

Analysis of Wicked Broadband Proposal

Report presented to PIRC

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Executive Summary

The KU Small Business Development Center has been asked to provide an Economic Impact Analysis regarding the Application for Economic Development Support/Incentives submitted by Wicked Broadband on May 9, 2013. Wicked Broadband proposes to build a gigabit fiber-to-the-premises (FTTP) network in Lawrence, Kansas.

Although this type of work is far outside of our area of expertise, we have endeavored to provide an analysis to the best of our ability. This report is the product of roughly 160 hours of research, reading, and writing. That said, this analysis is subject to significant limitations, as detailed in section 1.4.

Based on a City memo from November 5, 2013, it is our understanding that the City staff did not recommend pursuing any part of the Wicked Broadband proposal. Subsequent to that, it is our understanding that the Mayor, the City Commission, and the PIRC were interested in further analysis. City staff did not feel that they had the information or the appropriate models to perform such an analysis, so the request was placed with our Center.

CTC Energy & Technology provided two reports to the City in 2013, including an August memo that detailed several thoughts specifically about the Wicked Broadband proposal. Both CTC reports are extremely professional and demonstrate absolute mastery of the subject matter. We believe that the City staff's recommendation regarding the proposal was based in part on the CTC reports. However, new information has been provided by Wicked Broadband, specifically regarding neighborhood selection. This information may be important to consideration of the proposal.

In addition, it is worth noting that information about this nascent industry is changing almost daily. There have been several high-profile privately-funded FTTP network flops in late 2013. With all due respect to CTC, if we have one significant point of departure from their analysis, we believe that relying *strictly* on the private sector for a last-mile solution is likely to result in frustration and delayed deployment. If a gigabit FTTP network is part of the vision for Lawrence, Kansas, it will almost certainly require public sector commitment.

Rather than looking at the Wicked Broadband proposal in its entirety, we have broken the proposal down to its individual elements. It is our belief that several elements of the proposal deserve consideration individually. It is our understanding that Wicked Broadband would be open to a dialog about various proposal elements and that it was not intended to be an all-or-nothing proposal.

As for an actual impact analysis, even with the added information about the specific target neighborhoods, we were not able to quantify with any degree of certainty what kind of job-creation impact Wicked Broadband's proposed gigabit FTTP network would have on the City of Lawrence. Any job-creation numbers we put forth would be nothing more than educated guesses based on the experiences of gigabit FTTP communities such as Lafayette, LA, Chattanooga, TN, and Kansas City, KS.

At that point, our approach changed. Rather than make claims about job creation that we would never be able to substantiate, we decided to reverse the process. We thought we would calculate the number of jobs it might take to justify a \$500,000 economic development grant. Then, by sharing the successes of other gigabit FTTP communities in the United States, we thought we would give the PIRC and the City Commission the opportunity to decide for themselves whether or not the proposed network would likely create that calculated number of jobs.

However, during the course of the inquiry, we found even that calculation to be impossible at this time. For example, we found that for 2012 tax abatements, the cost per job created was \$1206. The calculation was not difficult because the abated taxes were all in one year, as were the created jobs. For the jobs created by the BTBC, the average cost was much more difficult to calculate because of 1) amortizing capital costs, and 2) trying to factor in operating costs over various calendar years. As a best guess, we came up with a cost per job created of \$20,260.

This makes perfect sense. A community *should* place different values on different jobs, and the BTBC-created jobs are very desirable for a number of reasons. Our research showed that on average, economic development incentives lead to job creation at a rate of roughly \$3600 per job. We found local incentives for high-wage, high-tech jobs as high as \$30,000 to \$40,000.

Based on our research, the City places significant and credible emphasis on economic development and job creation. However, the vision is, in our opinion, not articulated clearly and tangibly enough for us to comment on the applicability of individual strategic initiatives.

While we may not be giving the PIRC the answer to every question sought, we do have some conclusions:

- Access to high-speed internet in Lawrence is not state-of-the-art
- Over a ten year period, job creation in Lawrence does not fare well in comparison with peers
- FTTP networks and gigabit speeds seem to give communities an economic development advantage
- Elements of the Wicked Broadband proposal should be considered individually, and as such they may merit further discussion
- If it is determined that a gigabit FTTP network is part of the vision for Lawrence, the City is likely to play a significant role. Whether that involves an economic infrastructure grant, an RFI or RFP for a City-owned network, or some other arrangement may merit further discussion
- Most importantly, in order for proposals of this magnitude to be evaluated accurately, we believe that the City must engage in a more concrete discussion about job creation that involves:
 - Tangible, quantifiable target numbers for total jobs
 - Assessment and accountability for specific results
 - Discussion and understanding about various sources for jobs
 - Discussion and understanding about the value and cost per job of incentives

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I. Introduction

1.1 KU-KSBDC Engagement

The KU Small Business Development Center (hereinafter KU-KSBDC) has been asked to provide this Economic Impact analysis. The analysis is provided without any fee or any contingency or expectation of fee.

Our understanding is that the City, and more specifically the Public Incentives Review Committee (hereinafter PIRC), has requested that we examine the May 9, 2013 Application for Economic Development Support/Incentives submitted by Wicked Broadband (hereinafter Wicked). This request did not come with an official engagement letter to include in this packet of information. Although the engagement was not entirely specific, to the best of our understanding we have been asked to look at:

- The historical and current applications of Fiber To The Premises (hereinafter FTTP) networks
- Competitive benefits for communities with FTTP networks
- Potential economic impact from an FTTP network in our community
- Specific elements of the Wicked proposal and how the PIRC and the City might evaluate

1.2 History of the Wicked Proposal and Relevant Related Communication

In addition to performing our own research, we have endeavored to gain as much context as possible from the City's record regarding the Wicked proposal. The following documents were considered to be part of that record:

- **April 2013**—report from CTC Energy & Technology, *Enhancing Broadband in Lawrence: A Range of Strategic Options* (see Section V)
- **May 2013**—submission of the Wicked proposal
- **May 2013**—letter from Debra Schmidt of WOW! to City Manager's Office
- **June 2013**—letter from Mike Scott of AT&T to City Manager's Office
- **August 2013**—memo from CTC Energy & Technology, *Considerations for your analysis of Wicked Broadband's Application for Economic Development Support*
- **September 2013**—reply from Wicked regarding CTC memo
- **September 2013**—letter from Wicked to Mayor's Office
- **October 2013**—reply from Wicked regarding WOW! letter
- **October 2013**—reply from Wicked regarding AT&T letter

We also endeavored to examine the City's budget, especially with regard to economic development funding and efforts. There do not appear to be any closely analogous economic development funding efforts currently under consideration.

1.3 About the KU-KSBDC

The KU Small Business Development Center is part of the Kansas Small Business Development Center (KSBDC) and America's Small Business Development Center (ASBDC) networks. We are primarily an economic development agency that provides generalist consulting services to small businesses in a six county area, including Douglas County.

The mission of the KSBDC is to increase economic prosperity in Kansas by helping entrepreneurs start and grow their businesses through professional consulting, training, and access to resources. We work with pre-venture start-up entrepreneurs as well as a wide variety of existing businesses. The vast majority of the work we do involves helping small businesses do things such as:

- Navigate the start-up process
- Business planning
- Access to capital, including identification of sources
- Strategic planning
- Market analysis
- Marketing strategy

In the last three years, we have worked with hundreds of pre-venture entrepreneurs, including approximately 140 entrepreneurs who have actually started small businesses. We have also worked with more than 200 existing small business clients. Our clients have indicated that we have helped them raise more than \$20MM in new capital in that time period. The businesses that we have assisted attribute more than \$25MM in new revenues to our assistance.

Our funding model leverages multiple partners, including state and federal sources in addition to the support from the KU School of Business and the KU Office of the Provost. However, we act independently. Thoughts and opinions contained in this analysis are in no way affiliated with either of those offices. They were not consulted during the collection of information or during the preparation of this report.

The City of Lawrence is a funding partner for the KU-KSBDC. In the most recent three years, the City has funded our activities to the tune of \$20,000 per year, providing approximately 9% of our operating budget.

The KU-KSBDC has two full-time employees (in addition to part-time MBA Interns):

- **Will Katz**—Director, June 1, 2006 to present. Resume included in appendix.
- **Brian Dennis**—Consultant, January 7, 2013 to present. Resume included in appendix.

The KU-KSBDC operates in partnership with other economic development entities throughout our six county region, including the Lawrence Chamber of Commerce (we office in the same space), the City of Lawrence (work with Planning and Development, especially the Small Business Facilitator), Network Kansas (which has some unique capital offerings), and a variety of other Chambers and Economic Development offices throughout the area.

1.4 Statement of Limitations

This report is subject to several important limitations:

- **Lack of expertise in telecommunications.** Neither Will Katz nor Brian Dennis has significant experience in the field of telecommunications. We spent many hours reading and also asking basic questions in order to put ourselves in position to understand some of the basics of the technology and the related subject matter. We know more than we did when we started, but neither of the principal writers should be considered experts regarding the technology nor the telecom business landscape.
- **Lack of expertise in macroeconomic analysis.** Both Will Katz and Brian Dennis have significant experience in microeconomic analysis. We have performed extensive market research for our small business clients and we have access to important tools to facilitate that type of analysis. However, impact analysis is something entirely different from our area of expertise. There are plenty of firms that provide that type of analysis (for a fee, of course). There are expensive software models that can provide specific analysis. The City staff uses a model for impact analysis, as well, but that model relies on data points that could not easily be obtained for the purpose under consideration.
- **Lack of specific data points.** In fact, one of the challenges that the City staff faced and that we also faced with regard to this report is that there are not a lot of concrete data points to use in a model. Seemingly (see the next bullet), when the City is analyzing potential economic development incentives, they start with a concrete job figure (usually one to which an employer commits), then they calculate the benefits to the City from increased employment. Compliance to those job gains is also monitored in the City's process. In this case, however, there are no specific employers giving specific job-creation figures.
- **Lack of time.** As we started doing our research on the Wicked proposal, it became clear to us immediately that we had a lot of background information to learn. Researching the current landscape proved to be more difficult than one would think, simply because FTTP deals are struck seemingly every day. It is the execution of those deals that brings out the devilish details. And details change. Constantly. We fell into numerous rabbit holes of information—lines of research that we could have pursued endlessly. In the end, we had to figure out some way to synthesize the information for the purposes of this report. In other words, we had infinite information, but a finite deadline. In some cases, that means our research is incomplete or at least not definitive. Even financial figures may be estimated or inexact.
- **Elements of consideration.** This analysis is by no means complete. There are several important elements that we elected not to consider in any detail, for a variety of reasons. One example would be the potential legal issues raised in the City memo dated November 5, 2013. Another example would be the financial considerations evaluated by Springsted.

We would like to thank the City of Lawrence, and particular the Office of the City Manager. We received patient and rapid assistance from Diane Stoddard, Britt Cano-Crum, Casey Toomay, Ed Mullins, Matt Bond, and probably several others along the way.

II: City of Lawrence Economic Development History and Outlook

Lawrence, Kansas is a city of approximately 90,000 residents located in Douglas County, Kansas. Lawrence is the sixth largest city in Kansas.

From our research and our experience as residents of the City of Lawrence, it appears as though the City places significant emphasis on economic development. According to the 2013 Operating and Capital Improvement Budget prepared by the City Manager's Office, the City Commission has eight strategic goals:

- **ECONOMIC DEVELOPMENT:** Promoting the economic development of Lawrence to provide varied work and business opportunities.
- **PLANNED GROWTH:** Encouraging growth that protects our environment, neighborhoods, and cultural features while benefiting all of our citizens.
- **COMMUNITY BUILDING:** Creating social capital and celebrating our heritage.
- **ENVIRONMENT ISSUES:** Integrating the environment into our decisions as we work towards a sustainable city.
- **NEIGHBORHOOD QUALITY:** Improving the livability of all Lawrence neighborhoods.
- **TRANSPORTATION:** Improving access for all citizens.
- **DOWNTOWN DEVELOPMENT:** Enhance the vitality of downtown while maintaining it as a unique community treasure.
- **SERVICE DELIVERY:** Provide excellent city services consistent with resources available.

Economic development is at the top of the list of goals. It is also worth noting for the sake of the Wicked proposal that Downtown Development makes the cut, as well. As is noted frequently throughout the budget document and other documents in the City's record, it is clear that growing the tax base and providing additional jobs in the community is a solid priority of the Commission and the City Manager's Office.

2.1 Economic Development Expenditures

The total 2013 budget for the City of Lawrence is \$174,271,735. The top-line figure was easily ascertained.

However, determining a true number related to funding for economic development has proven to be somewhat more challenging.

The City of Lawrence provides budget numbers specifically for economic development under the General Operating Fund as follows:

- Downtown Lawrence: \$42,500
- Lawrence Chamber of Commerce: \$219,500 (includes KU-KSBDC funding of \$20,000)
- LDCBA (BTBC): \$200,000
- BTBC Phase I Facility: \$75,000
- **Total: \$537,000**

However, there are numerous other 2013 expenditures that are clearly designed to foster economic development that are not captured as part of the General Operating Fund. These listed expenditures are technically part of capital projects and, as such, not grouped with economic development expenditures per se.

- BTBC Expansion Facility (City's share of 2013 debt service): \$66,540
- BTBC Capital Debt (second half of commitment): \$500,000
- Venture Park commitment: \$7,855,000
- **Total: \$8,421,540**

Of course, it is dangerous to look at figures like this in the context of one specific year. Many of the capital figures change substantially from year-to-year. For example, next year, the BTBC Capital Debt payment should be complete and the Venture Park commitment drops to \$1,578,122, bringing the total expenditure level down to \$1,644,662.

In addition, the City's Economic Development Support & Compliance Report for 2012 lists several other programs that incent growing the tax base and providing additional jobs in the community. These include, but are not limited to:

- Tax abatements: \$183,296 (2012 figure)
- Employee training incentives: (no figure finalized as of report date)
- Retention grants/loans: \$75,000 budgeted
- **Total: \$258,296**

It is clear that City support for economic development is quite significant.

It is also clear that narrowly categorizing the Wicked economic development request as economic development funding will almost certainly not lead to a fair, apples-to-apples economic comparison. There are certainly elements of the request that might lead to considerations more along the lines of a capital project. There may even be elements that could be considered as a part of the City's IT budget.

2.2 Economic Development Outcomes

Twenty years ago, Lawrence was a shining star for Kansas job creation. Over the last ten years, the results have not been nearly as strong. Job growth in Lawrence over the last decade has been, in a word, nonexistent. Despite the best efforts of policymakers, the ten-year period from 2003 to 2012 resulted in a net loss of 874 jobs in Lawrence.

While it would be tempting to assume that the Great Recession was the culprit, this does not hold up to much scrutiny. Compare to some other potential peer cities¹:

¹ Bureau of Labor Statistics: <http://data.bls.gov/cgi-bin/surveymost?la>

	2003 jobs	2012 jobs	net change	change %
Lawrence, KS	59237	58363	-874	-1.48
Iowa City, IA	81996	87964	5968	7.28
Auburn, AL	57660	64473	6813	11.82
Corvallis, OR	39860	41694	1834	4.60
Columbia, MO	84813	92894	8081	9.53
Blacksburg, VA	71013	76652	5639	7.94
Ames, IA	45705	46166	461	1.01
Lafayette, LA	113721	134278	20557	18.08

In Kansas, our neighbors in Manhattan showed job growth over that ten year period, as well, from 47,860 jobs to 54,852 (14.61% growth).²

(Note: we picked Lafayette as a comparison point due to their FTTP network, further detailed in Sections III and IV. The other peer cities were chosen from a document shared with us by City staff.)

