generally show a competitive harm merely by showing a loss of customers. Rather, except in very rare circumstances one must show harm to consumers or product users in the context of a relevant product and geographic market.
- c. Nor is it a barrier to entry when sellers and buyers engage in swaps of goods and services, or choose to deal with one another for reasons other than strictly price. In a competitive marketplace, if Buyer A has an asset that Seller A needs or can use, Seller A may well be willing to provide service at a lower, or even at no cost, in order to obtain that asset; the

Seller can and should take into account what the Buyer brings to the table.

In a competitive marketplace, Buyers and Sellers may choose to deal with one another even where there are cheaper price alternatives for reasons of quality of service, trust, or other intangibles

- d. In a competitive marketplace, competitors pay for resources that are used to provide products or services. In a competitive marketplace, charges for use are not limited to out-of-pocket expenses, but also reflect the value of the property used. Policies that require payment at value are consistent with a “fair and reasonable” marketplace
- e. As a basic matter of economics, while an entity that wishes to use property should pay for the use of that property, it does not follow that the owner of the property must also make a payment for its use. Owners are generally entitled to the use of their own property. Hence, the fact that an owner does not pay the same amount for use of its own ROW as does a lessee - even a lessee that competes with the owner - is not, standing alone, prohibitory in an economic sense. Allegations that IRNE uses the ROW with terms and conditions different from others, even if true, would merely reflect a typical condition of ownership. Ownership is merely one among many competitive factors, some of which may favor one or more competitors over others. Policies that recognize differences in ownership, are consistent with a “fair and reasonable” marketplace.
- f. In a competitive marketplace, we encourage companies to resolve disputes through contract, and we allow for differences in contract between one

customer and another customer. Even in regulated marketplaces, a regulated company and its customers generally are allowed to agree to contract terms, and regulatory agencies are expected to uphold those terms except in exceptional circumstances. This process allows parties to establish terms and conditions that take into account, for example, differences between one customer and another, and changes between the time one contract was signed and another negotiated.

- g. In addition to the fee provisions that are at issue in this case, I understand that Qwest and Time Warner are challenging several “non-fee” provisions that the City claims (i) are not prohibitory; and (ii) are protected by subsections of Section 253 that protect from preemption, for example, requirements related to right of way management, and requirements related to compensation for use of the rights of way. My focus at this stage is on the prohibition claims. In deciding whether a non-fee provision is “prohibitory” it is important to recognize that the sort of non-fee provisions at issue here balance competing and complementary interests of government, the public and telecommunications providers. For example, suppose that government did not manage the rights of way in downtown Portland at all, and that as a result, telecommunications providers were able to enter the rights of way at a very low short-term cost. But, if, as a result, downtown streets deteriorated, access to local businesses were blocked, the overall impact could be to reduce the market for telecommunications service in the downtown area. More directly, if

the location of facilities in the rights of way is not known, the cost of future entry may increase in terms of the cost of locating facilities, rerouting lines, damage to facilities, and so on. Hence, efficient right of way management will attempt to balance both short term and long term costs. From the standpoint of telecommunications providers, generally it should not be enough to show that a non-fee provision causes it to incur costs, at least absent some quantification that shows that a reasonably efficient company could not remain in the marketplace and comply with requirements. Rather, because right of way management costs may cause short-term inconvenience while yielding substantial long-term benefits, from an economic standpoint to establish a prohibition it should be necessary also to show both that the costs are substantial and that the benefits are outweighed by the costs.

12. Basing a “prohibition” claim on IRNE’s entry into the marketplace raises particularly troubling issues. IRNE does not, and is not in a position to provide all the communications services desired by its customers. Rather, IRNE provides important local connections that allow users to communicate with one another more efficiently, to increase usage without substantially increasing expenses and to reach points where services (such as local exchange service, long distance services and Internet services) can be purchased from a variety of competitive providers.

13. One of the traditional problems in the telecommunications marketplace is that incumbent local exchange carriers, like Qwest, have priced services well above the rates that would be expected in a competitive marketplace. They have been able to do so in

part because of control over key elements of the communications network which provide them a unique ability to service certain customers. If IRNE construction of facilities breaks local distribution bottlenecks, it may open the door to additional competition among private companies.

14. As suggested above, in a competitive market, we would expect buyers to be able to switch sellers, and we would expect that buyers might use different strategies - joint purchasing, vertical integration and so on -- to avoid becoming captive customers of companies with market power. To the extent that IRNE allows users to create products tailored to their own requirements (products which may not even be offered by traditional participants in the marketplace) it would enhance competition, not harm it. In a study in the February 2005 issue of *Applied Economic Studies*, researchers assessed whether public investments in communications networks crowds out private investment. The study showed that no such crowding out occurred and that “the empirical model indicates that municipal communications actually increases private firm entry.”<sup>1</sup>

15. In addition, to the extent that IRNE helps Portland schools and governments deliver services (including emergency services) more efficiently, it may enhance the overall attractiveness of the Portland region to companies, and make the area a more attractive market for businesses generally and for telecommunications providers. That is, IRNE may enable schools and governments to communicate and provide services in new ways, without increasing government expenditures. This in turn may enhance the overall health of the Portland region, and increase the overall size of the telecommunications

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<sup>1</sup> George S. Ford, “Does Municipal Supply of Communications Crowd-out Private Communications Investment? An Empirical Study. *Applied Economic Studies*, February 2005. p. 9.

marketplace. To put it another way, the telecommunications marketplace is not static. If IRNE's entry (or Portland's right of way franchising and management policies, or both) help increase the size of the communications marketplace, IRNE's operations will not be prohibitory.

16. With respect to IRNE, plaintiffs' challenge to IRNE should be rejected unless they are able to demonstrate, at a minimum, that IRNE has a long term effect of reducing business opportunities in the telecommunications marketplace in Portland. This research demonstrates the opposite: That the market is growing and thriving. There is also evidence that IRNE has created competitive opportunities.