Clearly, some of the initiatives that the City has undertaken have worked.

- According to the 2012 report from the City, \$183,296 in tax abatements led to the creation of 152 jobs. **Total cost per job: \$1206**
- According to the Docking Institute, which surveys KSBDC-assisted businesses on behalf of Legislative post-audit services, KU-KSBDC-assisted clients reported that they saved or created 392 jobs in 2012. Total cost to the City per job: **\$51.02** (Note: the job number includes jobs created throughout the six county service area, not just in Lawrence. Also includes part-time jobs with no regard to living-wage calculations.)
- According to the 2012 report from the City, the BTBC housed 99 jobs at the end of 2012. No number was listed in the 2011 report. Even if one factors in capital costs and operating expenses over three years, **total cost per job comes to \$20,260**. While that is significant compared to tax abatements, it is not uncommon to see sector-specific job incentives in the range of \$30,000 to \$40,000. These highly-sought-after jobs are expensive to create, but it is clear that the BTBC has been successful in creating high-value jobs.

This analysis, of course, is historical. What is more important for the sake of the analysis of the Wicked proposal, and in fact more important for the economic development picture for our community, is to look toward the future.

2.3 Economic Development Overview

There are three legs of the economic development, job creation stool:

- New businesses generate new jobs
- Growth of existing businesses generates new jobs
- Bringing existing businesses into a community generates new jobs

² U.S. Census Bureau LEHD Extraction Tool <http://lehd.ces.census.gov/data/>

It appears as though the City of Lawrence is engaging in all three activities.

- **New businesses:** Supporting the BTBC and the KU-KSBDC provides aspiring entrepreneurs with a variety of services to help them start and grow new businesses
- **Existing businesses:** Tax abatements, employee training incentives, and retention tools give the City some flexibility in working with businesses currently in our community, and KU-KSBDC can provide some services in this area, notably Economic Gardening projects
- **Business recruiting:** Site work in areas such as Venture Park should give us the ability to make sites available for businesses to move to our community, and from our observation it appears as though a significant element of the City's professional agreement with the Lawrence Chamber is related to this aspect of economic development

We would point to the tax abatement program as a great example of economic development funding that works well. There are specific job creation targets. The results are assessed. Finally, there is accountability related to that assessment. This makes it easy to look at job creation using quantifiable cost-per-job measurements. Outside of the tax abatement program, however, these important elements (targets, assessment, accountability) seem to be missing from our economic development discussion.³

For example, we can ascertain how many jobs are currently housed in the BTBC, but there is no record of the anticipated job creation at the time of the project. It is therefore difficult to ascertain, quantitatively, whether or not the policy had the intended job creation effect. It is difficult to ascertain the cost per job, as well.

We believe it would be productive to articulate a vision with tangible, concrete goals. If we hope to add, say, 5000 jobs over the next ten years (a modest goal, really), we believe that sharing and tracking the total jobs number would make it more tangible and more likely to happen. We also believe that it is important to establish assessment and accountability, as we found in the tax abatement program.

Also, it is absolutely imperative that we give some real thought to the actual sources for those 5000 jobs. One source is the growth of existing businesses. In this case, the tax abatements seem to work. But it seems unlikely that Prosoco, Grandstand, and Amarr would be capable of adding 5000 jobs over the next ten years. The BTBC expansion will help, and the track record is good and the value of those jobs is high, but that might not put a big dent in 5000 jobs.

Another source for jobs is the recruiting of businesses to our area. In our limited time, we were not able to determine a projection for the number of jobs to be created by Venture Park. But, again, with such a significant expenditure, it would be reasonable to establish targets and to maintain accountability.

In any case, that leaves entrepreneurs and start-ups to create a significant number of new jobs (and to replace the job churn that naturally comes when we lose businesses). In fact, the best information that we have seen on the subject (not a published study) indicates that more than 60% of all job growth in Kansas comes from start-up entrepreneurs, 35% comes from the growth of existing businesses, and less than 5% comes from recruiting efforts. Our mileage may vary in Lawrence, given the significant investment in the site selection process, but if we really understand the need to see 5000 jobs (plus replacing lost jobs) in our community, we should consider the exercise of quantifying the various opportunities.

³ <https://www.planning.org/eda/toolkit/2008/#4>

If we quantify the opportunities and we understand the real needs, then we can engage in a “gap analysis”. How many jobs do we need entrepreneurs to create over the next ten years? What resources do entrepreneurs have? What resources do they need if we want them to create, say, 3000 jobs in that time frame?

There could be many answers to those questions, but it is the dialog that is important. Unlike many communities, we do not currently have any kind of revolving loan fund to which entrepreneurs can apply for gap financing—financing that they wouldn’t be able to find via traditional means. These programs exist all over rural Kansas, and, in fact, throughout the country.⁴ We don’t have any kind of retail incubator space or co-working environment, which can be critical to the growing freelancer economy.

Specifically regarding the analysis of the Wicked proposal, although it is difficult to quantify, an FTTP network *could* be a significant step towards entrepreneurial job creation. In section IV, you will see some statistics shared with us by the Wyandotte EDC about job creation in the Google Fiberhood in Kansas City, KS. It is worth noting that this is a residential-only installation with no intent to serve the business community.

Again, although it is difficult to quantify, an FTTP network could also be a significant step towards our site selection and recruiting efforts, as well. In Section IV, you will read about Lafayette, LA, Bristol, VA, and Chattanooga, TN. All three cities have seen significant job creation as a direct result of their FTTP networks, including, in one case, jobs moving from Kansas.

2.4 Economic Development—Conclusions

Without quantifiable economic development targets and without an understanding of the cost per job inherent to incentives, evaluating the proposal from Wicked Broadband (or just about any economic development proposal) becomes virtually impossible. Some important elements of the discussion would likely include:

- Target number of jobs for the community
- Target number of new jobs from the growth of existing businesses
- Target number of new jobs from recruiting businesses to our community
- Target number of new jobs to be created by entrepreneurial, start-up activity
- Target cost per job numbers applied to various economic incentives
- Assessments and accountability measures for the above

If these elements were present in our community discussion of economic development, the analysis of the Wicked proposal might make more sense. To look at a fictional example:

- 5000 more jobs by 2023
- Existing businesses to create 900 jobs (to be determined by discussing prospects with local business leaders, Chamber staff, etc...) incented by tax abatements

⁴ <http://garybhansen.com/pdfs/led/pt2rshndbk.pdf>

- BTBC Phase II plus extension to create 200 jobs (includes graduating businesses locating in community)
- Venture Park to create 2000 jobs (largely new businesses to the community)
- Entrepreneurial activity to create 1900 jobs
- Cost/value per job:
 - Abatements: \$1500
 - BTBC: \$20,000
 - Venture Park and other recruiting activity: \$6000
 - Entrepreneurial activity: \$2000

In this fictional case, if we thought it reasonable to expect that a gigabit FTTP network would likely facilitate the creation of 250 jobs, it would be incumbent on us to give serious consideration to how we might make it happen. Especially when one considers the relative lack of other resources for entrepreneurs compared to other communities and the dependence on entrepreneurs to create almost 40% of the new jobs we desire.

With that all this mind, we will examine how FTTP networks are being built and utilized throughout the United States. We will look at some outcomes other communities are seeing. We will look at the Lawrence market, and specifically at the geographic boundaries identified by Wicked. We will review the CTC reporting to the City. Finally, we will take a look at the specific elements of the Wicked proposal.

III: Models of Service

As we conducted research into the race to build FTTP networks across the country we encountered several models of service worth mentioning in this report. FTTP networks are quickly becoming the calling card of economic development professionals working to expand, retain and recruit the high paying jobs of the booming tech industry. It is worthy of note to mention that none of these models are expected to be used as a benchmark for the Wicked Fiber proposal.

It should also be noted that currently, Lawrence ranks 11th (tied with Manhattan) in the state of Kansas on the scale of available internet speeds. Kansas City ranks first, thanks to the gigabit network that Google Fiber has been able to create. As a state, Kansas ranks 38th.

Rank	City	Mbps
1	Kansas City	95.21
2	Newton	28.07
3	Arkansas City	24.61
4	Pratt	23.5
5	Emporia	23.06
6	Hutchinson	22.9
7	Salina	22.39
8	Wichita	22.33
9	Junction City	22.19
10	Olathe	21.77
11	Lawrence	21.73
11	Manhattan	21.73
12	Haysville	21.7
13	McPherson	21.57
14	Independence	20.95

As CTC noted in their April 2013 memo, "...the residential and small business service offerings are costlier, slower, and more limited than in other comparable communities."

3.1 City Owned Utilities



LUS Fiber *Lafayette, Louisiana*

LUS Fiber is a separate, but related, division of a city utility service. The Lafayette Utilities System (LUS) provides an FTTP network to its residents and businesses along with electric, water & wastewater treatment services. Beginning in 2015, LUS Fiber will begin directly reinvesting in the city with an In-Lieu-of-Tax (ILOT) contribution to the Lafayette Consolidated Government. The 2015 contribution is expected to be close to \$1.5 million, followed by \$2 million in 2016 and a projected \$2.5 million in 2017.

Although both the fiber and utilities services are owned by the city, a state law regulating the competition of government-owned telecommunications services with private companies prohibits city-parish government from subsidizing LUS Fiber.

The service launched in 2009 funded by the city on a borrowed \$125 million. The plan brought fiber-to-the-home options to over 60,000 homes in the city of 120,000 people. Due to Louisiana law allowing public utilities to keep registration rates secret, we do not know how many of the 60,000 homes have opted into the service. But the director of the service did mention in an article in May of 2013 that over 14,000 homes had subscribed. The city released earnings reports showing that the system will bring in close to \$29.7 million for calendar year 2013 and anticipates 2014 to show an 18% increase to \$35.3 million.

The establishment of fiber-to-the-home has been a long road for LUS. The concept was born in 2000 when the Lafayette Chamber of Commerce along with the Lafayette Economic Development Authority urged the city to establish wholesale and governmental retail networks for internet services. In 2004 the city proposed the idea to its citizens, who voted 62%-38% in 2005 to fund the system through bonds. In 2007 the \$110 million in bonds were issued for the project. The system has been brought to court three times during the development stages; first in 2004 by the incumbent providers and again in 2006 by two anonymous citizens. The cases reached the Louisiana Supreme Court in 2007 which ruled in favor of LUS. The first customers began receiving services in February of 2009. By 2010 the build-out was complete (ahead of schedule) and 100% of Lafayette's residents and businesses now had the option to receive fiber-to-the-premises service.

The creation of the network has helped Lafayette become the "Silicon Bayou". Fast access internet has been a key in keeping the Oil & Gas industry in Lafayette. The industry was moving most of its key Gulf Coast operations to Houston, but has kept Lafayette's offices thriving and hiring. Most impressive is the creation of the Louisiana Immersive Technologies Enterprise (LITE) which is one of a few facilities in the world that combine high-performance computing capabilities with advanced visualization. It has found use by both the public and private sectors. Lafayette has also built the Louisiana Optical Network Initiative. The initiative connects the city to the 15,000 mile long National LambdaRail, a nation-wide fiber

network dedicated to research. All of these initiatives and growth have meant an additional 1,500 jobs in the tech sector for Lafayette.

EPB Fiber Optics

Chattanooga, Tennessee



Fiber Optics

EPB Fiber Optics is a non-profit agency operated by the city of Chattanooga, Tennessee. The system was rolled out in 2007 through \$220 million in bonds and another \$111 million in Federal Stimulus money. The Federal money was an unexpected boon for EPB, by the time the money was awarded, the system had already been constructed. The additional funding allowed the organization to build a “Smart Grid” throughout Chattanooga. EPB Fiber increased its revenues from \$66.5 million in FY 2012 to \$80.7 million in FY 2013, an increase of \$14.2 million, or 21.4 percent. This increase in revenues is due mainly to growth in the number of customers for Fiber Optics.

EPB Fiber now has over 48,000 customers throughout the Chattanooga metro area. Residential customers make up 57% of revenues with industry and government filling out the rest.

Like Lafayette, Chattanooga was dogged by legal battles to get their network built. All of the incumbent providers took the city to court to challenge the creation of the network. None of the suits delayed or stopped any part of the network’s creation.

3.2 Private/Public Partnerships

VermontTel

Springfield, Vermont



VTel is a small family-owned telephone company, serving 14 rural Vermont villages, based in Springfield, Vermont. Thanks to a very generous Federal Stimulus Grant of \$81 million, Vtel has been able to build an FTTP network throughout the city of Springfield and is branching it out throughout Vermont.

Most notably for the Vtel network is the low price of only \$35 per month that the company charges for their 1 Gigabit per second internet package.

The success of Vtel is directly due to the stimulus funding. The company would not have entered the FTTP market had the grant not be awarded. Vtel is a prime example of how the private sector has been able to work with state and local policy makers to build a robust and successful network.

3.3 Private Development

Google Fiber

Wyandotte/Johnson Counties Kansas

Google fiber



No report would be complete without mentioning Google Fiber. More than 1000 cities were vying for a partnership with Google, including Topeka, Kansas. On March 30, 2011 Google made the announcement that Kansas City, Kansas would be the first city to have the Google network implemented. Multiple communities throughout the region are now signing up have access to the network.

Google has also begun building and operating new FTTP networks in Austin, Texas and Provo, Utah. Like Kansas City, Austin had the fiber lines already laid out; Google is just finishing the last mile. Unlike anywhere else, Provo built the entire FTTP network with the hopes that a major player would come into the market and privatize the entire thing.

Google has been championed as the perfect example of private industry creating an FTTP network. It should be noted however that, *Google received stunning regulatory concessions and incentives from local governments, including free access to virtually everything the city owns or controls: rights of way, central office space, power, interconnections with anchor institutions, marketing and direct mail, and office space for Google employees. City officials also expedited the permitting process and assigned staff specifically to help Google. One county even offered to allow Google to hang its wires on parts of utility poles—for free—that are usually off-limits to communications companies.*⁵

⁵ "How Kansas City taxpayers support Google Fiber," last modified September 7, 2012, arstechnica.com/tech-policy/2012/09/how-kansas-city-taxpayers-support-google-fiber/.

Gigabit Squared

Seattle, Washington



In April of 2013, the city of Seattle opened up the 500 miles of dark fiber it had constructed at its own cost. Much like Lawrence's current fiber situation, the backbone of a network was there, the problem lied in the fact that there was no "last mile" provider options for the city to offer residential and business services.

Gigabit Squared was one of the first providers to sign up to be a provider. The company announced that twelve neighborhoods throughout the city would receive an FTTP network with two of those neighborhoods going live in the first quarter of 2014. The project has been delayed with a re-launch highly unlikely due to funding options not materializing. The funding of the project was not successful due to the city offering the use of the dark fiber, but nothing else. Outgoing Mayor Mike McGinn championed a public/private partnership to help bring the FTTP dream to a realization. He lost the most recent election and was replaced on January 2nd of this year.

In a recent interview, McGinn said, "The kids are moving to Kansas City right now because they want to get that fiber," McGinn said. "I don't want to say anything bad about Kansas City, but we want the kids to come here. We want the entrepreneurs who want that high speed to come here."

3.4 Private Models Completing Municipal Networks

The City of Lawrence Staff memo of November 5, 2013 suggested, as outlined by CTC, that the City focus on the middle mile and letting the private sector build out into the neighborhoods. The Wicked Fiber proposal would work within that parameter much like what other private companies are doing in cities like Austin, Texas and Provo, Utah.

In Provo, Google fiber has purchased the ailing iProvo network. The citywide network was built with taxpayer money for around \$58 million. Google has purchased the system for \$1.00 and will pay \$1.00 per year to lease the network's operations center. In return, Google will spend \$18 to \$20 million to upgrade the network to gigabit service.

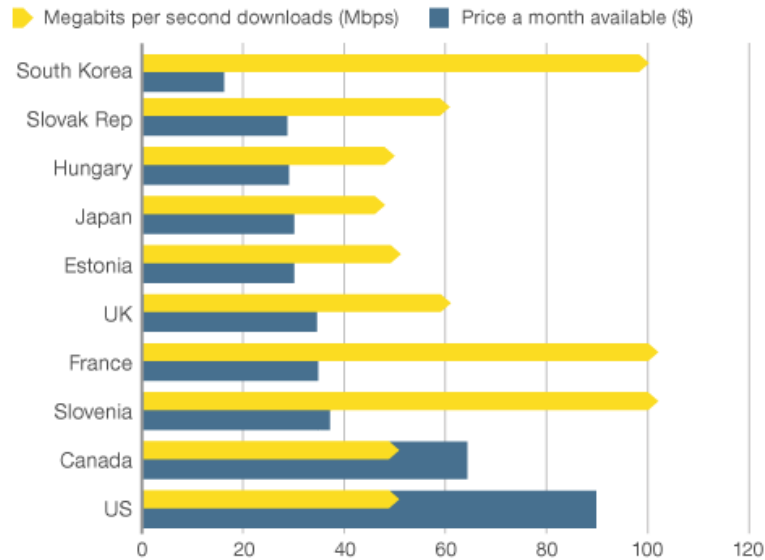
In Austin, the city is providing access to their middle mile network and allowing the private sector to build out the final leg to homes and businesses. As a result of the Google Fiber announcement indicating their entry into the market, AT&T has introduced their new U-verse Gigapower product—only in Austin.

3.5 International Models

This report would not be complete without addressing the strides the international community has taken to bring high-speed internet to residents, business and industry. Slower speeds and lack of access to quality broadband have brought the USA's international broadband ranking down to the 24th best in the world. The US market is being bested by countries across Europe and Asia.

Countries with high-speed broadband

45 megabits per second or more



Note: \$ reflects cost of living (purchasing power parity)

Source: OECD

6

The markets internationally have been growing at rapid speeds because of significant government investment, adoption of a common carrier concept, and a giant increase in available competition. In the UK, a country that once lagged behind the US, the government has no ownership of infrastructure and has not invested in any upgrades. The British approach opened up the fiber lines to any company that wished to compete against the one ILEC (British Telecom) that had monopolized control up until the early 2000's. The common carrier method has worked in the UK. In 2004 around 12,000 British homes had access to multiple options in the broadband market. By 2008 that number had reached 5 million homes.⁷

In South Korea, the world leader in fast internet speeds and low prices, the government built the backbone of the network and invited competitors in to drive prices down. One of South Korea's biggest benefits was a very late start to the internet revolution. In the mid-1990's when the US and much of the rest of the industrialized world was busy upgrading phone lines and cable lines to provide internet access, the South Korean government trying to figure out how to get started. In 1995, less than 1 percent of South Koreans had access to the internet. ⁸ By 2005, that number was more eighty percent. Like the UK model, South Korea relies on multiple providers to drive prices down and competition up.

⁶ <http://www.bbc.co.uk/news/magazine-24528383>

⁷ <http://www.engadget.com/2011/06/28/why-is-european-broadband-faster-and-cheaper-blame-the-governme/>

⁸ http://news.cnet.com/South-Korea-leads-the-way/2009-1034_3-5261393.html

IV. Potential Market Profiles

Without the use of sophisticated modeling software, coming up with specific numbers for business growth is at best a guessing game. The only way for this report to come close to quantifying what an FTTP network will mean for potential markets is to base the thinking on similar experiences. We have taken information and data from models across the country and broken them down into the potential for growth.

What numbers we were able to divine out of the data gave us an insight into the direction that the American gigabit market is moving. 135 municipalities have built, are contracted to build or are considering building FTTP networks.⁹ Hundreds more have are exploring their FTTP options. **Figure 4.1** is a brief snapshot of a few of the projects planned, underway or online.

⁹ "Number of Municipal FTTP Networks Climbs to 135," last modified August, 2013 http://www.bbpmag.com/2013mags/may-june/BBC_May13_MunicipalNetworks.pdf

Figure 4.1

City	Type of Rollout	Service provider	Provider type	Services offered	Pricing	Competition	Status
Austin	Citywide	AT&T	ILEC*	1 Gbps FTTH data, U-verse TV	N/A	Time Warner Cable, Google, and Grande Communications	Online
Cedar Falls	Citywide	Cedar Falls Utilities	Municipal electric utility	1 Gbps/500 Mbps FTTH data	\$267.50 (residential); \$950 (business)	CenturyLink	Online
Chattanooga	Citywide	EPB Fiber	Municipal provider	1 Gbps FTTH data, IPTV	\$69.00 (residential)	AT&T	Online
Chicago	Neighborhoods	Gigabit Squared, City of Chicago	Community provider	1 Gbps FTTH	N/A	AT&T, Comcast	Project failed to attain needed funding
Kansas City	Neighborhoods	Google Fiber	Internet search provider	1 Gbps FTTH data, TV	\$70.00	AT&T, Comcast	Online
Lafayette, La.	Citywide	LUS Fiber	Municipal provider	1 Gbps FTTB, IPTV, voice	\$999.95 for business	AT&T, Cox	Online
Leverett, Mass.	Citywide	Leverett Broadband Committee	Municipal provider	1 Gbps FTTH data	N/A	Verizon	Spring 2014
Omaha	Neighborhoods	CenturyLink	ILEC	1 Gbps FTTH data, Prism IPTV	\$150	Cox Communications	Online
Provo	Citywide	Google Fiber	Internet search provider	1 Gbps FTTH data, TV	\$70.00	CenturyLink, Comcast	Online
Springfield, Vt.	Citywide	Vtel	Rural ILEC	1 Gbps FTTH data	\$35	Comcast	Online
Seattle	Neighborhoods	City of Seattle, Gig.U	Municipal provider	1 Gbps FTTH data	\$80	CenturyLink	Online

*Incumbent Local Exchange Carrier

4.1 Bristol, Virginia

In Bristol, Virginia the BVU Authority runs an FTTP network serving ten counties in Virginia and covering parts of a bordering county in Tennessee. Due to a slump in all of its once prosperous industries of tobacco, textiles, manufacturing and coal mining the area was looking for new industries to revitalize the stagnant growth. In 2007, BVU submitted a report to the state highlighting the job gains from its broadband investments. It traced over \$50 million in new private investment, generating 1,220 jobs in seven counties and \$37 million in annual payrolls.¹⁰

Northrop Gummman created over 700 jobs for the community because of easy access to the BVU network. Only 30% of the jobs went to locals due to a lack of highly skilled employees in the area. But to ensure that locals would be able to compete, the University of Virginia created a software engineering curriculum at a satellite location in the nearby town of Wise.

In 2010, DirectTV, one of BVU's competitors opened up 100 jobs in the area for a virtual call center. Again, access to a gigabit network was listed as the main reason for the placement of the center in Bristol.

When Alpha Natural Resources, a major employer headquartered in Bristol, merged with a rival company located in the Washington D.C.-Baltimore metro, it was determined that due to network strength in Bristol, the D.C.-Baltimore offices would be moved to Bristol.

4.2 Lafayette, Louisiana

After a lengthy struggle to build an FTTP network in Lafayette, Louisiana LUS was able to begin supplying services to customers in 2009.

In 2011, Lafayette was named as the sixth fastest growing economy in the nation by the Bureau of Economic Analysis. This growth was attributed to a constantly robust petroleum based industrial system and a boom in the high-tech sector. The Lafayette Metro area had the largest percent increase in median household income from 2007-2012 according to a study released in February of 2012.

NuComm, a Canada based contract call center management service, opened a Lafayette call center and created 1,000 jobs in the process. It should be noted that in the same year, the company closed a call center with over 1,000 jobs in Wichita, Kansas.

The television and film industry has found a home in Lafayette as well. Pixel Magic, a special effects studio, built an office in Lafayette and created 200 jobs. The fact that the city had built a fiber network allowed the company to live and work in a state with a much cheaper standard cost of living and at the same time have access to state of the art internet speeds.

¹⁰ "Broadband At the Speed of Light," last modified April, 2012, <http://www.ilsr.org/wp-content/uploads/2012/04/muni-bb-speed-light.pdf>.

4.3 Chattanooga, Tennessee

Chattanooga is perhaps the best example of what an FTTP network can do for economic development. In a speech in 2011, EPB CEO Harold DePriest referenced a study that had initially suggested Chattanooga would see 683 direct jobs created because of the network with another 2,000 created indirectly¹¹. He said the study had been updated to an estimate of 3,600 new jobs and more than \$580 million in economic value over the next ten years. Those anticipated benefits total three times more than the value of the investment in the networks first 10 years.

Volkswagen was one of the first major companies to locate manufacturing and offices in the city. After the network went live, the company decided to expand its manufacturing presence and open corporate offices in Chattanooga's downtown.

HomeServe, a Connecticut based emergency home services company, created 350 jobs in Chattanooga after learning about the capacity of the city's network. When the company decided on the move, it initially planned to create 240 new jobs, but after only a few months decided to invest more in the community by adding to its 30,000 square foot office and bringing in an additional 110 new positions.¹²

The entrepreneurial community in Chattanooga is booming as well. Thanks to organizations like the Lamp Post Group, entrepreneurs have access to the financial and technological resources to help get their start-ups moving from concept to reality.¹³ The Lamp Post Group is one of many start-up based groups that have formed since EPB's SmartGrid creation.

4.4 Kansas City, Kansas and Surrounding Areas

Google Fiber has made lots of news across the country about its efforts to bring an FTTP network to Kansas City. It should be noted that Google Fiber only offers residential services and does not have a business side built yet.

However limited residential service may be, economic development is enjoying some nice numbers thanks to Google's network. Greg Kindle, President of Wyandotte County Economic Development shared some numbers for our report.

- In September 2012, three properties and five startup companies located within a half block from each other in the first initial Google Fiberhood. One of these houses was purchased by a local startup leader who recruited hackers and entrepreneurs from around the country to live in his Google Fiber enabled house for three months rent free to build their startups.
- In the 14 months since, Kansas City Startup Village has grown to 13 properties and 25 startups within six blocks of one another.

¹¹ "Broadband At the Speed of Light," last modified April, 2012, <http://www.ilsr.org/wp-content/uploads/2012/04/muni-bb-speed-light.pdf>.

¹² <http://www.timesfreepress.com/news/2013/jun/05/hiring-homeserve-to-add-100-jobs-at-local-office/>

¹³ <http://www.lamppostgroup.com/about/>

- Entrepreneurs have moved from 12 different states to live and work in KCSV.
- Delegates and business people from over 45 countries and visited.
- Thus far, Kansas City Startup Village has created over 70 jobs.

4.6 Neighborhood Rollouts

Across the country we are seeing initiatives rolling-out to supply FTTP networks to certain neighborhoods within a city as opposed to the costly roll-out option for the entire community. Cities like Seattle, Washington, Chicago, Illinois, Omaha, Nebraska and Santa Rosa, California have plans to launch FTTP networks to specific neighborhoods within their city limits.

4.7 Proposed Lawrence Profile

In reviewing the Wicked proposal we decided to breakdown the neighborhoods in question by demographics and tapestry segmentation. These reports were created using ESRI Business Analyst Online. Tapestry segmentations, demographic and income profiles, and census profiles are all attached to this report for further review.

As the table below shows, the East location in Wicked's proposal is the economic powerhouse of the three areas. With 459 businesses, over \$619 million in 2012 sales and close to 3,800 employees, it will see the most benefit from an up and running FTTP network.

Quantifying potential job creation is very difficult, but there are several information-intensive businesses in this area that could potentially benefit in a similar fashion to Scanning America, which has seen growth as a result of their fiber connection (see their letter in appendix). Callahan Creek, for one, certainly moves graphic files all over the world (see their letter in appendix). One could imagine Downtown Lawrence second and third story offices with gigabit connections filled with entrepreneurs doing business all over the world—much like the KC Startup Village, but our Downtown would likely have even more overall vitality. The possibilities in the East Lawrence Warehouse Arts District are also endless. Finally, though this is outside of Phase I, with everything we have seen in Chattanooga and Lafayette, it is worth considering how much advantage we would give our site selection efforts in Venture Park with gigabit FTTP availability. Perhaps there is a trade to be negotiated.

If the creation of an FTTP network can boost employment by 5% in the proposed eastern neighborhood, that would mean a net benefit 150 new jobs for Lawrence. Using the 5% increase as a goal, it would cost about \$3,330 for every created job. If we added 300 jobs, the cost per job would be \$1,667.

Figure 4.7

	Wicked Fiber East	Wicked Fiber Central	Wicked Fiber West
Population Comparisons			
2012 Total Population	1,354	218	204
2012 Household Population	1,224	134	204
2012 Family Population	534	50	124
Households Comparisons			
2000 Total Households	587	99	69
2010 Total Households	594	97	79
2012 Total Households	593	99	80
2017 Total Households	602	104	84
Income Comparisons			
2012 Per Capita Income	21,205	34,318	29,597
2012 Median Household Income	28,236	46,907	50,397
2012 Average Household Income	43,084	69,756	63,272
Housing Comparisons			
	202	28	31
	391	71	50
	64	3	6
Business Comparisons			
<i>Total Businesses</i>	459	9	17
<i>Total Sales \$</i>	619,900,921	2,498,115	2,329,858
<i>Total Employees</i>	3,762	39	59

V: CTC Documentation Review and Update

CTC Technology and Energy was engaged to prepare a lengthy report for the City. The document, titled *Enhancing Broadband in Lawrence: A Range of Strategic Options*, was delivered in April 2013. CTC is a well-known and respected consulting and strategic planning firm. They specialize in, among other things, community broadband and public-private partnerships. One of their signature projects has been the previously referenced Gigabit Squared FTTP network proposal in Seattle, championed by outgoing mayor, Mike McGinn.

The April 2013 CTC report contains a wealth of information that was incredibly educational to our office as we sifted through resources to understand the big-picture implications of gigabit internet in our community. The report contained 9 specific strategies that CTC advocated at the time of the report.

In August of 2013, the City received a memorandum from Joanne Hovis, the President of CTC Technology & Energy. The City had asked Ms. Hovis to examine Wicked's Application for Economic Development Support/Incentives.

Both of the CTC reports are extremely informative, understandable, and well-documented. The CTC team is clearly an authority on this subject. The KU-KSBDC team, on the other hand, does not hold itself out to be an authority on this subject. However, the purpose for this section is to review some of the CTC documentation and to update readers in light of information that has become available since the time of the CTC reporting.