**E. THE RESEARCH: PORTLAND'S CONTRACTS WITH WIRELINE TELECOMMUNICATIONS PROVIDERS**

17. The initial aspect of the research involved a review of Portland's existing franchise agreements with Point-to-Point and Competitive Local Exchange Carrier (CLEC) franchisees, and the Temporary Revocable Permit held by Qwest. For each of the contracts and the TRP, specific attention was given to the fee structure (per linear foot or revenue percentage), scope and duration of the contract, sales and leasing provisions, and any "in-kind" requirement provisions, in part because it is my understanding that those issues have been the focus of the disputes in this case, and in part because those provisions are the provisions that directly involve payments to the City in the form of cash, services, or facilities. More specifically, the review focused on:

- Contract start date and term
- Type of rate structure (linear foot vs. revenue percentage)
- Selling and subleasing provisions
- In-kind requirements<sup>2</sup>

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<sup>2</sup> All contracts available at Portland Website - <http://www.portlandonline.com/index.cfm?c=33150>

In assessing the contract provisions, the research detected and tracked the transformation of contracts from basic to increasingly market driven over the period from 1990 through 2005. Generally, the review of the City of Portland's telecommunication franchise agreements finds that the agreements are largely similar:

- (a) Exclusive of temporary arrangements, all agreements to date have been for ten years.
- (b) Setting aside the Qwest TRP, all agreements with private companies have required that the provider include some element of in-kind remuneration, in the form of incremental ducts for the City's use whenever a provider undertook construction projects. In addition, some of the contracts contain what amount to distinct business deals established where a provider planned construction through a facility that is not under the control of the City (this is true for the QCC contract). It is my understanding the Qwest TRP does not include an "in-kind" provision because of state law limits on the fee that can be charged to Qwest. However, Qwest overall pays a higher amount, in absolute dollars, than does QCC or Time Warner.
- (c) The Agreements between the City and IRNE also call for remuneration, and also provide for what might be characterized as "in-kind" rights. There is, however, an obvious and important distinction between an IRNE installation and a private installation. Even without an agreement, it is far from obvious that IRNE would be able to refuse a directive to install facilities on behalf of other city departments, or refuse to share facilities with other City departments.
- (d) Point-to-point carriers were required to pay an annual fee based on linear footage included in the contracts. Rates increased each year based on an inflation-related algorithm. All CLEC contracts called for 5% of gross revenues generated as an annual fee.
- (e) Starting in 1997, agreements incorporated a provision that the City of Portland would receive 1% of the revenue generated from the sale of ducts to other providers.
- (f) The agreements also began to include a provision giving the City of Portland a percentage of revenue associated with the sub-lease of ducts in 1997. Initially this fee amounted to 1% of associated revenues. In certain contracts, the fee increased to 5%. In other instances, specifically with the CLEC agreements, this provision was not included in more recent contracts:

**Summary of Franchise Agreement Provisions**

<u>Provider</u>	<u>Type</u>	<u>Start Date</u>	<u>Linear Footage</u>	<u>Cost per Rev. or Lin. Foot</u>	<u>Sell</u>	<u>Lease</u>	<u>In Kind</u>
AT&T Long Distance	Pt-to-Pt	1/15/1990	78,750	\$ 3.15	0%	0%	Yes
PT Cable	Pt-to-Pt	10/25/2000	25,200	\$ 3.15	0%	0%	Yes
WorIdCom	Pt-to-Pt	2/26/1997	5,600	\$ 2.80	0%	0%	Yes
Sprint Communications	Pt-to-Pt	9/4/1997	56,084	\$ 3.16	0%	0%	Yes
Qwest Communications Corp.	Pt-to-Pt	12/31/1997	14,038	\$ 3.01	0%	0%	Yes
WCI Cable	Pt-to-Pt	9/30/1998	60,000	\$ 3.11	1%	1%	Yes
360 Networks	Pt-to-Pt	11/12/1998	125,000	\$ 3.01	1%	1%	Yes
FTV Communications	Pt-to-Pt	11/12/1998	18,730	\$ 3.04	1%	1%	Yes
Will Tel	Pt-to-Pt	11/8/2000	17,100	\$ 3.04	1%	1%	Yes
Broadwing Communications, LLC	Pt-to-Pt	11/8/2000	45,000	\$ 3.04	1%	5%	Yes
Tyco Networks (U.S.), Inc.	Pt-to-Pt	5/22/2002	110,000	\$ 3.12	1%	5%	Yes
MCI Metro	CLEC	10/23/1995		5%	0%	0%	Yes
Electric Lightwave, Inc.	CLEC	8/19/1996		5%	0%	0%	Yes
Enron Broadband Services	CLEC	5/26/1997		5%	1%	1%	Yes
Time Warner Telecom	CLEC	9/4/1997		5%	1%	1%	Yes
Leve13	CLEC	1/17/2000		5%	1%	1%	Yes
TCG Oregon	CLEC	2/8/2000		5%	1%	1%	Yes
McLeod USA Telecommunications	CLEC	12/4/2000		5%	1%	5%	Yes
XO Communications	CLEC	12/4/2000		5%	1%	5%	Yes
AboveNet	CLEC	2/13/2001		5%	1%	0%	Yes
All Phase Utility	CLEC	6/20/2001		5%	1%	0%	Yes
OnFiber Communications	CLEC	9/16/2001		5%	1%	0%	Yes
Integrated Network Regional Enterprise (IRNE)	CLEC	5/26/2003		5%	1%	5%	Yes with modifications

**F. RESEARCH AND KEY FINDINGS: GENERAL COMPETITIVENESS**

18. As a next step in our research, we sought to determine whether Portland's telecommunications policies were likely to promote competition or whether instead they may prohibit or have the effect of prohibiting the ability of an entity to provide telecommunications services. We did so by comparing the state of competition in Portland with that in comparable cities. If Portland's markets are as competitive or more competitive than comparable communities, that would be an indication that its policies

result in a “fair and balanced” marketplace that may not prohibit or effectively prohibit entry. Also, and particularly if Portland provides a valuable marketplace for telecommunications providers, there is good reason to defer to the assessments of the value of that marketplace reflected in contracts between the City and telecommunications providers.

### *The Comparison*

19. The first step in identifying a list of comparable cities was to review the U.S. Census Bureau’s Statistical Abstract of the United States: 2004-2005.

20. Like many American cities, Portland serves as an economic center for a larger metropolitan area. As an urban core, cities like Portland will provide highly concentrated and efficient operating locales for many industries, including telecommunications. Also, as an economic core for commercial entities, including corporate operations and retail, the urban sector offers significantly greater revenue opportunities for telecommunications service providers, including the ILEC, the CLECs, and Private Point-to-Point companies. Given this economic and business reality, the analysis focused on cities with an overall residential population within 100,000 inhabitants of Portland’s 2003 residential population of 539,000. Thus, this study’s initial pool of cities comparable to Portland was limited to those cities with residential populations between 439,000 and 639,000 in 2003. This filter resulted in the inclusion of 20 cities in the initial sample.

21. Given the favorable disproportionate contribution that cities like Portland provide in the broader adjacent metropolitan areas, the study then incorporated the population of the overall metropolitan areas of the above referenced sample cities. In this case, the study established a metric for metropolitan areas within an interval of 30% higher and lower than Portland. In 2003, Portland’s metropolitan area had a population of

2,040,000. In assessing an interval of 30%, the study identified metropolitan areas with residents from 1,428,000 to 2,652,000 in 2003. This interval size also showed a fairly distinct demarcation from data points beyond the interval.