Since the CTC reports seem to be very sound, and rightfully influential, we consider it to be important to review conclusions and also to understand where new information has come to light. In no way are we attempting to re-direct their words or trying to guess how CTC might interpret new information that has arisen since their reports were published. It is quite possible that our interpretations would not match theirs. However, many of these facts serve as important reminders and/or points of importance. Some of the main points from the CTC reports as relates to our analysis:

5.1 CTC April Report

The following quotes are directly from the April 2013 CTC report.

- **“Our research regarding broadband supply suggests that broadband is universally available in the City, but that on the whole, the residential and small business service offerings are costlier, slower, and more limited than in other comparable communities. We also find that the consumer markets—residential and business—do not have access to the very high speeds that are enabled over fiber optics and that are increasingly viewed as the emerging international standard.” (April report p2)**

Our comment: This may be the heart of the matter. Just how important is it for Lawrence to be competitive in its offering? As we have examined in Section II, the City of Lawrence has spent a significant amount of money to compete in certain arenas, such as the biosciences space (LDCBA and BTBC). The City has also spent a significant amount of money to compete in business the business site selection space (Venture Park). We have also taken a look at the big picture of job creation over the last 20 years. Are we

investing in the right areas in the competition for jobs? Are we doing enough? We believe this is the question.

- **“Fiber networks hold the advantage in capacity, robustness, and security. Fiber provides almost unlimited capacity. Each single fiber optic strand is theoretically able to duplicate the entire electromagnetic spectrum available to all wireless users. In a practical sense, the capacity limit is imposed by the capability of the electronics connected to the fiber. Further, capacity is constantly increasing as technology improves. Fiber has a life of decades, assuming adequate maintenance, and it can cost-effectively and simply be scaled to dramatically higher speeds as new electronics become available.” (April report p21)**

Our comment: Not much to be added here. Fiber is the desired mode.

- **“According to data from the map, 100 percent of Lawrence residents and businesses have access to some level of broadband service. The most ubiquitous broadband technology available in the City is wireless, followed closely by cable modem and DSL. Fiber optic infrastructure is generally not available to residential customers. Given that the NBM data rely heavily on self-reporting by the commercial carriers, the NBM may overstate the broadband coverage in the City. However, if the NBM’s data are accurate or close to accurate, this broadband landscape suggests a monopolistic incumbent market.” (April report p23)**
- **“To conclude, we acknowledge the significance of universal broadband availability, and note that the private market does appear to offer wireline broadband access throughout the entire City. On the whole, however, the service offerings are costlier, slower, and more limited than in other comparable communities.” (April report p30)**

Our comment: Not much to be added here. Our last mile in Lawrence leaves much to be desired.

- **“Despite these difficulties, the literature available on broadband and economic development does suggest a causal relationship between broadband and economic development. High-speed broadband is an economic enabler for businesses. From the standpoint of most businesses, broadband has ceased to be a luxury and has become crucial to business functionality. According to a 2011 survey of building owners and property managers, broadband access is one of the most important decision factors for commercial real estate siting—after price, parking, and location. Similarly, a national survey found that 77 percent of economic development professionals believe that to attract a new business, a community must have broadband of at least 100 Mbps; in other words, they believe that economic development without broadband is essentially inconceivable.” (April report p36-37)**

Our comment: Again, it’s more of a question than a comment. How important is it for Lawrence to be competitive in its offering? Is it comparable to the importance we have placed on biosciences or site selection?

- **“For example, dependable, high-speed Internet access greatly improves the ability to work from home, or telework. This is often touted as the “most transformative”¹⁵⁷ and “biggest environmental benefit” of FTTP.” (April report p67)**
- **“Another significant, emerging application for high bandwidth broadband is the area of “aging in place” and other means of using technology to support seniors in their homes.” (April report p68)**

Our comment: These are areas that might be of significant interest in Lawrence based on our proximity to Kansas City and our community involvement with intergenerational neighborhoods and attracting retirees.

- **“We recommend pursuing and expanding the full range of contemplated fiber and conduit construction projects that is currently in development by City staff. The projects, which are discussed in more detail below, represent cost-effective, efficient, and low-risk infrastructure initiatives that would be mutually beneficial for the City and its partners such as KU and the County. We also recommend that the City expand and enhance the current strategy to promote further infrastructure development and expansion.” (April report p73)**

Our comment: To the best of our knowledge, this is being done. In our limited time for preparation of this report, we did not see the need to communicate with City IT staff until late in the process. Given more time, we would have certainly done so. From the information we have gathered, it appears as though the City’s approach to middle-mile architecture has been efficient and adequate. The potential inadequacies of our system seem to be related to the last mile. It is also worth noting that we did not examine the City’s budget for IT expenditures, but only for economic development expenditures. It would be fair to say that a project such as this might well fit under several different expenditure profiles.

- **“Lawrence should focus on expanding its existing fiber and conduit footprint in such a way as to connect existing fiber routes into rings.” (April report p82)**

Our comment: We believe that this is being done, including the 4.5 miles specifically indicated in the map on page 84. This is based on the City’s November 5, 2013 memo. Again, we conclude that the City has been efficient with its approach to the middle mile architecture.

- **“We recommend the strategy of maximizing the City’s existing fiber infrastructure by making it available, under defined terms, to the private sector to encourage competition, economic development, and last-mile construction (i.e., further connections from the City’s backbone to homes and businesses).” (April report p87)**

Our comment: We are not aware of any instances of this being done. If there are other proposals besides the Wicked proposal, we are not aware of them. Again, this speaks to the heart of the matter, specifically related to points 4 and 5 of the Wicked economic development request.

- **“Beyond the incremental fiber construction that we have recommended above, the City could take a long-term approach to expanding its fiber network and construct a fiber-to-the-premises (FTTP) infrastructure that reaches all residences and businesses in the City. This approach would, potentially, deliver the greatest benefits to the City’s residents and businesses by providing ubiquitous access to connectivity at the highest technically available speeds. But constructing an FTTP infrastructure would involve the greatest risks for the City, too: It would require the most construction; would entail the largest municipal investment, in terms of financial and human resources; and would require a long-term commitment to sustaining a substantially expanded operation.” (April report p97)**

Our comment: On page 105 of the report, CTC went on to sketch out some potential next steps for examination of a municipal FTTP infrastructure. There are cities engaging in this activity, notably, as included in this report, Chattanooga, TN and Lafayette, LA. Then there are cities who have been lucky enough to receive private investment in FTTP infrastructure, such as Kansas City, KS through Google. We would note that the Google effort in KCK might not have been quite as private as believed, as Google has received significant public assistance in their effort. There are also some public/private partnerships, such as the Vtel example listed.

There is certainly a case to be made for a municipal FTTP infrastructure, as seen in other cities, but that is far beyond the scope of this report.

- **“Leverage the City’s proximity to Kansas City and communicate with Google” (April memo p109)**

Our comment: It would be great if we had a private builder of an FTTP infrastructure for the city with the means and the desire to complete such a project, but this is highly unlikely. In fact, on page 112 of the April report, CTC indicated that they established contact with Google, and Google was noncommittal. It is also worth noting that Google makes many of the same requests as we find in the Wicked proposal, and also some additional requests.

If the community has the desire for an FTTP network in the foreseeable future, there is little doubt that the City will be involved in some way.

5.2 CTC August Memo

The following quotes are from the CTC August memo:

- **“Based on our knowledge of Lawrence, the Wicked proposal to build FTTP and offer access to other companies does align with the City’s interest in world-class communications infrastructure and communications competition. Lawrence stakeholders demonstrated to us as we conducted fieldwork in Lawrence earlier this year that there is a strong community understanding of, and interest in, the kind of high-speed communications enabled by fiber optics all the way to the premises.” (August memo p2)**

Our comment: It appears as though Wicked is making a proposal that is in line with CTC’s observations from April.

- **“At the same time, the City’s stakeholders also demonstrated other broadband interests that do not align with the Wicked proposal, including those that would enable expanded broadband connectivity to local businesses and community anchor institutions or to multiple private providers rather than a single company.”(August memo p3)**
- **“Another alternative is to focus on expanding broadband options in the small business community, an important part of the Lawrence economy. This investment would likely have broader-based impact on the entire community, because enhanced business broadband can generate economic activity, new jobs, and tax revenues that benefit the entire community.” (August memo p3)**

Our comment: it is CRITICAL to understand that the CTC August memo was written BEFORE Wicked had selected their pilot Phase I neighborhoods. As noted in Section IV, the entire downtown community would be served by the updated Wicked plan. Under the terms of the proposal, 485 local businesses would be served by the FTTP network. These businesses currently employ approximately 3,860 employees. Several important community institutions would also be served.

Given the information about the service area, it is quite possible that there would be significant economic activity generated, which could very well include new jobs and tax revenues.

Also, it is worth noting that CTC seems to advocate for a municipal network that allows access by multiple providers. The Wicked proposal would allow access to the FTTP network by other providers, if they so choose.

- **“Over the course of 30 years, the City might be forgoing revenues in the range of \$20,000 to \$80,000 for each mile of 12-strand fiber in the agreement (again, for 24 strand fiber, the valuation range would increase on an incremental basis but would not double).” (August memo p5)**

Our comment: This relates to items 4 and 5 of the Wicked request. As noted above, CTC recommends that the City make use of the middle mile infrastructure by leasing to private providers. Wicked has proposed to do this at a below-market rate. The questions here are as follows: Are there any other private providers making similar requests? Knowing that the City might forego revenue opportunities, are there other elements of the proposal that benefit the City? These benefits may come in the form of franchise fees, or new jobs and tax revenues from increased economic activity. We will attempt to synthesize some data points in Section VI.

- **“We recommend to Lawrence that any entity conducting splicing should be qualified and City-approved. In addition, any entity that splices City fiber should be documenting those splices in the City’s own fiber documentation system. Any moves, adds, or changes to City fiber infrastructure should be cleared with City staff and conducted under their supervision by an entity approved by them. In addition, any entity splicing the City’s fiber should hold appropriate insurance, licenses, and bonding.” (August memo p6)**

Our comment: This relates mostly to items 2 and 3 of the Wicked request. Frankly, either there is something here that we do not quite understand or these requests seem to be the easiest to fulfill. From our tour of the Wicked facilities and examination of their inventory and equipment, it seems as though they would be great candidates to serve as an approved entity. Rather than paying a contractor \$340 per hour to drive from Kansas City, Wicked could pay the City \$80-100 per hour for staff time so that City staff could supervise and document. If Wicked does not hold appropriate insurance, licenses, and bonding, we suspect that could be an easy fix for them.

- **“In the event that the City funds fiber construction, either by Wicked or any other private carrier, we recommend that the City secure some key contractual protections related to its broadband goals. For example, we recommend the City ensure that all funds disbursed would directly fund capital costs paid for equipment and fiber construction—and would not be used to cover day-to-day operations or other obligations. This type of restriction is generally attached to public grant funding for capital infrastructure projects.” (August memo p9)**

Our comment: This makes sense and we discuss options in Section VI, though there are surely many more possibilities.

- **“Frankly, we believe the City holds relatively little information with which to evaluate Wicked’s proposal, particularly in light of other opportunities for broadband expansion with the funds available. Should the City wish to proceed with funding a private FTTP build in part of the City, as contemplated by the Wicked proposal, we recommend that the City do so through a formal process in compliance with its own procurement rules. We cannot opine on the parameters of those rules, but based on our practical experience, there are benefits to either a request for information (RFI) or request for proposals (RFP) process.” (August memo p10)**

Our comment: When CTC reported in August, there was no knowledge of the intended Phase I neighborhoods. This is certainly an important piece of new information. That said, an RFI process or an RFP process may well be in order at this time. We would recommend that the process move quickly, however, in light of the fact that Wicked’s proposal was made almost a year ago. As for other opportunities or funds available, we were not clear on what those would be.

VI. Analysis of Proposal Elements

In this section, we will discuss each of the specific elements of the Wicked proposal. It is our understanding from the City memo dated November 5, 2013 that City staff does not recommend pursuing any part the Wicked proposal. We fully respect that analysis and we understand that City staff has a much better understanding of City resources than we could ever hope to have. Our discussion is simply meant to be a part of the dialog. Reasonable people could reasonably expect to come to different conclusions on almost any policy matter that touches on so many aspects of governance.

This analysis is certainly not intended to contradict the analysis of CTC, City staff, or any other experts who have weighed in on the subject, and it should be noted that 1) we do not consider ourselves experts on most of this subject matter, and 2) we were asked for our opinions rather than simply volunteering said opinions.

In some cases, we may offer an additional perspective or some suggestions for further evaluation—again, just another part of the dialog.

6.1 Proposal Element: Waiver of \$20K in franchise fees for five years

Although this has not been addressed at any point in the report until this section, the waiver of franchise fees is one of the more interesting elements of the Wicked proposal. The City collects franchise fees for electricity, gas, cable, and phone service providers in exchange for the use of rights-of-way. Wicked is the only service provider that pays franchise fees for the delivery of broadband service.

The total collection of franchise fees has gone up significantly over the last ten years. However, the vast majority of that growth has come from franchise fees for electricity.

	City of Lawrence Franchise Fees									
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013*
Electricity	2,089,255	2,212,453	2,563,297	2,833,316	3,418,772	3,808,141	4,228,676	4,388,130	4,657,590	4,777,294
Telephone	200,487	183,523	180,788	317,706	434,936	409,812	349,125	500,090	437,368	454,500
Video	568,418	540,124	492,250	656,937	779,207	796,191	855,704	663,044	721,924	687,799
Gas	826,781	818,084	750,648	976,646	910,278	858,782	866,679	841,780	665,301	841,828
	3,684,941	3,754,184	3,986,983	4,784,605	5,543,193	5,872,926	6,300,184	6,393,044	6,482,183	6,761,421

* Note 2013 is unaudited and will be adjusted with January accruals
Electric, Telephone and Video Franchise Fee increased to 5% in 2007 from 4%

Looking at just the franchise fee collections for telephone and video, that number began to decline after reaching a high in 2008.

	City of Lawrence Franchise Fees									
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013*
Telephone	200,487	183,523	180,788	317,706	434,936	409,812	349,125	500,090	437,368	454,500
Video	568,418	540,124	492,250	656,937	779,207	796,191	855,704	663,044	721,924	687,799
	768,905	723,647	673,038	974,643	1,214,143	1,206,003	1,204,829	1,163,134	1,159,292	1,142,299

Moving forward, it is not unlikely that franchise fees for telephone and video would continue to decline. American consumption of television is changing. An ever-growing number of “zero-tv” households, or “cord cutters” are obtaining content through streaming services such as Netflix, Hulu, and/or from devices such as Roku. The number of “zero-tv” households has grown from 2 million in 2007 to 5 million in 2013¹⁴. Even the venerable Nielsen ratings are tracking viewership of these online consumers of content.¹⁵

As for landlines, according to the Wall Street Journal, only 71% of US households have one, down from 96% 15 years ago.¹⁶

It seems likely that these trends will continue, and they will be even more acute in a city of early-adopter college students. Using modest estimates of 2% reductions in franchise fees, the potential loss to the City would range from \$22,846 to \$21,072 per year from cable and telephone service.

One opportunity for the City to reverse the declining trend would be through the growth of Wicked’s subscriber base. Wicked accrued \$17,440 in franchise fees in 2013. Their internet revenues grew 30% in 2013. Assuming growth rates of 15% in 2014 and 2015 and assuming their predicted market penetration with the FTTP network of 10% in 2014 and 30% in 2015, their franchise fees would be:

- 2014: \$26,100 (minus \$20K forgiven = \$6,100)
- 2015: \$34,605 (minus \$20K forgiven = \$14,605)

It seems as though a two-year payback on only the selected neighborhoods is not likely. The City would be giving up \$40,000 in exchange for \$20,705, of which \$16,200 would be directly attributable to FTTP customers. That figure also assumes that the households are customers all year, which clearly is not possible for 2014, anyway.

Where this proposal might seem to have some merit, however, would be as the network expands. According to our calculations, given an average price of \$75 per month, it would take 445 new Wicked subscribers for this incentive to show a positive return. This represents less than 1% of the residential and business addresses in the community.

¹⁴ <http://www.usatoday.com/story/tech/2013/05/28/reviewed-cut-the-cord-tv/2156677/>

¹⁵ http://televisions.reviewed.com/news/nielsen-ratings-will-begin-to-track-online-viewership?utm_source=spikes&utm_medium=referral&utm_campaign=collab

¹⁶ <http://online.wsj.com/news/articles/SB10001424127887323893004579057402031104502>

By the time Phase 2 of the Wicked FTTP network rolls out in 2016 and into 2017, the franchise fee benefit to the City would be substantial. Our rough calculations indicate a franchise fee benefit to the City of somewhere in the neighborhood of \$144,000 to \$288,000 per year. (Wicked's calculation came to \$151,200 per year—see Appendix)

With a citywide rollout of an FTTP network and a 30% adoption rate, franchise fee receipts for the network would reach \$421,200 per year. One of the important yet unknown factors would be whether or not other providers elect to utilize the network, as Wicked's proposal calls for access by competing providers. If the KCK network can achieve penetration rates of 30% without allowing competitors on the network, it is possible that an open network could reach even higher penetration rates—especially in a community of early-adopters.

It is also important to note the following:

- While it is difficult to quantify, given the evidence, it is extremely likely that City franchise fee collections for phone and cable will see further erosion and that this will be true regardless of the status of this proposal
- The analysis in this section is completely independent of the analysis in Section II regarding the cost of incentives related to job creation
- The City's largest locally-owned provider, Sunflower Cable, was sold to Knology, which then sold to WOW! While we could not quantify the job loss with any degree of accuracy, it is clear that there are fewer jobs in our community as a result of call center operation transfers
- The Wicked FTTP network would allow multiple providers, but any current providers, none of whom pay franchise fees for broadband, would be paying franchise fees for service over the new network.

Possible solutions:

- As discussed previously, we would advocate for economic development incentives containing targets, assessment, and accountability. If the City is interested in pursuing an alternative to reductions in video and telephone franchise fees, further analysis of this proposal may have merit. There is almost certainly some risk involved. The City would almost certainly have to grant the reduction in order to get a Phase 1 rollout (from Wicked or from any other provider). But the franchise fee payback won't come until the network expands. One solution might be to base the franchise fee forgiveness based on projections. In other words, in 2014, if Wicked builds the network and generates 100 subscribers, the City might forgive \$20,000. If Wicked has 80 subscribers, forgive \$16,000. If, in 2015, Wicked has 300 subscribers, forgive \$20,000. By 2016, the City might consider targets and assessments based on whether or not the network expands to cover some certain number of addresses.
- This would be a different approach entirely, but the targets and assessments could also be related to job creation rather than franchise fee creation. Extending the discussion from Section II of this report, nationwide, the average incentive for job creation comes in around \$3600. If Wicked can document the creation of 6 jobs per year, either on their team or on the team of a gigabit FTTP client (specifically as a result of the service), then forgive \$20K in franchise fees. This could also be done on a sliding scale or per-job basis.
- A similar approach but using a different metric—the City could the 2012 Lawrence tax abatement average job-creation number of \$1206. For up to 17 jobs, give Wicked \$1206 in franchise fee

forgiveness for each job they document, either on their team or on the team of an FTTP client (specifically as a result of the service).

- The bottom line is that, in light of the current situation with video and phone franchise fees, this incentive might merit further discussion.

6.2 Permission to co-locate splice cases in City hand holes

This element of the proposal does not seem to be particularly controversial. In any case, much of the analysis in Section 6.3 might be applicable.

6.3 Permission to splice fiber under City supervision

As we understand it, currently every time Wicked makes a splice into City fiber, a sub-contractor drives over from Kansas City at a cost of \$340 per hour to Wicked. This leads to unnecessary travel and unnecessary costs for Wicked and for any other potential last-mile provider. It leads to unnecessary dollars leaving our community. There are also, as we understand it, City staff members at the splice site responsible for documenting those splices in the system. That would not change per the Wicked proposal.

Per the Wicked proposal, the City would still retain ownership of the fiber. The City would still document the splices. Based on everything we have seen and read, this element of the proposal should be seriously considered regardless of any other proposal findings.

The CTC August memo states:

“We recommend to Lawrence that any entity conducting splicing should be qualified and City-approved. In addition, any entity that splices City fiber should be documenting those splices in the City’s own fiber documentation system. Any moves, adds, or changes to City fiber infrastructure should be cleared with City staff and conducted under their supervision by an entity approved by them. In addition, any entity splicing the City’s fiber should hold appropriate insurance, licenses, and bonding.”

The City should strongly consider implementing a process to qualify entities to splice City fiber. The City might even consider a charge of \$80-100 per hour to send City staff to the splice site for supervision and documentation purposes. This could be a source of revenue to the City and also enable any potential last-mile providers to reduce costs, provided they are willing and able to qualify.

Wicked has the equipment, the training, and the personnel to splice fiber. This was not an insignificant investment on their part. Yet we are sending money outside of our community every time this happens. Google Fiber got far more of a concession from Kansas City for their Fiberhoods, and it is worth mentioning that Wicked proposes open access to the network, whereas Google does not.

6.4 Thirty year leases of fiber as specified

Based on our reading of the CTC documents and our understanding of projects completed in 2013, the City has done an excellent job with the middle mile. Our understanding is that many of the main points in the CTC report regarding the security of a redundant fiber ring have been addressed in 2013.

As noted in section V of this report, CTC recommends that the City make use of the middle mile infrastructure by leasing to private providers. Wicked has proposed to do this at a below-market rate.

“Over the course of 30 years, the City might be forgoing revenues in the range of \$20,000 to \$80,000 for each mile of 12-strand fiber in the agreement (again, for 24 strand fiber, the valuation range would increase on an incremental basis but would not double).” (August memo p5)

One of the time limitations we ran into during the period of our analysis was that we were not able to determine whether or not any other private providers have made similar requests. It seems obvious that unused fiber is not a benefit to the City, and that the substantial middle mile investment must eventually translate to the last mile.

Without sharpening the pencil to its finest possible point, we are talking about somewhere in the neighborhood of \$1000 to \$2000 per year per mile, depending on the fiber count. Honestly, it is not clear whether we’re talking about one mile to the Courthouse or 4.5 miles to the Douglas County Jail, but to dismiss this request out-of-hand in the midst of the rest of the proposal seems like a mistake. Again, compared to the concessions given to Google Fiber, this seems insignificant.

Possible next steps:

- Issue an RFI to determine whether or not there are other potential last-mile providers who would bid to use the fiber
- Develop, propose, and negotiate a shorter-term lease, even ten or twenty years, to protect the City from over-promising fiber
- Establish economic development metrics, assessment, and accountability, as proposed in section 6.1

6.5 Infrastructure grant of \$500,000

An economic development grant from the City of Lawrence of \$500,000 would be unprecedented. On the face of it, considering the City’s budget for economic development of \$537,000, and considering the fact that no budget dollars set aside for activity of this type, this request seems to be impossible to accommodate.

Ultimately, though, this is not really just a question about an economic development grant. It is also a question about infrastructure, capital, downtown development, and community self-definition. When we were considering as-of-yet unidentified neighborhoods, this was a question about how Lawrence residents

want to live and how we want to be connected to the rest of the world. Given the inclusion of downtown and also community anchor institutions, this request defies easy classification.

As we have seen from our analysis around the country, a gigabit FTTP network is not going to build itself. Frankly, as we've also seen, a gigabit FTTP network is not likely to be built by the private sector, either. There is not one single example of a privately-built gigabit FTTP network that serves a business community. There are, however, several examples of gigabit FTTP networks built with public support that serve business communities and provide a boon to economic development.

The City Staff memo of November 5, 2013 suggested, as outlined by CTC, that the City focus on the middle mile and let the private sector build out into the neighborhoods. In theory, we would agree completely. But that is not likely to happen any time soon, if ever. The CTC project with Gigabit Squared in Seattle has officially been shelved. Google Fiber is extensively subsidized. The only real live examples of successful networks include public investment. In fact, the situation is not unlike the infrastructure build out of copper wire for telephone systems and coaxial cable for cable television.

It is worth noting that the request was made for economic development funds. However, there might be other ways to look at this proposal, as we've seen in the capital budgets for the BTBC, the BTBC extension, and Venture Park. In our view, that discussion should take place within the larger framework of an economic development plan for the City of Lawrence—a plan with greater specificity than what we believe exists currently. That economic development discussion and plan should include some vision for how those jobs might be created. There should be targets, assessments, and accountability in the plan. There should be some effort to quantify the value of the creation of a new job.

If the determination is made that Lawrence is in need of this tool in the economic development arsenal, there may be a variety of options available, including but not limited to:

- An RFI process to determine other interested parties
- An RFP process to determine the capital cost of a City-owned, city-wide FTTP network
- An RFP to determine the cost of another provider building a network that matches only the Phase I rollout that would be City-owned
- The conversion of the \$500,000 grant request to a forgivable loan, with the forgiveness based on job creation and the determined value of a new job.
- Perhaps if the City offered some kind of abatement or credit related to job creation infrastructure development, that would create an opportunity for Wicked to find a suitable local development partner
- One of the more interesting lines of examination for us throughout the process was the comparison of Venture Park to the Wicked proposal. Venture Park involves a substantial capital commitment. Success will also require substantial operating costs over many years, or as it may be classified, contract for services cost. We think Venture Park will attract employers and jobs, but to the best of our knowledge, we don't have any guarantees and we don't have solid projections on the numbers. The same things are true of the Wicked proposal, although the cost of Phase I, anyway, is significantly less. The projects would, we think, enhance each other. Though it would require an RFP proposal, we thought it might be possible to finance much of Phase I for Wicked to be paid as a contractor for building an FTTP network at Venture Park.
- Without more information about capital costs, it is impossible for us to opine, but perhaps Wicked could make Phase I happen with less than \$500,000, especially if the other elements are accepted.

As the CTC memo suggested, we would also stipulate that any funding provided to any potential network provider should be used strictly for capital costs, rather than operational expenditures.

One of the consistent themes throughout our research has been that many FTTP network plans end up failing due to a lack of capital. With that in mind, we believe it is best to focus on the targeted Phase I rollout exclusively. This suggestion is not based on anything related to the Springsted report or anything related to Wicked, but rather it is based on everything else we have encountered in the course of researching this analysis.

Of course, this raises other potential issues for the City. It might be difficult to justify City funding for only selected areas of Lawrence. Of course, with Downtown Lawrence as a featured part of the Phase I rollout, that might fit in with the Commission's Downtown Development strategic focus. But it might still present difficulties from a governance perspective.

Finally, it is worth mentioning that Google Fiber got everything Wicked is proposing with the exception of the franchise fee waiver and the infrastructure grant, and, in fact, they also received quite a few things that Wicked has not proposed.

VII. Appendix

7.1 Suggested Reading

Broadband At the Speed of Light

How Three Communities Built Next-Generation Networks

<http://www.ilsr.org/wp-content/uploads/2012/04/muni-bb-speed-light.pdf>

Number of Municipal FTTP Networks Climbs to 135

http://www.bbpmag.com/2013mags/may-june/BBC_May13_MunicipalNetworks.pdf

The City of Seattle, Department of Information Technology

Request for Information to Use Excess Capacity in City of Seattle's Fiber Optic Cable Network

<http://www.seattle.gov/doiit/docs/DIT120124-RFIforUseofExcessFiber%28100112%29.pdf>

iProvo: A Requiem

<http://www.utahtaxpayers.org/wp-content/uploads/2013/05/20-iProvo.pdf>

7.2 Reference Articles

Why is European broadband faster and cheaper? Blame the Government

<http://www.engadget.com/2011/06/28/why-is-european-broadband-faster-and-cheaper-blame-the-governme/http://www.engadget.com/2011/06/28/why-is-european-broadband-faster-and-cheaper-blame-the-governme/>

BY Rick Karr June 28th, 2011 at 5:00PM ET

Rick Karr is a journalist and frequent contributor to [The Engadget Show](#).

If you've stayed with friends who live in European cities, you've probably had an experience like this: You hop onto their WiFi or wired internet connection and realize it's really fast. Way faster than the one that you have at home. It might even make your own DSL or cable connection feel as sluggish as dialup.

You ask them how much they pay for broadband.

"Oh, forty Euros." That's about \$56.

"A week?" you ask.

"No," they might say. "Per month. And that includes phone and TV."

It's really that bad. The nation that invented the internet ranks 16th in the world when it comes to the speed and cost of our broadband connections. That's according to a study released last year by Harvard's Berkman Center for Internet & Society on behalf of the Federal Communications Commission.

It's not surprising that we lag behind such hacker havens as Sweden (number one worldwide, according to the study) and Finland (number seven), nor densely-populated Asian nations like Japan and South Korea (numbers three and four). But the U.S. also trails countries that are poor by European standards: Portugal is just ahead of us in 15th place; Italy is number 14. (The full rankings are on page 81 of the study.)

By most measures, the U.S. has been losing ground. The UK, which traditionally lagged in international broadband rankings, is now number eleven, Germany, which has been slow to move to the most-recent DSL and fiber technologies, is number twelve.

I wanted to find out why we're doing so badly. So earlier this year I went to the UK and Netherlands under the aegis of the Washington-based Center for Investigation and Information to learn why broadband in those countries is so much better than ours. The project was funded by the Ford Foundation. (In April, my colleagues and I produced the first version of the story for the weekly PBS newsmagazine *Need to Know*; you can see that report here. Later this year, we hope to produce additional reporting for two NPR programs.)

We went to the Netherlands because it has one of the world's most advanced and fastest-growing fiber-optic networks. We visited homes there that get 100 mbps service in both directions -- they can upload as fast as they download -- as well as TV and phone for under \$100 a month.

We chose the UK because it's racing ahead in global rankings. Over the past decade, average speeds increased by 25 percent between 2009 and 2010, while prices have tumbled. Broadband service comparable to what we get here in the U.S. is available for less than \$6 a month. And no, there isn't a zero missing there. Six bucks a month.

So, what's the difference?

Our reporting suggests a one-word answer: Government.

Not government spending. The UK's administration hasn't invested a penny in broadband infrastructure, and most of the network in the Netherlands has been built with private capital. (The city government in Amsterdam took a minority stake in the fiber network there, but that's an investment that will pay dividends if the network is profitable -- and the private investors who own the majority share of the system plan to make sure that it will be.)

The game-changer in these two European countries has been government regulators who have forced more competition in the market for broadband.