22. The two demographic filters to identify cities most proximate to Portland in size and economic scope are:

- a. Cities with resident populations within 100,000 of Portland's 539,000 inhabitants;
- b. Of the cities identified in (a), only those cities with metropolitan areas within a 30% interval around Portland's metropolitan area population.<sup>3</sup>

23. Based on these filters, the cities which are most comparable to Portland for purposes of our analysis are:

<b>Portland, OR</b>	<b>539,000</b>	<b>2,040,000</b>
<i>Charlotte, NC</i>	<i>585,000</i>	<i>1,437,000</i>
<i>Cleveland, OH</i>	<i>461,000</i>	<i>2,140,000</i>
<i>Denver, CO</i>	<i>557,000</i>	<i>2,301,000</i>
<i>Kansas City, MO</i>	<i>443,000</i>	<i>1,905,000</i>
<i>Las Vegas, NV</i>	<i>517,000</i>	<i>1,577,000</i>
<i>Milwaukee, WI</i>	<i>587,000</i>	<i>1,514,000</i>
<i>Sacramento, CA</i>	<i>445,000</i>	<i>1,975,000</i>
<i>Virginia Beach, VA</i>	<i>439,000</i>	<i>1,637,000</i>

24. For a complete list of cities considered, please review Appendix A.

25. Once the comparable cities had been identified, the next phase of research involved contacting each city individually to determine the methodology by which they assess and manage telecommunications right-of-way issues. The research began with a review of publicly accessible information on city-specific Internet sites. At least one

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<sup>3</sup> U.S. Census Bureau, Statistical Abstract of the United States: 2004 - 2005. Large Metropolitan Statistical Areas - Population: 1990 to 2003 and Incorporated Places with 100,000 or More in Habitants.

representative in each city was contacted. In nearly all cases, the cities cooperated with the research to the best of its ability. The cities provided information on the fee structures used in each location (linear foot, percentage of revenue, etc.), the actual fees being charged, the duration of agreements, and the inclusion of alternate fee types, such as in-kind charges, subleasing fees and sales fees. If further research indicates that any of the information provided to us was in error, we will make appropriate adjustments.

26. In addition to population in a given market, the economic value of a franchise will also be determined by the purchasing power available to the people residing in that market. Given the importance of income level to the provision and purchase of enhanced telecommunication services, the study considered broader economic statistics available through the U.S Department of Commerce's Bureau of Economic Analysis.

27. In several of the communities identified, localities are limited to recovering certain costs by state law. Telecommunications providers may pay little or nothing to use the rights of way in those states. In other communities, the fee structure appeared comparable to Portland. While there are plainly markets where providers pay lower fees, and are not subject to the same type of right of way management regulations, Portland's market is among the most competitive and potentially most lucrative for a telecommunications provider. Additionally, the fees charged by the city of Portland fall within the range of the comparable cities and were applied consistently among Portland's franchisees.

### *Cities Analyzed*

28. *Charlotte, N.C.* The city of Charlotte, North Carolina, has very few procedures in place to manage telecommunications ROW issues. Currently, the city is considering

legislation to formulate a plan to better balance the public interest with the telecommunications industry. The fee for a temporary easement in Charlotte is \$500. No additional fees are charged. The city representative acknowledges it can do a better job in managing the process. Without any structure in place, all road repairs and other related costs are borne entirely by the taxpayers, at an annual cost estimated in the millions of dollars. While Charlotte has slightly more providers than Portland, roughly 30 telecommunication providers, Charlotte does not attempt to manage the ROW function in manner which covers the cost of infrastructure degradation or recovery.

29. *Cleveland, OH.* Cleveland, Ohio, does not appear to have a department that addresses telecommunications ROW. No references exist on the city's website nor does anyone within the government bureaucracy seem to know the appropriate contact.

30. *Denver, Co.* Since 2001, the city of Denver has been unable to charge a fair value rent for use of the rights of way and it also does not recover all costs associated with use of the rights of way; it instead charges a nominal fees to cover the costs of administration of the ROW application. Costs associated with infrastructure degradation must be borne by the taxpayers of the city or of the state. Denver has only five active telecommunications companies currently operating in Denver.<sup>4</sup>

31. In 1997, the city of Denver's charged \$2.84/ft. for arterial ROW and allowed a provider to choose to pay 5% of gross revenues in lieu of the per foot fee. In subsequent years, this fee was increased in proportion to the Consumer Price Index (CPI). The per foot fee charged by Denver was noticeably higher than that being charged by Portland at the same time.

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<sup>4</sup> Conversation with Darrin Zuehlke, Office of Telecommunications, City of Denver, May 19, 2005.

32. In its 1997 policy, Denver also stated that “the city may accept or require in-kind compensation from rights-of-way users in lieu of all or a portion of fixed fees.”<sup>5</sup>

33. *Kansas City, MO.* Kansas City, Missouri, relies on legislation from the 1940s, which was modified in the 1960s, to manage its telecommunications and ROW matters. The city requires a nominal business license fee, in addition to requiring 6% of gross revenues for residential accounts and 10% of gross revenues for commercial accounts. Certain service revenues are considered exempt from the fee on gross revenues.

34. Kansas City has not been active in managing the ROW situation since the passage of the Telecommunications Act of 1996.<sup>6</sup> Kansas City currently has roughly 20 telecommunication providers with approval to operate within the city.<sup>7</sup>

35. *Las Vegas, NV.* By Nevada state law, Las Vegas may charge a maximum of 5% of retail intrastate gross revenues as a fee for a business license, franchise or public right-of-way. The City may require provision of in-kind facilities rather than cash payments. Currently, Las Vegas demands the maximum allowable payment of 5% from its providers.<sup>8</sup> The City of Las Vegas has eight franchised providers in its ROW program.<sup>9</sup>

36. *Milwaukee, WI.* The City of Milwaukee, Wisconsin is limited by state law to cost-based fees for use of the rights of way. However, Milwaukee also owns its own conduit system and leases that conduit to telecommunications providers. The rents for

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<sup>5</sup> Denver Council Bill No. 612, Ordinance No. 628, 1997. Ordinance was later ruled to be contrary to state constitution in matter *City & County of Denver v. Qwest* in 2001.

<sup>6</sup> Interview with Bill Geary, Kansas City Counsel on April 14, 2005.

<sup>7</sup> Interview with Bill Geary, Kansas City Counsel on May 19, 2005.

<sup>8</sup> Interview with Christopher Wallace, Franchise Officer, City of Las Vegas, April 7, 2005.

<sup>9</sup> Interview with Christopher Wallace, Franchise Officer, City of Las Vegas, May 19, 2005.

conduit are not limited to cost. For conduit that does not involve river crossings, the fees can be up to \$2.85 per linear foot per year. The charges for river crossings are significantly higher, up to \$105 per linear foot per year.