The market in the UK used to be much like ours here in the U.S.: British homes had two options for broadband service: the incumbent telephone company British Telecom (BT), or a cable provider. Prices were high, service was slow, and, as I mentioned above, Britain was falling behind its European neighbors in international rankings of broadband service.

The solution, the British government decided, was more competition: If consumers had more options when it came to broadband service, regulators reasoned, prices would fall and speeds would increase. A duopoly of telephone and cable service wasn't enough. "You need to find the third lever," says Peter Black, who was the UK government's top broadband regulator from 2004 to 2008.

Starting around 2000, the government required BT to allow other broadband providers to use its lines to deliver service. That's known as "local loop unbundling" -- other providers could lease the loops of copper that runs from the telephone company office to homes and back and set up their own servers and routers in BT facilities.

BT dragged its feet and very few firms stepped up to compete with the telephone giant. "The prices were too high," Black says. "There were huge barriers to entry. The processes were long and drawn out."

When Black was named Telecommunications Adjudicator in 2004, he fought on two fronts to break the BT logjam. First, he used his own experience as a former employee of the telecom giant to push for change from the inside. When that wasn't enough, he used the bully pulpit provided by his government post to embarrass BT in public. He publicized the company's failure to meet goals. Reporters loved the story of the government regulator holding the giant firm's feet to the fire.

"Embarrassment works, you know?" he laughs.

When Black started work, only 12,000 British homes had multiple broadband providers. By the time he stepped down in 2008, about 5 million did, and today the number's closer to 6 million. "That's about a 500-fold increase in less than ten years," he says.

You can see evidence of the UK's competitive market on the streets of London: Broadband providers splash ads across bus shelters and train stations, touting prices that seem outrageously low by U.S. standards. Post offices sell broadband service; so does Tesco, one of the UK's largest supermarket chains.

Those providers target their offerings to users' needs. If all you plan to do is check you email every now and then, try TalkTalk's plan that goes for £3.25 a month (under \$6). If you're a gamer and low latency is a key factor, buy a more expensive plan from Demon. (Bonus: Their customer service people are trained geeks who won't repeatedly insist that you reboot your computer and modem before moving on to help solve the problem.) Some London homes now have a dozen or more broadband providers.

Competition is spurring technological improvements. BT and its dozens of competitors realize that they're already pushing old-fashioned copper wires to the limit, and that speeds will increase only if homes are connected to fiber-optic cables. So right now, a consortium of competitive broadband providers is negotiating with BT for the right to use the phone company's poles and underground ducts to build their own fiber-optic network.

What's good for Britain is bad for America?

America's AT&T and Verizon are members of that consortium, pushing for faster service for British broadband users. Both firms back more competition in the UK and across Europe and fight to take market share from incumbent telephone companies there.

Yet both firms say the same policies they support in the UK would be a mistake here in the U.S. (You can see my questions to the firms [here](#) and [here](#). AT&T's response is [here](#), while Verizon's is [here](#).)

Verizon told me in its written statement that it flat-out opposes the kind of local-loop unbundling that's

reduced prices and increased speeds in Britain "for competitive reasons". Those regulations are "bad public policy and bad news for consumers", Verizon says, which "only benefit a few big phone companies, and those companies do not pass their savings on to consumers." Verizon also claims that "those competitors do not invest in their own networks".

Broadband industry insiders in the UK beg to differ.

AT&T takes a different tack: The firm says it supports competition, but notes that, "There is no 'one-size fits all' regulatory regime" that will work worldwide. AT&T cites two main differences between the UK and U.S. markets: First, more U.S. homes have the option of buying broadband service from cable companies. Second, the U.S. is more spread out -- the technical term is that those "loops" are longer.

But again, the facts in the UK suggest otherwise. Many homes in Britain's largest city -- London -- have cable access, but cable prices have fallen alongside that of DSL service.

Meanwhile, the size of the U.S. may be a red herring. Most of the region between Boston and Washington is as densely populated as most of Europe and the UK. So is the California coast between San Francisco and San Diego. And so is the region of the Midwest centered on Chicago. Those areas are home to about a quarter of all Americans. In other words, we live in a big country, but a lot of it is relatively empty space.

The argument that the U.S. is too spread out is nonsense, according to Herman Wagter, one of the Netherlands' most prominent evangelists for next-generation broadband. He thinks there's something else going on in Verizon's and AT&T's opposition to competition at home: They're afraid of it.

Standing next to an Amsterdam canal, Wagter used a historical analogy: Those canals were built and operated by private firms, he says. When they were built, they helped Amsterdam become the world capital of commerce and finance. But after a hundred years or so, a new technology -- railroads -- was proving itself to be more efficient. The new transportation system was helping Holland's neighbor to the west, the UK, race ahead of the Netherlands. When Dutch entrepreneurs petitioned to build a train, the owners of the canals "were screaming murder".

"They were saying, 'Oh, we can accelerate the boats a little bit, and convey a little bit more if you need more capacity'," Wagter says. The canal owners said the new railroads would "take away their business, and it was absolutely forbidden, and government shouldn't interfere."

Wagter says it's fortunate that the Dutch government at the time didn't listen to those arguments. Whether or not U.S. officials will make the same decision when it comes to next-generation broadband, he says, is "a matter of political will."

Mayor McGinn: Seattle's high-speed Internet project delayed, possibly in jeopardy

<http://www.geekwire.com/2013/mcginn-gigabit-squared-delay/>

December 9, 2013 at 4:32 pm by Taylor Soper

Financing problems are forcing Gigabit Squared to delay plans to implement a high-speed Internet network in 14 Seattle neighborhoods using the city's dormant "dark fiber" network.

Seattle Mayor Mike McGinn — a longtime champion of the project who will leave office at the end of the year — acknowledged the setback in an interview with GeekWire this afternoon. He said Gigabit Squared, the company behind the project, is having problems securing financing to install the network, and he raised questions about the project's future.

"We're now a year into it and the question is, will it work or not?" McGinn said inside his office at City Hall. He acknowledged that he's "very concerned it's not going to work."

GeekWire contacted Gigabit Squared for comment, but a company representative said executives were unavailable for comment this afternoon.



Gigabit Squared said it would deliver its service to these 14 neighborhoods by the end of 2014. The arrows point to the launch areas — U-District and Capitol Hill — that were supposed to have service by early next year.

McGinn first announced the public-private partnership with Gigabit amid a great deal of fanfare one year ago after the city released a request for information to private companies interested in using the city's 500 miles of unused cabling throughout the city.

Gigabit announced its prices eight months later, in August of this year, and had planned to begin its initial rollout of Gigabit Seattle to two of the 12 neighborhoods — University District and Capitol Hill — by Q1 of 2014. But that has since been delayed, with no new launch dates announced.

McGinn, who will be succeeded by state Sen. Ed Murray next month, said that if a private company can't raise the money to build out a fiber-to-the-premises network with an open architecture, it's time for Seattle to consider using tax dollars for a city-run network.

"It's one of the things I regret that I can't be around to be a part of, because I know what decision I'd make," he said.

The Gigabit Squared plan became a subplot in the election after McGinn raised questions about donations from Comcast to Murray's campaign. Murray, however, said at the time that he supported the plan to bring alternative high-speed Internet to Seattle — countering McGinn's attempts to label him as "Comcast's candidate."

McGinn said today that the incumbent Internet providers like Comcast are "not upgrading their systems in any meaningful way."

"That means cities like Seattle are falling behind and will fall behind other places around the globe if we don't upgrade the service," he added.

Reached by phone this afternoon, mayor-elect Murray said it was the first he'd heard of the problem with Gigabit and needed more information before commenting.

McGinn noted that "we haven't given up on the private sector," but said that if he were continuing as mayor, he'd start garnering political support to build a municipal fiber utility. That's actually something the mayor considered back in 2010, after a consultant recommended that the City find a way to build an open-access fiber-to-the-premises communication infrastructure to meet Seattle's goals and objectives.

But at that time, McGinn believed the risk was too high to ask taxpayers to fund a project on that scale — \$600 or \$700 million, he noted. On top of that, McGinn also foresaw political and legal obstacles.



"It was easier politically, and there was obviously less risk to go with the private sector at the time," he said.

Now, though, it seems McGinn is at least somewhat supportive of having government build out a high-speed network with open architecture — to encourage competition — that can reach the masses. He talked about Google choosing Kansas City as its initial test-bed for Google Fiber, and said Seattle should have the same Internet options for its citizens.

"The kids are moving to Kansas City right now because they want to get that fiber," McGinn said. "I don't want to say anything bad about Kansas City, but we want the kids to come here. We want the entrepreneurs who want that high speed to come here."

Gigabit Squared co-founder stepping down after botched broadband deal in Seattle

<http://www.geekwire.com/2014/gigabit-squared-co-founder-stepping-botched-deal-seattle/>

January 8, 2014 at 3:30 pm by John Cook

Gigabit Squared is turning into a saga that's perhaps more aptly titled Gigabit Screwed. In the latest chapter, the president and co-founder of the company, Mark Ansboury, confirmed that's he's parting ways with the Cincinnati, Ohio-based broadband Internet provider.

The decision comes just five days after GeekWire reported that Gigabit Squared — which had contracted to build a super fast high-speed network in parts of Seattle — had failed to pay the City an overdue bill of \$52,250.

That figure was significant given the multi-million dollar cost of building out a fiber-optic network in the city, a high-profile plan touted by former Mayor Mike McGinn that has since been scrapped.

Ansboury told GeekWire last month that he was no longer operating as president, instead shifting to a general manager role. But now he's giving up that position as well and ending all affiliations with the company, according to a statement that he's provided to GeekWire and GigaOm.

I am no longer with GB2. I am resigning over strategic differences and am pursuing other projects. You can reach out to Matt Weiland for comment. Their intent is to pay. Other than that I cannot comment.

Asked to comment further, Ansboury told GeekWire: "I will talk to you in 30 days." We've also reached out to Gigabit Squared spokesman Weiland for comment.

Announcing the project with then-Mayor McGinn in December 2012, representatives of Gigabit Squared said Seattle would be one of the first cities to take part in its broader \$200 million program to bring high-speed broadband Internet access to communities around the country. But Gigabit Squared officials informed the city in November 2013 that they hadn't been able to raise the funding as expected — leaving the project in limbo and presumed dead by many in the city.

Newly-elected Seattle Mayor Ed Murray told The Puget Sound Business Journal that the city has decided to scrap the Gigabit Squared project altogether. We've reached out to the Mayor's office for comment about the project, and we'll update this post as we hear more.

UPDATE: Mayor Murray just posted a blog post on the Gigabit Squared issue, noting that "The City is now at a crossroads and a new fiber strategy needs to be, and will be, explored." He said the goal of bringing fiber to the home is "not dead" but has just "encountered a speed bump along the way."

"It was going to be a pretty heavily lift for (Gigabit Squared) to pull this off," City of Seattle CTO Erin Devoto told GeekWire last week. "It would be a heavy lift for anybody. None of this is easy, and there's a reason why people aren't just doing this all over the place."

Meanwhile, Sandra Guy at ChicagoGrid reports that Gigabit Squared's plans to deliver high-speed Internet in parts of south Chicago are up in the air, and that community members there are growing frustrated. And Stacey Higginbotham at GigaOm notes that Gig.U, an entity affiliated with Gigabit Squared, is attempting to distance itself from "implosion," providing a statement that says they were not "party to any transactions related to such deployments."

Ed Lazowska, the University of Washington computer science professor who has advocated for broadband initiatives in the state, said the news of Gigabit Squared's demise in Seattle is a tough pill to swallow.

"I worry that this will set us back a long way," said Lazowska, who did not play a role in the selection of Gigabit Squared. "Seattle simply cannot live with Comcast and NexTel as its broadband providers. And others, like CondoInternet, are cream-skimming vs. deploying widely."

How Kansas City taxpayers support Google Fiber
Google Fiber isn't exactly a free-market success story.

<http://arstechnica.com/tech-policy/2012/09/how-kansas-city-taxpayers-support-google-fiber/>

by Timothy B. Lee - Sept 7 2012, 7:00am CDT

On Wednesday, Republican FCC commissioner Ajit Pai released a statement praising the Google Fiber project as a model for other metropolitan areas to follow. He argued that it shows that "it is critically important that states and local communities adopt broadband-friendly policies when it comes to rights-of-way management."

Fred Campbell, a former FCC official who now hangs his hat at the Competitive Enterprise Institute, has been singing a similar tune in recent weeks. He portrays the Google Fiber project in Kansas City as a triumph for free markets, once government gets out of the way. "Deregulation promotes private investment," he writes in a recent analysis of the broadband network. He regards the Google project's apparent success as a rebuke to groups like Public Knowledge and Free Press, which advocate a more active government role in developing and regulating broadband networks.

Yet closer examination of the Google Fiber project reveals a more complex story. It's true that the Google Fiber project hasn't developed the way many liberal groups wanted it to. But it's important not to gloss over the fact that Kansas City's support for Google's network went well beyond deregulation to outright corporate welfare. It's hardly an example of the free market in action.

A level playing field?

"When private companies compete on a level playing field, consumers always win," Campbell writes. "When government regulations mandate a particular business model or favor a particular competitor, bureaucracy is the only winner—everyone else loses."

Few would disagree with this in the abstract. But is Google Fiber an example of a level playing field or government favoritism? Campbell seems to believe the former, but his own description of the project suggests the opposite interpretation:

Google received stunning regulatory concessions and incentives from local governments, including free access to virtually everything the city owns or controls: rights of way, central office space, power, interconnections with anchor institutions, marketing and direct mail, and office space for Google employees. City officials also expedited the permitting process and assigned staff specifically to help Google. One county even offered to allow Google to hang its wires on parts of utility poles—for free—that are usually off-limits to communications companies.

Indeed, the agreement between Google and Kansas City, MO, specifies that the city will "make space available to Google in City facilities for the installation of Google's Central Office equipment and for additional network facilities," will "provide power necessary for Google's equipment at City locations," and "will not charge Google for such space, power, or related services."

Obviously, offering free (e.g. taxpayer-subsidized) power and rack space goes well beyond "regulatory concessions." Campbell has suggested that these subsidies "weren't as important as the rights of way issues," but much the same point can be made about waiving customary fees for the use of rights of way.

Space under a city's streets and along its utility poles is a scarce, taxpayer-owned resource. When a city offers a private company access to those resources for free, it's forgoing an opportunity to raise revenue. The implicit subsidy is even clearer when taxpayers, rather than Google, pay to hire extra city staff to supervise the project.

"There's a reason we have these fees for rights of way," said Mercatus Center scholar Jerry Brito when interviewing Campbell for his podcast. "It's incredibly costly for the community to put up with having the streets torn up every time there's a new entrant." Brito argued that fees were needed to "internalize the costs of what they're imposing on the community" and "to pay for the city to supervise it to make sure that is all done correctly."

Campbell conceded that "you don't want just any company to be able to come in and tear up the streets without some assurance that they'll repair the damage." That's true enough, but the issue goes deeper than that. Even assuming Google leaves the streets exactly as it found them, the company will still be getting free access to valuable taxpayer-owned resources. And it will still impose significant costs—in terms of noise, construction damage, congestion, and so forth—on thousands of Kansas City residents. Waiving fees designed to compensate the community for those costs represents an implicit subsidy to Google.