In addition, if a provider needs to install conduit from the City system to its own conduit system (essentially linking two systems together), or from one City-owned manhole to another (as may occur if City conduit between the two manholes is already full), the provider must (a) deed the conduit installed to the City and (b) install additional conduit for the City, which is also deeded to the City.<sup>10</sup>

37. *Sacramento, CA.* Sacramento, California does not charge telecommunications providers a rent for a franchise to use rights of way. It does impose a cost-based street cut fee, which appears designed to take into account costs that do not appear to be accounted for directly in permitting fees imposed by other communities examined in this study. Sacramento bases its fees on the age of city streets. The fee structure appears to be designed to capture the loss of street life caused by street cuts. In the case of newest streets, the fees can range from \$3.50 per linear foot for longitudinal streets up to \$7.00 for transverse excavations. For the oldest streets (over 15 years old), the rate is from \$1.00 to \$2.00 per linear foot. The scale is a sliding scale based on age.<sup>11</sup> Because of limits imposed by state law, the city does not have any franchise agreements with telecommunications providers and does not receive any supplemental revenue once the

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<sup>10</sup> Interview with Randolph Gshwind, Information and Technology Management, City of Milwaukee, April 14, 2005.

<sup>11</sup> Sacramento City Resolution 97-537.

streets have been repaired. Currently, the city has approximately seven telecommunications providers in operation.<sup>12</sup>

38. *Virginia Beach, VA.* Virginia Beach characterizes itself as being subject to a very restrictive state law with regard to telecommunication rights-of-way issues. Virginia Beach believes these restrictions prevent it from imposing a rent for use of the rights of way, or from recovering (through permitting fees) all the costs caused by telecommunications providers who use the rights of way. While telecommunications must apply for a permit before engaging in certain activities in the rights of way, the obligation of the provider is to ensure the right-of-way used is restored. No fee structure exists. The city had imposed a \$1 fee per residential and commercial line, but withdrew the charge. The city does not feel it can effectively control costs associated with right of way use given the state legislation.<sup>13</sup> Currently, Virginia Beach has five telecommunications providers in operation.<sup>14</sup>

39. The research suggests that Portland's policies have resulted in very competitive entry compared to other communities.

#### ***Comparison to Portland's Business Climate***

40. In its "Metro Area and State Competitiveness Report 2004," the Beacon Hill Institute, lists Portland, Oregon, as the third best competitive metropolitan area of the 50 largest metropolitan areas<sup>15</sup> in the United States. The report assessed metropolitan areas

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<sup>12</sup> Interview with Dave Colliman, ROW Streets Management, City of Sacramento, May 23, 2005.

<sup>13</sup> Interview with Bill Macali, General Counsel, City of Virginia Beach, April 19, 2005.

<sup>14</sup> Interview with Bill Macali, General Counsel, City of Virginia Beach, May 23, 2005

<sup>15</sup> Virginia Beach is included in the Norfolk metropolitan area.

in the categories of (1) Government and Fiscal Policy, (2) Security, (3) Infrastructure, (4) Human Resources, (5) Technology, (6) Business Incubation, (7) Openness and (8) Environmental Policy. Of the comparable cities included in this report, Portland ranks first overall and in the critical business related categories.<sup>16</sup> In analyzing the core business climate variables included in the Beacon Hill study, this report focuses on ten variables most critical to economic growth. When assessing these variables, Portland also led the comparable cities, with Denver a close second. This data also suggests that Portland has created a competitive environment for telecommunications providers.

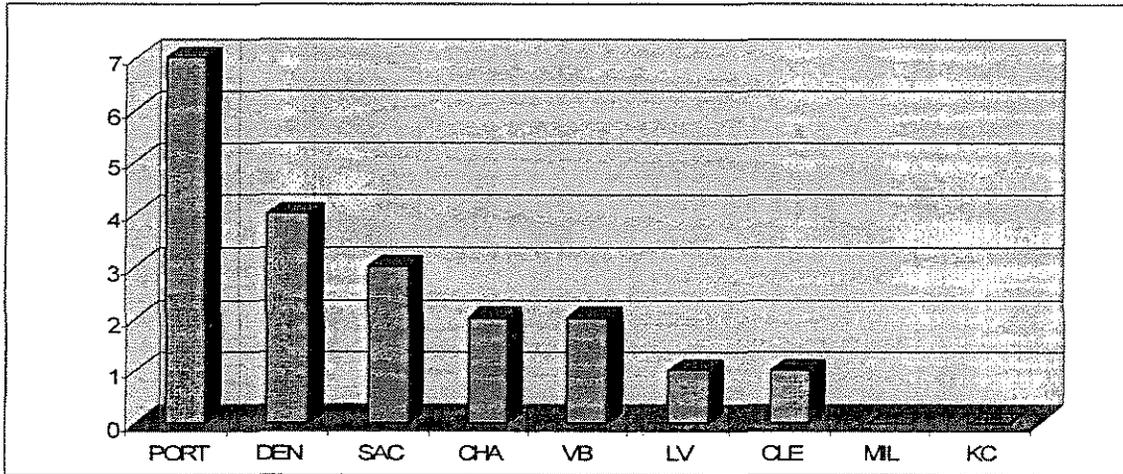
	<u>Portland</u>	<u>Denver</u>	<u>Kansas City</u>	<u>Charlotte</u>	<u>Milwaukee</u>	<u>VA Beach</u>	<u>Las Vegas</u>	<u>Sacramento</u>	<u>Cleveland</u>
Overall Rating									
Peer Group Rating									
Government Index	4	7	3	1	6	2	5	9	8
Bond Rating	4	6	3	1	7	2	9	8	5
Infrastructure Index	4	3	5	2	6	7	1	9	8
Broadband Penetration	3	5	8	5	5	5	2	1	9
Technology Index	3	1	2	5	6	7	9	4	8
New Patents Issued	1	6	8	2	3	9	3	7	5
Business Incubator Index	4	7	6	8	9	5	3	2	7
Employer Births	3	1	5	7	8	5	2	4	9
New Publicly Traded Cos	2	1	3	5	6	9	4	7	8
Venture Capital Investment	4	2	6	5	8	3	9	1	7

### **Business Total Peer Group Rating**

41. The city of Portland receives its highest marks in its ability to encourage innovation and in creating new businesses. In the 2004 Inc. Magazine list of 500 fastest growing privately held companies, Portland hosted seven of the top 500, leading the other comparable cities by a significant margin.<sup>17</sup>

<sup>16</sup> “Metro Area and State Competitiveness Report 2004,” The Beacon Hill Institute at Suffolk University.

<sup>17</sup> Listing of companies is available at [www.inc.com/resources/inc500](http://www.inc.com/resources/inc500).



*Economic Value to Franchisee*

42. In determining the value of the telecommunications ROW to a telecommunications provider, the revenue that can be generated in the community is a significant consideration. From the perspective of a franchisee, an agreement for 1,000 linear feet in Manhattan is significantly more valuable than a franchise for 1,000 linear feet in Tupelo, MS. Manhattan has greater population density and significantly higher purchasing power, which will result in an opportunity for the franchisee to realize higher revenues.

43. In this part of the analysis, local economic and demographic data were reviewed and analyzed in an attempt to determine relative value. Overall, telecommunications service revenues are influenced by various factors, including population density, economic growth, the business environment, educational and other skills of the population, employment opportunities, local governments' roles in attracting business, local tax policy, etc., that contribute to the demand for voice, data, video, and other services. Of these variables, population density, population growth and personal income are most readily measured.

44. Using ordinal ranking in these three variables, Denver demonstrates the best combination of the population density, population growth and personal income. Portland, Sacramento and Cleveland follow.

	Population Density	Population Growth	Personal Income	Total Score
1 Denver	6	2	2	10
2 Portland	5	4	3	12
2 Sacramento	3	5	4	12
2 Cleveland	2	9	1	12
5 Las Vegas	4	1	8	13
6 Milwaukee	1	8	6	15
7 Charlotte	7	3	7	17
8 Kansas City	9	6	5	20
9 Virginia Beach	8	7	9	24

45. The importance of population density in assessing the value of the ROW is clear. The more people per linear foot a city has, the more potential customers per linear foot and the greater the expected revenue potential. In a more densely populated area, the firms will gain more revenue per linear foot. In assessing the comparable cities, Portland falls directly in the middle - meaning telecommunications providers in Portland have an opportunity to receive average revenue per linear foot based on the population density variable:<sup>18</sup>

Milwaukee, WI	6,108.2	(residents per square mile)
Cleveland, OH	5,940.7	
Sacramento, CA	4,578.2	
Las Vegas, NV	4,563.1	
Portland, OR	4,013.4	
Denver, CO	3,631.0	
Charlotte, NC	2,414.4	
Virginia Beach, VA	1,768.0	
Kansas City, MO	1,413.1	

<sup>18</sup> U.S. Census Bureau, Statistical Abstract of the United States: 2004-2005, Incorporate Places with 100,000 or More Inhabitants in 2003.

46. As metropolitan areas add inhabitants and commercial entities, the value of the linear foot fee structure continues to increase. Since 1990, rates in Portland and other cities have increased in proportion to inflation, during a period of low inflation. In the same metropolitan areas, the number of inhabitants has increased at a much higher rate than overall inflation. In Portland, the base rates for the first franchise agreements were set in 1990. From 1990 - 2003, the comparable cities and their metropolitan areas have all grown:<sup>19</sup>

<b>Las Vegas, NV</b>	<b>85.6%</b>
<b>Denver, CO</b>	<b>30.7%</b>
<b>Charlotte, NC</b>	<b>29.9%</b>
<b>Portland, OR</b>	<b>26.5%</b>
<b>Sacramento, CA</b>	<b>21.3%</b>
<b>Kansas City, MO</b>	<b>12.2</b>
<b>Virginia Beach, VA</b>	<b>8.7%</b>
<b>Milwaukee, WI</b>	<b>4.8%</b>
<b>Cleveland, OH</b>	<b>2.2%</b>

47. In assessing the comparable cities, Portland falls above the median for population growth-meaning telecommunication providers in Portland have an opportunity to receive above average revenue per linear foot based on the population growth variable

48. Finally, once the people have moved to a metropolitan area and are fairly densely populated, a critical remaining piece to creating customers for telecommunications companies is income level. With a higher personal income level, greater expenditures can be made on items such as telecommunications services. According to the Bureau of Economic Analysis (BEA), overall personal income in each metropolitan area for 2002, in millions of dollars, was:<sup>20</sup>

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<sup>19</sup> U.S. Census Bureau, Statistical Abstract of the United States: 2004-2005, Large Metropolitan Statistical Areas - Population: 1990 to 2003.

<sup>20</sup> Information on personal income is available through Bureau of Economic Analysis [www.bea.gov](http://www.bea.gov).

<b>Cleveland, OH</b>	<b>136,756</b>
<b>Denver, CO</b>	<b>129,650</b>
<b>Portland, OR</b>	<b>85,439</b>
<b>Sacramento, CA</b>	<b>75,149</b>
<b>Kansas City, MO</b>	<b>74,810</b>
<b>Milwaukee, WI</b>	<b>73,730</b>
<b>Charlotte, NC</b>	<b>72,648</b>
<b>Las Vegas, NV</b>	<b>51,652</b>
<b>Virginia Beach, VA</b>	<b>50,180</b>

49. In assessing the comparable cities and their relative economic scale and purchasing power, Portland falls near the top in personal income - meaning telecommunication companies serving the Portland area have an opportunity to receive significantly more revenue per linear foot based on the metropolitan area's personal income level.

50. In assessing the population density, population growth and personal income, the research demonstrates that the City of Portland offers a strong combination of these three characteristics. When the city's favorable business environment is factored into this analysis, it is clear that Portland offers significant economic value to its telecommunications franchisees.

51. Based on the foregoing, I conclude:

- a. There is evidence, based on comparison to the state of competition in other markets, that, in an economic sense, Portland's telecommunications policies are pro-competitive, and do not have and are not likely to prohibit or effectively prohibit entry into the market. This is true as to both the fee and the non-fee provisions.
- b. Given this environment, there is little reason to suppose that the contracts entered into by CLECs and point-to-point carriers are unfair, or fail to

reflect a fair marketplace valuation of the rights of way in Portland. The agreements themselves suggest that Portland's policies may not prohibit entry or have the effect of prohibiting entry.

- c. There is evidence that Portland has created a business environment that provides benefits to telecommunications providers, and could fairly charge a higher fee for use of the rights of way in Portland than is charged in other Cities.
- d. In their complaint, QCC and TWTC accuse the City of Portland of creating an environment that is not in the spirit of the Telecommunications Act of 1996. On the contrary, the research clearly indicates that the City of Portland has created an environment that serves the competitive goals of the Act. An examination of the relative numbers of competitive telecommunications service providers in the comparable cities clearly demonstrates that the city of Portland has a relatively large number of competitive providers which is a significant indication that the city's regulatory policies have not inhibited competitive entry. On the contrary, competitive entry has been enabled by the city's pro-competitive policies. In sum, the City of Portland has fully lived up to the goals and spirit of the Act in connection with its management of the ROW and the charges for the use of that right of way, as indicated by the comparison to other markets and by the terms of the contracts themselves.

#### **G. KEY FINDINGS: IN-KIND PROVISIONS**

52. A central contention of QCC and TWTC is that the in-kind provisions of their contracts are particularly objectionable, presumably because the City may be able to use

those facilities to avoid purchasing services from QCC and TWTC, and because IRNE may obtain advantages in its efforts to provide services or facilities to other governmental entities. In-kind provisions are commonplace in the telecommunications-information industry, see Paragraph 3 c. above, and a list of Regional Bell websites listed in Appendix 2.