Telling the truth about subsidies

As depressing as it is to contemplate, we should acknowledge the possibility that it simply doesn't make economic sense for private firms to build new fiber networks without taxpayer subsidies. This is especially likely for new entrants, like Google, who would be building networks from scratch in towns that already have a couple of incumbent players.

If it's true that more robust wired broadband competition won't occur without public support, reasonable people can disagree about the policy implications. Conservatives might argue that we should make do with the limited options we already have, perhaps waiting for advances in wireless technology to provide new alternatives down the road. Liberals might counter that the public benefits of faster broadband networks make them worthy of public subsidies—or they might argue that the government should mandate more open-access rules on existing networks rather than subsidizing new ones.

If a city is going to spend public funds on a new broadband network, it has an obligation to ensure that taxpayers are getting a good deal for their money. That might mean insisting on conditions, such as build-out requirements or open-access rules, that will avoid the need for yet another taxpayer-subsidized network to be constructed in the future. But mis-characterizing a government-supported project as the result of unfettered free markets obscures the true costs of such projects, and makes informed debates over them more difficult.

How Chattanooga Markets Its Way to Broadband Success

Coordinated messaging has produced strong awareness of Chattanooga's gigabit network nationally and internationally.

<http://www.govtech.com/wireless/How-Chattanooga-Markets-Its-Way-to-Broadband-Success.html>

by Craig Settles / April 3, 2012

Watching Chattanooga's progress using broadband to impact economic development, I'm reminded of a slogan I used to print on my business cards: "The great thing about marketing is ... it works." Chattanooga has engaged its diverse community in the marketing of its broadband network to spur economic outcomes. And it works.

In a corporation, selling products relies on every department contributing to creating and maintaining the company image. Apple Computer's "Think Different" campaign, for instance, was more than creative ads and brochures. How the company's retail stores operated, the products Apple developed, the way service reps treated customers, and how employees from the mailroom to the boardroom spoke about Apple — all conveyed directly or indirectly that singular message.

If broadband is to improve economic development by improving existing businesses' profitability and attracting new ones, various community stakeholder groups must convey and amplify the community's marketing message. In Chattanooga, the public utility, Electric Power Board (EPB) which owns the network and its marketing staff constitute one group. The Chattanooga Area Chamber of Commerce is another, several nonprofit organizations provide marketing support, and business leaders are yet another group amplifying the message.

EPB launched its gigabit network service in September 2010. Press releases, EPB participation in national conferences and promotional material continually cited the service as the first of its kind in the U.S., and a compelling reason to do business in Chattanooga. At the grass-roots level, the CEO of a technology incubator in Chattanooga is one of several business people who send out Twitter messages and contribute to media coverage reinforcing the marketing message.

This concerted effort reflects how deeply the various stakeholders both understand and believe in the message that Chattanooga is a technology leader. Communities that are implementing or contemplating broadband projects need to build this depth of support if they want to compete nationally and locally for business subscribers.

Collaboration Is a Challenge, Success Is its Reward

Collaboration is a much (over)used term, but to actually get stakeholder groups working closely together is a necessity and a Herculean effort. Chattanooga laid the foundation for marketing itself as a technology-centric economic powerhouse back in the mid-'80s. At that time its main claim to fame was being the nation's smoggiest city. Civic leaders started recruiting private-sector companies to work together to turn around the city's image and its economy. The Chattanooga-based Lyndhurst Foundation invested \$2.5 million into city planning that drew the public leadership into the picture.

The city's downtown redevelopment effort produced a \$120 million waterfront project in the early '90s that drew new residents and tourists to Chattanooga. In 1997, EPB started the planning to bring its 19th-century utility into the 21st century. As the new millennium got into full swing, Volkswagen's 2007 decision to set up operations in Chattanooga electrified city constituents and stakeholders.

One side effect of this turnaround and string of economic wins was that several private, public and nonprofit organizations strengthened their positions as standalone entities, key stakeholders and partners in the city's growth. As this happened, they perfected their ability to effectively market Chattanooga.

"Over years, everyone just figured out how to work together," said Ken Hays, partner in economic development consulting firm Kinsey Probasco Hays. It seems people instinctively knew which groups should partner for whatever efforts were under way; they teamed up and they executed. Now everyone realizes what they need to do and they get it done. They succeed because they communicate very well to each other and to constituents."

EPB, after deciding to make fiber-optic infrastructure the heart of its plan to transform communications within its 600-square-mile territory, began exploring how to make smart grid and broadband major economic engines for the community. As the vision took shape, the public utility met with each stakeholder group to educate them on the vision, so each respective group could help evolve and refine it.

When the fiber network came online in 2009, and the gigabit service rolled out in 2010, EPB tapped into the city's spirit of collaboration to enlist the full range of stakeholder groups to create a consistent message that's communicated nationally.

Different Messengers, Same Message

Kinsey Probasco Hays is a driving force behind the local and national awareness campaign. The chamber provides much of the hands-on national joint marketing of the city and the network, while EPB's team markets the service locally. The chamber, EPB, the River City Company (which some refer to as the Department of Downtown), and the Enterprise Council (which promotes high-tech economic development) team up to recruit new companies to move to Chattanooga or expand there.

SIM Center Enterprises is a nonprofit that brings together The University of Tennessee and private enterprises to research new applications, including some for the gig network. The city's entrepreneurial community, including technology incubators the Lamp Post Group and Company Lab, has united under the banner GigCity to collaborate on programs and activities that galvanize additional gigabit network apps development. These include bringing teams of students and entrepreneurs to Chattanooga this summer to develop leading-edge apps for the network.

Hays believes another key to Chattanooga's marketing success is that "EPB quietly went about building a community asset and didn't talk to many people outside of Chattanooga until the project was near completion. We didn't know all the ways the network would be beneficial." Other communities tend to talk about their networks in a big way before they become real, and constituents' expectations become inflated. This hinders effective marketing if the network is delayed or runs into trouble immediately after launch.

Once they publicly announced the network, stakeholders quickly expanded discussions with stakeholders and citizens through "intentional conversations." Every few days a different group of 10 to 15 people would have a roundtable discussion about network developments in order to solicit feedback. "You plant seeds at these [discussions], then come back later to see what ideas people have," Hays said. "We talked to 300 people in 25 to 30 meetings during the run up to the network launch date."

Chattanooga's coordinated efforts have produced strong awareness of the network nationally and internationally. The city recently reported 2,000 jobs were created from two companies moving to town largely because of gigabit broadband, and that they are 30 percent ahead of subscriber projections. For Chattanooga, marketing definitely works.

Fed up with slow and pricey Internet, cities start demanding gigabit fiber

Google Fiber can't do it all, so city governments start taking charge.

<http://arstechnica.com/business/2013/11/fed-up-with-slow-and-pricey-internet-cities-start-demanding-gigabit-fiber/>

by Jon Brodtkin - Nov 22 2013, 7:30am CST

Slow Internet speeds and a lack of competitive pressure on Internet providers is a fact of life in communities throughout America. We've seen that competition can make a difference, notably with the entry of Google Fiber in certain markets, forcing incumbents to offer faster speeds and better deals.

But Google, or any single entity, can't be expected to upgrade the entire country to fiber. Even in Kansas City, the first Google Fiber location, the service still isn't available to everyone. So the leaders of at least a couple of cities are trying to take matters into their own hands and use whatever leverage they have to lure a new Internet service provider or convince an existing one to get on the fiber train.

"We've gone through the rounds of applying for Google Fiber," Ted Smith, director of economic growth and innovation in Louisville, Kentucky, told Ars, but his town didn't get the nod.

Louisville government officials believe, as many other municipal officials in US cities do, that fiber networks are crucial for attracting and retaining businesses, which increasingly need copious amounts of bandwidth to remain competitive. Fiber can also save residents from the frustration of slow cable and DSL speeds.

"We pay 34 times more, 34 times, not percent, 34 times more than peer cities that have already implemented fiber," said James Benham, a software company owner and elected City Council member in College Station, Texas, which is served by Verizon and SuddenLink. "If you compare our pricing to Chattanooga and Lafayette, who have already done citywide fiber to the home, and fiber to business networks, our commercial rates per megabit are 34 times higher. Our residential rates are 15 times higher. If that was our electric rates or our water rates there would be riots in the streets."

The discrepancy in per-megabit speed arises from cities with fiber deployments offering a gigabit per second at prices as low as \$35 a month, or more typically, around \$70 or \$80 a month. People in many cities pay similar amounts just to get a fraction of a gigabit.

While businesses in the Bryan/College Station area pay \$3,395 per month for 50Mbps download and upload, businesses only pay \$99 for the same service in Chattanooga, Benham told Ars. Bryan/College Station officials are looking for affordable gigabit fiber for residents and 10 to 100Gbps for businesses, along with public wireless networks. The region includes Texas A&M and other institutions in a thriving research sector.

How do you ask for a gigabit?

Chattanooga, Lafayette, and other communities have built their own fiber networks, with the utility serving as the Internet provider. Government-run networks aren't for everyone, though—Louisville and the metro area of Bryan, Texas, and College Station are both hoping to attract private companies to build out a fiber network.

That's also what Los Angeles is trying to do. The city is planning an RFP (request for proposals), asking vendors to bid for the right to build a fiber network to every home and business in the city.

LA's proposal has been panned as being about as likely to succeed as a unicorn hunt. Louisville and Bryan/College Station think they have a better way.

Like LA, neither city plans to devote taxpayer money to subsidizing the buildout. But instead of going straight to an RFP, which is an advanced part of the public bidding process, they're starting with an RFI (request for information). Presumably, vendors will offer advice on how to best structure a request for proposals and what incentives must be offered to make a buildout worthwhile, making it more likely to succeed.

Perhaps more importantly, Louisville and College Station aren't expecting a vendor to lay fiber immediately to every home and business. The more realistic path is similar to the demand-based

"fiberhood" approach that Google is using in Kansas City. People throughout the region are asked to sign up for service, and neighborhoods with the highest demand get service first.

"You always do demand-based rollouts," Benham said. "One of the biggest mistakes Verizon did in their fiber rollout with FiOS is they did an individual house-based rollout, individual houses would order the service and they would run the fiber there. That's an inordinately expensive way of doing a rollout."

Verizon's fiber deployments have notably stalled.

The costs in LA are estimated to be \$3 billion to \$5 billion. "The cost of carrying the capital, just to get to revenue neutral, would be overly burdensome. It would probably put the company out of business unless they were being subsidized," Benham said. With a fiberhood approach, "the cash flow on the first neighborhood can pay for the 2nd neighborhood and the first two can pay for the third and fourth."

Cities realizing they "have to take action"

Blair Levin, who was chief of staff for the Federal Communications Commission during the Clinton years and helped develop the National Broadband Plan under Obama, is optimistic about the Louisville and College Station attempts to get fiber.

"Communities are recognizing that they need to have better networks than they have today, and they actually have to take action. Market forces won't drive it," Levin told Ars.

Levin also worked as a telecom analyst for investment firm Legg Mason and is today the executive director of Gig.U, which is trying to speed up deployment of fiber in universities and surrounding communities.

In most cases, financial reality does not justify large-scale fiber deployments either by new entrants or by the incumbent provider, he said. Levin identifies six key factors: capital expenditures, operating expenses, risk, revenue, system benefits, and competition.

"The incremental or new capex and opex is going to be greater than the risk-adjusted revenues, plus whatever kind of system benefits the network operator gets plus the threat of competition," Levin said.

Cities need to "change the math" to attract a vendor. This doesn't have to mean providing public financing. One way is to offer regulatory flexibility, speeding up the process of acquiring permits. Another is to have existing infrastructure to offer. Seattle, for example, had a lot of dark (or unused) fiber in the ground that helped make a fiber rollout worthwhile, in partnership with the University of Washington and a company called Gigabit Squared.

Without government prodding, there isn't enough competition in most places to spur a fiber rollout—one fiber project in rural Vermont we wrote about required \$116 million in federal funds.

Levin acknowledges that there aren't any good examples of a Louisville- or College Station-style plan succeeding yet—that is, a private company swooping in to save a community that puts out an RFI without any public financing. Communities are still looking for the best model.

"When we did telecom, the fundamental deal was AT&T gets a monopoly in exchange for providing universal service," Levin said. "When we did cable, it was the cable company in a local area gets a monopoly, and they have to build out everywhere. With this upgrade we don't really have a model of the social contract. There's no monopoly to give away; it's not like gigabit is a separate product market, it's simply a better version."

To Levin, a demand-based rollout where the vendor isn't required to extend service to everyone seems the most likely to succeed. While that could disappoint some people, the extension of fiber into communities potentially has indirect benefits for those residents who don't get fiber.

"There's a good reason why it wasn't until Google went into Kansas City that Time Warner upped their speeds. There's a good reason why when Google went to Austin, [Texas], AT&T said, we'll do a gig. There's a good reason why when Google went to Provo, [Utah], Comcast started changing its pricing. These are all good things," Levin said.

A promising start

The Louisville city-county is about 350 square miles with 750,000 residents, Smith said. Using a fiberhood rollout, Smith hopes to get fiber to at least 25 or 30 percent of the city-county over the next couple of years. That would primarily cover densely populated areas, but Mayor Greg Fischer wants to wrap in as many "adjoining disadvantaged census tracts" as possible to spread the wealth, Smith said.

"The old model was 'everybody has to have service,' which is where cable and telephone came from," Smith said. "This is a model that says, 'we can be patient while demand builds.' We'd like to see some of our most disadvantaged served, but we're not starting out with 'everybody must get service immediately.'"

The RFI process will help vendors understand the local regulatory environment, Smith said. "We have the ability to grant rights of way for Internet and residential Internet. We're educating the nation and the world that we are clearing the path, because in many cities around the country it's not so clear what the local issues may be. If you're a city that really wants to push to get this upgrade, you have to do that homework on behalf of the private marketplace."

The Bryan/College Station effort is being spearheaded by the Research Valley Technology Council, covering an area of about 250,000 people, Benham said. The region might be able to lure a vendor with conduit, which is essentially a placeholder that makes it easier to install fiber. Benham said there is already conduit traversing the entire area.

"We can streamline the permitting and inspection process. We can streamline right of way. We can sublease conduit that we have," he said.

The Bryan/College Station RFI was issued last month, and responses are due December 6. "We have started receiving them," Benham said.

The RFI notes that a vendor would receive "Access to available infrastructure and other public assets—including publicly owned poles, ducts, conduits, towers, buildings, dark fiber, etc.—on attractive terms and conditions." It also promises "Streamlined regulatory and permitting practices; Tax, enterprise zone, and other financial incentives; [and] Coordination with planned construction activities."

In Louisville, the RFI was issued last week, and responses are due January 31. In addition to gigabit fiber, the city-county seeks "discounted or no-cost" service of 100Mbps in low-income areas.

Smith is optimistic because of the early response. "We've met with a number of different parties going into this RFI, and we already have preliminary interest," Smith said. "I'm not going to over-promise anything, but the fact that we've had multiple meetings with some parties makes me feel a little more bullish."

The area's current providers, Time Warner and AT&T, are welcome to join the fun.