53. This assumes that in the private marketplace, in-kind compensation is uncommon, or that companies refuse to enter into arrangements that may be helpful to a competitor. That is not the case. In reality, each element of in-kind compensation has a monetary value. In the case of the city of Portland, the in-kind compensation was incremental duct being laid in already planned locations. When one views the overall franchisee fees, including the monetary value of the in-kind provisions, the city of Portland certainly falls within the range of the comparable cities.

54. From an economic standpoint, there are several reasons why a company may choose to provide in-kind benefits rather than cash. First, if the in-kind facility is of more value of equal value to a seller than cash, the seller may be willing to take in-kind benefits in lieu of cash; likewise, if a buyer can provide an in-kind facility and reduce cash outlays, it may be worthwhile to provide the in-kind benefit. This is particularly so where (as is true here), the in-kind benefit can be provided relatively cheaply as part of a larger project, where a company may gain economies of scale and volume discounts for the in-kind requirements.

55. A seller and buyer may agree to in-kind arrangements where doing so may reduce costs and potential risks to both parties. Suppose, for example, that a company wishes to place a facility along a railroad ROW, and the railroad may wish to use similar facilities

at some point in the future. If the railroad builds along the ROW later, there may be a risk of harm to the facilities of its lessee, or there may be costs and disruption associated with the installation. The parties could agree at the outset who would bear those costs and risks; or they could agree to terms (such as provision of facilities in-kind) that minimize the risks. In the case of Time Warner Telecomm Inc., the company admits that it “benefits from its relationship with Time Warner Cable, an affiliate of Time Warner, Inc., both through access to local rights-of-way and construction sharing costs.”<sup>21</sup>

56. Third, a competitor may agree to arrangements that may have a beneficial impact on the overall marketplace. As I mentioned above, if one impact of IRNE is to make government and educational institutions more efficient, the effect may be to increase the overall market for telecommunications services, or to make it easier to serve certain customers (this is particularly true for companies that do not have facilities throughout the community). There is evidence I discuss in the next section that IRNE has eliminated some bottlenecks to competition, for example.

57. There is no reason to assume that the in-kind provisions are inherently anticompetitive or prohibitory. In-kind provisions may be of particular benefit to new entrants into the marketplace who may wish to reduce cash outlays or other operational risks.

58. Based on a comparison of the contracts for telecommunications franchisees in the city of Portland, the in-kind provisions appear substantially similar, and do not appear to unfairly disadvantage any company.

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<sup>21</sup> US Securities and Exchange Commission report, Time Warner Telecom Inc. 10-Q, June 30, 2004, p. 13.

## H. KEY FINDINGS: IRNE

59. In an effort to streamline government services, while significantly reducing the growth in telecommunications costs to the city and its taxpayers, Portland introduced the Integrated Regional Network (IRNE) in 2001. The organization's goals include providing a cohesive, redundant communications infrastructure that will allow a multitude of government agencies to communicate on secure fiber lines at high speeds and low cost. Currently, IRNE provides voice and data services to all government bureaus of the City of Portland, along with data services to the following agencies<sup>22</sup>:

- Oregon State Department of Transportation
- Oregon State Department of Administrative Services
- Portland Public Schools
- Multnomah County
- Multnomah Educational Service District
- City of Hillsboro Police Department

60. As I suggested at the beginning, IRNE's entry into the marketplace as a competitor may have a number of pro-competitive effects. The research regarding the general state of competition in Portland certainly suggests that IRNE is not now having an anticompetitive effect. There is evidence that IRNE's presence has actually itself resulted in greater competition in Portland among private companies, thus serving the pro-competitive goals of the Telecommunications Act. For example, TWTC complains in an internal e-mail that it lost a contract to serve Metro to another private provider because Metro was able to take service at a local telecommunications hotel thanks to IRNE.

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<sup>22</sup> Documentation provided via factual background summary and interviews with Terry Thatcher, General Counsel, City of Portland and Mark Gray, Portland's Office of Communication and Networking.

61. To understand TWTC's email, it helps to have a little background on the telecommunications industry. Telecommunications providers often bring facilities to one or more central locations in a market where providers can interconnect with one another and exchange traffic. From these "telecommunications hotels" or "meet me" points, individual systems run to various parts of the community. If a retail customer such as a business has its own connection to the hotel, it could potentially buy telecommunications services from a large variety of providers. If the business does not reach the hotel directly, it must either purchase all its services from someone who reaches its offices, or lease connections back to the hotel. It may have very limited choices in this regard, and so it may not be able to obtain services at truly competitive prices. What TWTC is complaining about in the email is that Metro was able to use IRNE facilities to get to a point where it could purchase services at competitive rates. TWTC is complaining that absent IRNE, it would have been the only provider capable of serving Metro.<sup>23</sup> In this instance, stopping IRNE would have reduced competition in the telecommunications marketplace.

62. Another case of enhanced competition has also been brought to my attention. When the Portland School District began using IRNE, instead of the local incumbent telecommunications firm (Qwest Corporation, an affiliate of plaintiff QCC) to obtain access to the local "telco hotel," that also opened more ISP options. In that case, ironically, the District dropped an ISP run by the State of Oregon's government and hired one of the plaintiffs in this case, Time Warner.

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<sup>23</sup> Email from Jon Nicholson to Brian Thomas regarding IRNE Service to Metro, August 11, 2004.

63. I have also reviewed the reports of interviews with IRNE customers. All the customers interviewed report that their level of data service has improved and costs have dropped or remained constant since switching to IRNE. Those are results one would wish to see in a competitive market and they appear to be the direct result of IRNE's operations. That is to say, consumers of telecommunications have been benefited by IRNE's presence in the market.

  
Alan Pearce, Ph.D.

Date: 9/1/05

## APPENDIX 1: COMPARABLE CITIES ANALYSIS

### *Comparable Cities Analysis*

<u>City/Metro Area</u>	<u>2003 City Pop.</u>		<u>2003 SMSA Pop.</u>	
San Antonio	1,215,000			
San Jose	898,000			
Indianapolis	783,000			
Columbus	728,000			
Austin	672,000			
<b>Milwaukee</b>	<b>587,000</b>	Ft. Worth	5,590,000	
<b>Charlotte</b>	<b>585,000</b>	Washington, DC	5,090,000	
<b>Ft. Worth</b>	<b>585,000</b>	Boston	4,440,000	
<b>El Paso</b>	<b>584,000</b>	<b>Seattle</b>	<b>3,142,000</b>	
<b>Boston</b>	<b>582,000</b>	Denver	2,301,000	<i>Denver</i>
<b>Seattle</b>	<b>569,000</b>	Cleveland	2,140,000	<i>Cleveland</i>
<b>Washington, DC</b>	<b>563,000</b>	Portland	2,040,000	<i>Portland</i>
<b>Denver</b>	<b>557,000</b>	Sacramento	1,975,000	<i>Sacramento</i>
<b>Nashville</b>	<b>545,000</b>	Kansas City	1,905,000	<i>Kansas City</i>
<b>Portland</b>	<b>539,000</b>	Virginia Beach	1,637,000	<i>Virginia Beach</i>
<b>Oklahoma City</b>	<b>523,000</b>	Las Vegas	1,577,000	<i>Las Vegas</i>
<b>Las Vegas</b>	<b>517,000</b>	Milwaukee	1,514,000	<i>Milwaukee</i>
<b>Tucson</b>	<b>508,000</b>	<b>Charlotte</b>	<b>1,437,000</b>	<i>Charlotte</i>
<b>Albuquerque</b>	<b>472,000</b>	Nashville	1,371,000	
<b>New Orleans</b>	<b>469,000</b>	New Orleans	1,318,000	
<b>Cleveland</b>	<b>461,000</b>	Oklahoma City	1,133,000	
<b>Fresno</b>	<b>451,000</b>	Tucson	893,000	
<b>Sacramento</b>	<b>445,000</b>	Fresno	850,000	
<b>Kansas City</b>	<b>443,000</b>	Albuquerque	765,000	
<b>Virginia Beach</b>	<b>439,000</b>	El Paso	705,000	
Atlanta	423,000			
St. Louis	332,000			
Pittsburgh	325,000			
Tampa	318,000			
Cincinnati	317,000			
Buffalo	285,000			
Orlando	199,000			
Providence	176,000			

## **APPENDIX 14**

**“Case Study of the OneCommunity, Ohio Network”**

## OneCommunity: Stakeholder-Owned, Public-Private Middle/Last-Mile Community Broadband

OneCommunity<sup>1</sup> is a 501(c)(3) nonprofit owner/operator of a community fiber/wireless network. The OneCommunity model is based on leveraging, investing and capitalizing local fiber/network assets on behalf of the community with the intended purpose of providing community subscribers access to high capacity fiber/wireless network services enabling local innovation while lowering subscriber operational expenses. OneCommunity is focused on using broadband technologies to address the community's top social priorities.

Our governance represents a broad cross section of public and private regional stakeholders and partners:



Our core principles include:

- ☒ **Co-investment** to address top social priorities
- ☒ **Broad community governance** model
- ☒ **Open, neutral network** that:
  - Aggregates demand;
  - Creates public/private partnership opportunities;
  - Enables sharing of public and private assets;
  - Facilitates carrier exchange and community Intranet;
  - Delivers high capacity, best of breed solutions;
- ☒ **Highest quality infrastructure** that enables access to leading edge services and applications
- ☒ **Capital-creation ability** of shared stakeholders public assets/service contracts

As a result OneCommunity has attracted more than \$50 million in new stakeholder and private investment for community based projects; \$15 million in network savings; and \$18 million for broadband social and economic development programs directly impacting our community partners.

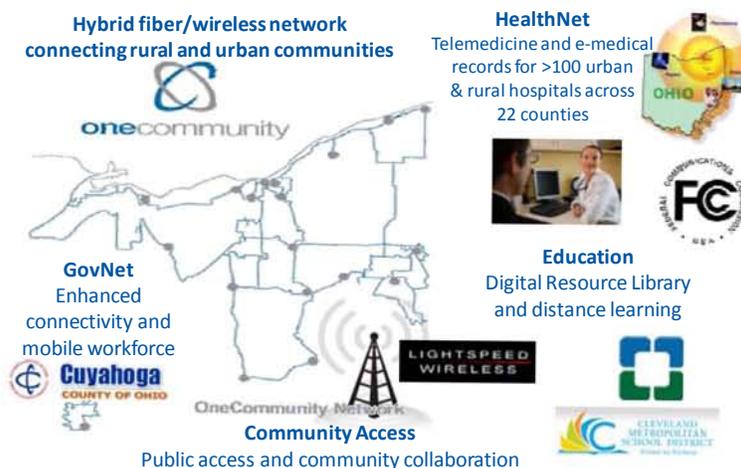
<sup>1</sup> NATOA thanks Mark Ansboury, the Chief Technology Officer of OneCommunity, for this case study.

OneCommunity works with local broadband partners and community stakeholders to create a financially sustainable economic environment that creates jobs. We garner support from:

- 🔗 **global technology companies** in fiber, equipment, software and in-kind services for innovation and transformation
- 🔗 **private and federal funds** for local community infrastructure and broadband innovation including funds that directly impacted local community interests such as schools and hospitals
- 🔗 **foundation funds** for local programming that leverages the broadband to improve society, plus millions from outside of Ohio aimed at innovation i.e. Knight Center of Digital Excellence

### Building Community Collaboration and Developing Regional Strategies

OneCommunity has successfully been working with communities interested in developing long-term commitments as subscribers for the purpose of co-investing, developing and adopting a shared community broadband network. Education, health care – and most recently, local government – have begun to work with OneCommunity on regional strategies for development of big broadband services. These efforts have also led to successful awards from the FCC and regional economic development grants. By obtaining resources (such as the FCC grant and funding from the Cleveland Clinic), and establishing open communications with interested communities, OneCommunity is in a position to expand the reach of its network while providing unique value to these subscribers and community stakeholders. Together, we are accelerating the progress of their industries, and hence the community.



### Community Shared Technology Development

OneCommunity will build its own broadband facilities if necessary, but it would prefer not to do so. It typically tries to work cooperatively with the providers that own or control facilities that OneCommunity can incorporate into its regional network. For example, in Northern Ohio, OneCommunity has received donations of fiber from private-sector providers such as Cavalier Telecom, First Telecommunications, and CityNet. OneCommunity has also acquired abandoned or underutilized assets that could be repurposed to facilitate revitalization of distressed communities and serve the needs of public interest institutions. OneCommunity has worked cooperatively with private-

sector entities such as AT&T, Cavalier Telecommunications, CityNet, Cox Cable, First Telecommunications, Level 3, Global Crossing, Qwest, XO Communications and Time Warner Cable. OneCommunity has also worked closely with public-sector and community providers such as the Department of Education and Instructional Technology Centers that serve the needs of the region's schools, colleges, municipal wireless projects, county and municipal fiber networks, the statewide academic and research network (OARNet), and various other university and health networks.

OneCommunity is not attached to any particular ownership model for broadband infrastructure, believing that the more important questions are whether the broadband infrastructure is available and whether it is being used most effectively. As long as broadband infrastructure is available on reasonable terms and conditions, broadband infrastructure is an asset to every community in the region, regardless of who owns it. When the value of the asset is increased (through effective and efficient use), it is increased for all concerned, including the community as well as the public or private asset owner. As a result, for OneCommunity and its partners, whether the network is "public" or "private" has little, if any, practical significance. OneCommunity's experience in Northern Ohio proves that, under the right conditions, public-sector and private-sector network assets can creatively be made to work for the community, to the benefit of all concerned.