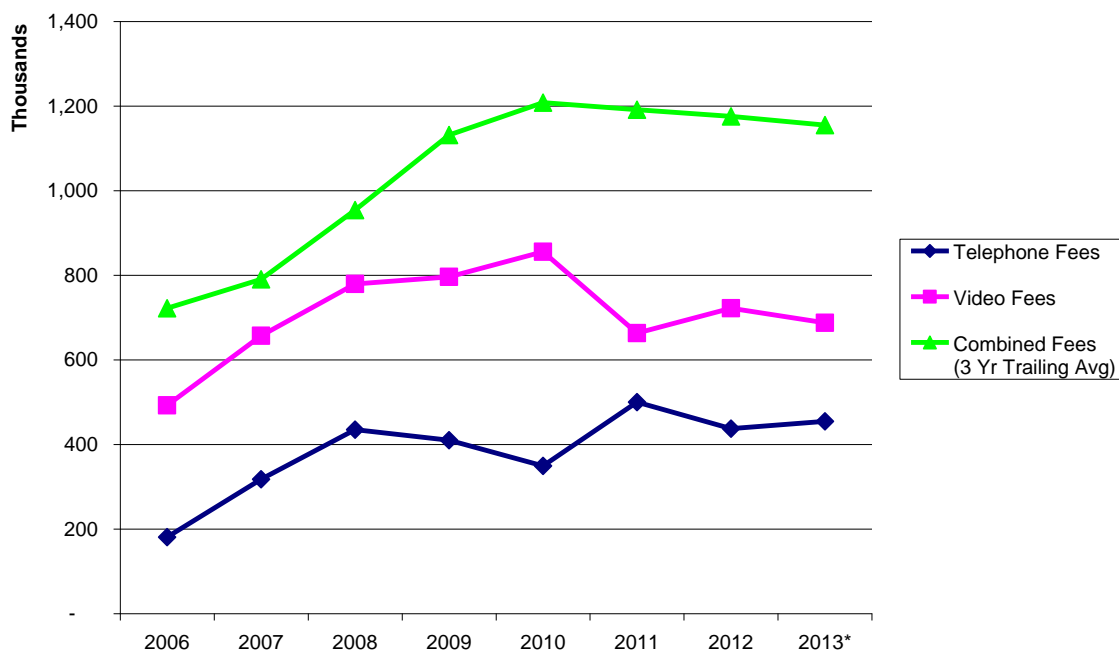
"I'm not here to say we're trying to get away from our incumbent providers," Smith said. "This is an equal opportunity situation, anybody is welcome. Time Warner is welcome. AT&T is welcome. What we're trying to say is, we see other cities offering a digital infrastructure on much different terms than we see them today. We want to be one of those cities."

7.3 Franchise Fee Analysis

One of the key differences between Wicked Broadband and other telecommunications providers in the Lawrence community is the payment of franchise fees on Internet revenue. Wicked Broadband pays a 5% fee on Internet service revenue while neither Wide Open West Holdings, Llc or AT&T pay a franchise fee on this important component of their revenue stream.

This is an important consideration in a time when traditional telephone and video adoption rates are shrinking. Looking at video service franchise fees for the past 6 years, for example, you can clearly see that revenue peaked in 2010 and has been steadily declining ever since. Despite a spike in 2011 due to changes in pricing, the overall trend in telephone revenue has also been downward in the past several years.

Telephone and Video Franchise Fees



This trend is logical given that, according to the Wall Street Journal, "Prior to 2010, the pay-TV industry never saw a quarterly subscriber decline. Since then, declines have surfaced in five different quarters."¹⁷ Consumers are increasingly changing from traditional subscription cable to online television services like Netflix, Hulu and Amazon On-Demand.

¹⁷ Ramachandran, Shalini, "Evidence Grows on TV Cord-Cutting", The Wall Street Journal, August 7, 2012, <http://on.wsj.com/1dx0e5a>, retrieved December 31, 2013.

The outlook for land line telephone franchise fees is equally grim. CDC survey data¹⁸ shows that in the period from 2008 to 2011 the number of homes with a landline phone decreased from 79.1% to 63.6%. Increases in landline pricing have kept this from being fully reflected in franchise fee revenues, but the trend away from traditional land lines is clear.

Wicked Broadband’s proposal provides a new revenue stream for the City to offset future declines in franchise fee revenue. Computing this revenue stream for the City is simply a matter of multiplying the number of addresses covered (A_c) by the anticipated penetration rate (P) by the annual revenue per subscriber (R_s) by the franchise fee (F).

$$Fees = A_c \times P \times R_s \times F$$

In Wicked Broadband’s case, the company is assuming that there are 1,200 addresses covered by the pilot project and that the company will start with 10% market share (the minimum required to win the company’s Pre-Registration Contest). Based on the penetration of Google’s project, the penetration rate after the first year of operation is expected to stabilize at around 30%. The average product price is expected to be \$75/Mo with customers taking a relatively evenly distributed combination of the company’s three products. Finally the City’s franchise fee is 5% of the gross sales.

Based on this analysis, the City would receive \$162,000 in new revenue if the pilot project is the only portion of the project completed. If the project proceeds to phase 2, the City would receive approximately \$1.35M in new revenue. Finally, if the project moves on to phase 3 and a city wide build-out, the City would receive \$3.22M in new franchise fee revenues in the first 10 years of operations.

The following table shows the new franchise fee revenues anticipated in the scenario where only the pilot project is completed.

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Addresses Covered	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
Penetration	10%	20%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Annual Revenue Per Subscriber	900.00	900.00	900.00	900.00	900.00	900.00	900.00	900.00	900.00	900.00	900.00
Franchise Rate	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Annual Fee	\$5,400	\$10,800	\$16,200	\$16,200	\$16,200	\$16,200	\$16,200	\$16,200	\$16,200	\$16,200	\$16,200

For these 10 years the city’s total franchise revenue from the pilot neighborhood would be \$162,000.

Taking this approach and expanding it to another 10,000 addresses as Wicked has indicated it means to do in phase 2 of the project, the return on franchise fees would be:

¹⁸ Blumberg, Stephen J & Kuke, Julian V “Wireless Substitution: Early Release of Estimates From the National Health Interview Survey July – December 2011. <http://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless201206.pdf>. Retrieved December 31, 2013

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Addresses Covered	1,200	6,200	11,200	11,200	11,200	11,200	11,200	11,200	11,200	11,200	11,200
Penetration	10%	12%	21%	30%	30%	30%	30%	30%	30%	30%	30%
Annual Revenue	900.00	900.00	900.00	900.00	900.00	900.00	900.00	900.00	900.00	900.00	900.00
Per Subscriber											
Franchise Rate	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Annual Fee	\$5,400	\$33,480	\$105,840	\$151,200	\$151,200	\$151,200	\$151,200	\$151,200	\$151,200	\$151,200	\$151,200

Under this scenario, and assuming that the project doesn't enter phase 3, the revenue from the first 11,200 households would be \$1,354,000 over 10 years.

When the project reaches phase 3, the total addresses passed would increase to approximately 30,000. With take rates similar to what has been seen in other markets, this City's franchise fees would be:

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Addresses Covered	1,200	6,200	11,200	31,200	31,200	31,200	31,200	31,200	31,200	31,200	31,200
Penetration	10%	12%	21%	17%	23%	30%	30%	30%	30%	30%	30%
Annual Revenue	900.00	900.00	900.00	900.00	900.00	900.00	900.00	900.00	900.00	900.00	900.00
Per Subscriber											
Franchise Rate	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Annual Fee	\$5,400	\$33,480	\$105,840	\$238,680	\$322,920	\$421,200	\$421,200	\$421,200	\$421,200	\$421,200	\$421,200

Under this final scenario the City's new franchise revenue would be \$3.22M in the first 10 years, a six fold return on investment.

All of this negates the likelihood that the company will see significantly more than 30% adoption of the planned infrastructure. Under the company's plan, other retail vendors will have the ability to deliver services using the same fiber lines. These companies would also be required to pay a 5% franchise fee on their revenue.

With multiple providers competing to provide services on the same infrastructure increases the likelihood that any given address will subscribe to one or more services. With multiple parties competing to provide services, each address will receive a lot of attention from marketers and will have a choice of a variety of services.

Assuming that these services average \$75/Mo in cost (whether they are Internet, Video, Telephone or some as-yet uninvited technology), and marketing efforts from these companies drive market penetration to 60% by 2020, the City's annual franchise fee revenue from Wicked's proposed system would be \$842,000 per year. More than the city is receiving in video franchise fees in 2013.

	2020
Addresses Covered	31,200
Penetration	60%
Annual Revenue	900.00
Per Subscriber	
Franchise Rate	5%
Annual Fee	\$842,400

7.4 KU-KSBDC Resumes

William I. Katz

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(785) 550-0481 wylkatz@gmail.com

Summary

- **High-energy leader with a proven track record of strong results**
- **Effective in a variety of leadership roles, including 15+ years in manufacturing and distribution operations**
- **Successful consultant and economic development professional specializing in financial analysis, marketing, sales, and capital acquisition for small business**

Professional experience

University of Kansas: June 2006 to present (University of Kansas Small Business Development Center)

Regional Director: June 2006 to present

- Oversee all activities of the KU Small Business Development Center
- Consult with existing and start-up business in virtually all areas of business management; wide variety of businesses and projects
- Establish and maintain relationships with economic development partners, such as development corporations, chambers of commerce, main street organizations, banks, and state legislators
- Develop and deliver seminars on topics such as business start-up, financial statement analysis, Human Resource management
- Improved outcome-based measurements of economic impact in region—jobs created, capital infusion, businesses started—over a multi-year period
- ROI increased from 16:1 (2006) to 37:1 (2012)
- Justified (due to performance) and negotiated Center budget increases of 45% from 2006 to 2013
- Distributed services over wider area and generated measurable economic impact in several smaller communities, such as Ottawa, Eudora, and Leavenworth

Target Corporation: May 2004 to May 2006 (Target Regional Distribution Center; Topeka, KS)

Operations Manager: May 2004 to May 2006

- Staffed, managed, led, motivated and inspired up to 40 direct reports and 120 indirect
- Guided various managers in DC processes continually recommending alternatives to improve operating systems improving department productivity by 25%
- Monitored and evaluated inventory levels and established inventory control processes
- August 2005—appointed Executive Safety Captain of Safety Steering Committee; reduced OSHA recordable incidents by 20% in the facility (500 total team members)
- Guided team members in daily operations to ensure a high degree of safety, service and quality
- Captain for new software (PeopleSoft) implementation that reduced administrative waste and system down-time

- Department captain for assessment compliance team that has achieved 100% on all annual inspections

E and E Display Group: October 1987 to May 2004 (E and E Display Group; Lawrence, KS)

Production Manager: November 2002 to May 2004

- Leader for all production operations in a 320,000 sq. ft. three-shift facility including woodworking equipment, plastics processing, corrugating, printing, die cutting, and final assembly/packaging; 20 supervisor/manager direct reports and 250 Team Members total
- Established vision for all facets of quality, safety, housekeeping, and efficiency
- P&L responsibility for cost of goods sold, labor
- Improved labor cost as a percentage of revenue by 10% and material cost for inventory shortage by more than 20%

System Administrator: October 2000 to November 2002

- Project head for the replacement of Alpha Micro mainframe. Duties included establishing requirements, coordinating software demonstrations, evaluating compatibility, negotiating terms, R.O.I. analysis.
- Performed administrative duties for Alpha Micro mainframe computer
- Responsible for mainframe software development
- Assisted with administration on Novell network, Windows 2000 Server, and Linux applications

Division Manager: December 1997 to October 2000

- Managed for 30-60 Team Members in a 40,000 sq. ft., three-shift production area encompassing many different types of wood and plastics processing
- Reduced OSHA recordable incidents from more than 40 per year to less than 10 per year
- Upgraded production throughput capabilities by cost-justifying and adding equipment—CNC router, p2p machine center, beam saw, edgebanding equipment
- Lowered direct and indirect material costs by initiating use of optimizing software and establishing inventory system for tools

Scheduling Manager: June 1994 to December 1997

- Scheduled work for up to 300 team members in a custom manufacturing environment containing over 100 job centers.
- Responsible for sequencing jobs to meet promised delivery dates.
- Cost-justified and installed corrugator scheduling software, generating cost savings in excess of \$50,000 per year.
- Gathered data and participated in meetings to determine need for overtime and temporary labor, also make-or-buy decisions.

Education, etc...

- Masters of Business Administration, University of Kansas, December 2001. Recognized on the Dean's List of Graduate Students.
- Bachelor of the Arts degree from the University of Kansas, December 1993. Full double major in Philosophy and Russian Language.
- Serve as Board Member for Wakarusa Valley CDC, former President of Board of Directors of Headquarters Counseling Center

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Brian S. Dennis

EXPERIENCE

**2013- Present Kansas University Small Business Development Center Lawrence, KS
Consultant**

Providing business counseling and training to existing and prospective entrepreneurs.

Assisting in business plan production and development

Utilizing multiple data resources and research methods to provide clients with key market data

Working with clients to understand what financial tools and resources are available to start-up
and existing businesses

Cooperating with multiple centers statewide to implement a shift in strategy to better serve the
existing businesses of Kansas

**2011-2012 ConnectEDU Baton Rouge, LA
State Director**

Organized and led entire Louisiana operation , including creation and execution of a marketing
strategy, P&L reviews, and human capital development

Executed ConnectEDU's existing contract to deploy a statewide web portal

Identified funding opportunities for the expansion of services offered as part of a web portal
and other ConnectEDU products and services

Developed and managed high-value relationships with various education and government
stakeholders to drive deeper adoption of ConnectEDU's suite of products and solutions

Articulated the benefits of ConnectEDU solutions to stakeholder groups including education,
government and business leaders, to build a network of in-state "champions"

**2010-2011 Development Consultant/Main Street Director Ottawa, KS
Business Development and Growth Specialist**

Coordinated with over sixty businesses to build and execute plans for new growth, expansion
and succession

Developed and managed fundraising for a non-profit designed to retain and expand a
downtown development district

Worked closely with economic development authorities to create and implement a county-wide
workforce development plan

Instituted and managed all events and marketing campaigns

Collaborated with local Chamber of Commerce director to build and initiate a 10-year strategic
plan

2007-2009 Children's Coalition for the Bayou Region Houma, LA

Executive Director

Strengthened Coalition's presence in five parishes
Built framework to form Two, Five and Ten-year Strategic Plans
Facilitated monthly educational offerings for coalition partners
Partnered with the Board of Directors to build SWOT analysis of program and attacked gaps
Raised funding and coordinated the Fifth Annual Capital One Classic Golf Tournament
Support two federal grants, two state grants, and two state contracts
Supervised and developed a staff of eight grant-funded positions

1997-2007 Community Coffee of Louisiana**New Orleans, LA****District Manager**

The first manager in the company to surpass \$1 million in revenue for a single location
Directed all aspects of multiple high volume sales locations, including keeping Cost of Sales at 29%, Labor at 25%, and EBIT at a company-record high of 30%
Participated in the redevelopment and rebuilding of a company following the destruction from Hurricane Katrina
Helped create and implement Marketing and Promotional campaigns to rebuild citywide awareness of company-offered products
Worked as a super-user for the implementation of SAP R/3 PRD inventory control software
Recruited and trained new employees for all locations in the New Orleans area

EDUCATION

2007	Nicholls State University	Thibodaux, LA	
	Bachelor of Arts	Marketing/English Major	History Minor

INTERESTS & ACTIVITIES

Leadership Lafourche Graduate, Class of 2008
Leadership Franklin County Graduate, Class of 2010
Rotary Club
Volunteer, American Red Cross
Volunteer, Bayou Country Children's Museum
Delta Sigma Pi, President