**Convergence:** OneCommunity is in an increasingly strong position to facilitate collaboration, convergence and sharing among local, regional and statewide projects that consolidate the investment in tech services and applications. The scalability and transformation potential of our **tech platform and its associated broad collaborative aimed at social innovation is a very attractive investment and operating** model:

- ☒ **Improves collaboration and sharing of resources**
  - Convergence of local, regional and state interests
  - Creates options for development of new services
  - Creates opportunities co-invest existing operation dollars for greater capacity and services
- ☒ **Improved digital infrastructure creates social and economic return on investment**
  - Virtualization, aggregation and distribution of community resources across region
  - Attracts talent, businesses and outside investment with jobs
  - Increases commerce and hence taxes
  - Innovation is a media magnet for the region and its leaders
- ☒ **Increased adoption of technology drives enhanced community services, enabling innovation and reduces costs**
  - Improved health, education, workforce development
  - Innovation in both the public and private sector
  - Enhances civic pride and fosters culture of change and innovation
- ☒ **Enhanced economic development**
  - Attracting investment/grants
  - Creating sustainable funding
  - Attracting and retaining talent
  - Attracting and retaining technology intensive businesses

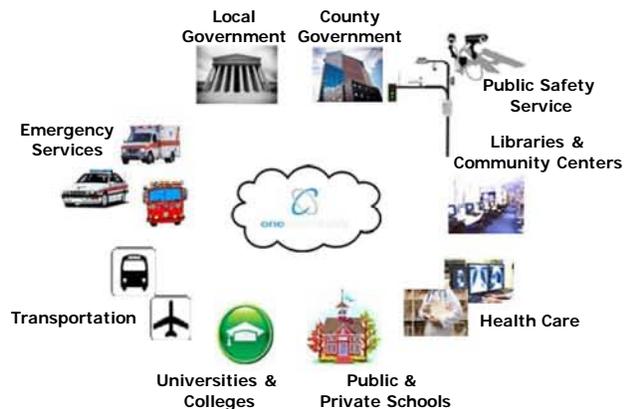
## Impact in our Rural and Urban Communities

### Solving middle mile in rural America creates last mile fiber & wireless options



- Regional/local meet-me points
- Public/Private partnerships
- Access to shared infrastructure
- Co-investment in local communities
- Consumer choice

### Public interest users Anchor last mile community broadband in rural America



- Creating Public/Private partnerships
- Aggregating demand
- Sharing infrastructure and services
- Collaborative community programs
- Co-investment in community infrastructure

### Guiding Principles: Creating the Core Value Proposition in Terms of Return on Investment (ROI)

OneCommunity's guiding principles are designed to help make technology invisible, removing all the barriers and providing support to our community stakeholders as needed. Our community objectives focus on scale, impact, and sustainability. The OneCommunity Broadband Coalition serves as the community's managed services partner and provides the following key differentiators' and core value proposition in terms of ROI that are realized through:

- **An Innovative Business Model**

*An open, carrier-neutral and multi-stakeholder community network aggregates and leverages our community's investments to increase availability, capacity, value added services. This lowers overall total cost of ownership (TCO) while increasing the social value of the communities' investment.* In addition, the community network approach can provide additional value to both the public and private sector by;

- **Reducing the burden of government** and improving health and education services;
- Helping communities leverage ultra broadband to prompt **economic development**;
- **Aggregating demand** across stakeholders and industries for **sharp collective cost reductions**;

- Leveraging the sharing of public and private assets and competencies (including phone, cable and utility) **to facilitate the delivery of the highest capacities, lowering capital and operating costs**, while helping attract additional investment
  - **Providing an open, facilities-based neutral network** that serves as a gateway for all network and service providers for both physical and logical network services;
  - Using strong existing partnerships and agreements with key local, state and national providers to **rapidly deliver high capacity, best of breed solutions, for sharply lower costs**;
  - **Leveraging the capital creation ability** of shared infrastructure and aggregating services to invest and advance the needs for broadband infrastructure throughout the region;
  - **Investing in the highest quality infrastructure, available for community use.**
- **Leveraging of Public and Private Investment to Resolve Market Inefficiencies**

Collaborative public and private investment:

- necessitates a role for the government, and community non-profit partnerships in part because benefits often accrue to society as a whole, where they are not an active part of the investment strategy of publicly traded broadband providers;
- creates community driven strategies that invest in broadband infrastructure to meet the needs of the underserved urban and rural communities through collaborative multi-stakeholder investment;
- has the potential to contribute to long-term community broadband projects that impact economic growth based on costs and benefits accrued to government, education, health and workforce programs; and
- raises the standard of living of all if the adverse market inefficiencies -promoting policies are offset, and if efforts are made to expand infrastructure access.

### **Examples and Impact**

**Community and Economic Impact:** The project provides direct fiber and wireless interconnectivity between thousands of government agencies, K-12 schools, health care facilities, universities, community colleges, libraries and civic organizations. The project spurs the roll-out of next-generation, last-mile broadband solutions with speeds of 10 Mb/s to 10 Gb/s by commercial carriers leveraging this investment in middle-mile capacity to extend enhanced service offerings to their last-mile commercial and residential customers. This will create one of the largest and fastest regional broadband networks in the world, placing the State of Ohio on the global map for business attraction, innovation, investment and retention.

**Partnering to Expand Infrastructure:** A shared broadband communications network allows community stakeholders to leverage the community's broadband fiber and service partnerships (along with their own enterprise infrastructure and resources) for the benefit of the entire region. Some examples of elevating the community infrastructure to that of a shared broadband communications resource involves the:

- **Cleveland Clinic Foundation's** investment of \$10 million in the CMSD Broadband E-Rate project brought \$8.7 million in additional federal funds for multi-gigabit broadband while

providing seed funding for OneClassroom. OneClassroom is a broadband content delivery program that facilitates the collaboration and interconnection of up to 1,500 schools through partnerships with the region's Instructional Technology Centers (ITCs) peering with the State eTech network.

- **FCC RHCPP awarded OneCommunity/NEO RHIO \$11.3MM over three years** to implement HealthNet, an expansion of our fiber-optic network to accommodate the connection of rural health care facilities. This investment will expand OneCommunity's broadband fiber network to 22 counties.
- **Cuyahoga County awarded OneCommunity \$14 million** to provide "Best of Breed" broadband technology services to attract additional investment and development in key innovation zones throughout the county, saving the county \$10 million over five years. In addition, aggregating over 17 municipalities' data and voice service demands, further lessening the burden of government while increasing capacity to everyone.
- **City of Akron's sharing of facilities, conduit and fiber** to support the deployment of the city's public safety network and creating the opportunity to share the physical fiber and wireless assets to provide public safety wireless enabling OneCommunity to use the fiber to support public interest access to health care and schools, along with public community Imax and WiFi wireless access.