

Memorandum

Date: August 28, 2013

From: Joanne Hovis

To: Ms. Dianne Stoddard
Assistant City Manager
City of Lawrence, Kansas

Subject: *Considerations for your analysis of Wicked Broadband's Application for Economic Development Support*

As the City requested, this memorandum raises issues and concerns for the City of Lawrence's consideration as it evaluates the Economic Development Support request proposed by Community Wireless Communications Co., also known as Wicked Broadband (hereinafter, "Wicked").

The bases for our analysis are the following: first, our experience with public-private partnerships and public broadband projects around the country and internationally. Second, our engineering experience with parameters around third-party access to fiber networks and standard industry practices in that regard. Third, we base some of our analysis of what we learned of Lawrence's broadband goals during the work we undertook for you earlier this year. Fourth, we have also based our analysis on Wicked's own request to the City, dated May 9, 2013. Finally, on August 6, 2013, I spoke for approximately one hour with Mr. Joshua Montgomery, a principal of Wicked Broadband. During that conversation, Mr. Montgomery explained the proposal to me in more detail and shared Wicked's vision for fiber optics in Lawrence.

Our analysis is intended solely to identify issues that the City should consider as it evaluates the application, according to your request and the scope of the task you assigned us. We did not, as part of this process, vet either the business or the technology plan proposed by Wicked; nor did we evaluate Wicked's past performance in either financial or technical areas. As a result, this memorandum does not make recommendations regarding Wicked's proposal; rather, on the basis of our experience with public-private partnerships, we raise some thoughts regarding financial, technical, and policy considerations for any fiber leasing or broadband expansion project the City might consider.¹

¹ In addition, CTC is neither qualified nor licensed to provide legal advice, and analysis of legal issues or legal risk is outside the scope of our work. We recommend that the City seek appropriate legal guidance.

Background

Wicked and its principals, Ms. Kristie Adair and Mr. Joshua Montgomery, filed an Application for Economic Development Support/Incentives with the City of Lawrence on May 9, 2013. The application requests the following incentives “to facilitate the expansion of 1 Gigabit Per Second Fiber-Optic Internet service” in the City:

1. “Waiver of first \$20,000 in franchise fees each year for the next 5 years retroactive to Q3 2012.
2. Permission to co-locate splice cases in City of Lawrence hand holes at locations where Wicked Broadband currently leases City of Lawrence fiber, or connects to existing City of Lawrence fiber.
3. Permission to splice fiber leased from the City using in-house resources. As with the City’s current contractor, this activity would be done under the supervision of City of Lawrence staff.
4. A 30 year lease of one buffer tube (12 count) of single mode fiber (SMF) in the fiber-optic cable connecting City Hall with the Law Enforcement Center at \$10.
5. A 30 year lease of two buffer tubes (24 count) of SMF on each new fiber-optic cable installed by the City of Lawrence in the next 120 months at \$10.
6. A one time Infrastructure grant of \$500,000.”

In exchange for these incentives, Wicked proposes to build “a 1 Gigabit Fiber-To-The-Premises (FTTP) system” that will connect “[o]ne neighborhood of approximately 1,000 households. Site TBD.”

The application also notes Wicked’s plans to create open access infrastructure to enable future competition: “The company is installing four (4) fibers at each site, but it only using two (2) to deliver service. This extra capacity will be available to other providers who wish to enter the community and compete to deliver service.”

And the company states that it plans to install wireless access points at “every FTTP installation” that could support a free wireless community access network.

Issue for Consideration: How should the City prioritize spending of funds for broadband?

We recommend that the City begin by considering whether and how the expenditure requested by Wicked aligns with the City’s priorities for broadband expansion.

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.

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.

Wicked's proposal is thus competing with other City priorities: For example, using the same amount to fund open access middle-mile fiber would potentially benefit groups other than residential customers—including consumer anchor institutions that serve large numbers of Lawrence residents.

Alternatively, the funds could enable the City to offer preferred pricing on conduit or fiber to providers that commit to building out unserved areas, low-income neighborhoods, economic development zones, or other high-priority areas.

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.

We therefore suggest that the City undertake a prioritization effort: the Wicked proposal would further some of its broadband goals, but not others. Prioritization would enable the City to determine how to apply (presumably finite) funds to one or more of a range of competing broadband interests.

Issue for Consideration: How should the City prioritize broadband spending with respect to potential impact on particular neighborhoods served?

To our understanding, Wicked plans to select the neighborhood in which it will build with City funds by allowing the neighborhood to self-select—i.e., by building in the neighborhood where the highest level of interest is demonstrated by potential customers.

This approach is akin to the model that Google has pursued in Kansas City and is now pursuing in Austin, TX. Google prioritized construction of FTTP facilities to those areas where a certain critical mass of residents have made pre-commitments to purchase service,² thus enabling Google to build in the most financially viable neighborhoods.

The vast majority of Kansas City areas qualified for construction under Google's model. (Significantly, those few that did not reach the necessary pre-commitment levels are primarily lower-income.) We note that this outcome is enabled by the glamour of Google's name—the prospect of Google fiber generated enormous publicity and excitement in Kansas City and internationally. Perhaps more importantly, this outcome is enabled by the

² "What is a fiberhood" and "How do I get Fiber service for my home?," Google Fiber "Frequently Asked Questions" web page. <https://fiber.google.com/help/>.

significant resources Google can bring to bear; once it selects a city for fiber construction, it can commit sufficient resources to build the entire city.

In our experience, this model is likely to have different results in Lawrence than in Kansas City because, to our knowledge, Wicked, like most companies, is not likely in a position to fund construction to all neighborhoods that indicate sufficient interest as Google did.

As Wicked notes in its document, expanded fiber optic connectivity offers enormous benefits in economic development, education, and quality of life. We note, however, that the benefits are likely to arise largely through a ubiquitous or near-ubiquitous FTTP deployment that connects the business sector as well as residences, not solely as a result of a single-neighborhood residential project. It is true that the residents of that neighborhood selected for Wicked's proposed FTTP service would benefit enormously, but the benefits would generally end at the edge of that neighborhood unless significant other funds are found to expand Wicked's FTTP footprint.

There is also a question as to the neighborhood itself, and whether the one selected would be one the City prioritizes for economic development spending. Assuming that only one or a few neighborhoods are likely to see FTTP constructed with City funds, the likely outcome in our experience is that the self-selecting neighborhoods (those that generate the highest percentage of pre-commitments to purchase service) will be those with the highest education levels and potentially the highest income levels, compared to the City as a whole. Indeed, Mr. Montgomery told me during our phone conversation that the highest levels of interest generated as of that date had been in neighborhoods with significant concentrations of University of Kansas faculty and/or students.

The self-selection model suits the needs of a company that seeks to ensure that enough customers will pay for service and thus generate a return on its investment. But we recommend that the City also evaluate the self-selection approach from the standpoint of local economic development and local community interest, given that City funds would be used to build fiber to one neighborhood, meaning that all taxpayers would be supporting construction that will benefit a select few. Further, we again recommend the City consider the proposed investment in light of the full range of City priorities in broadband: For example, the funds could be targeted toward the least, rather than the most, connected neighborhoods.³

³ As we noted in the broadband report, "the Urbana-Champaign Big Broadband (UC2B) network, an intergovernmental initiative in Illinois, has been exploring using [the fiberhood] model since long before Google announced its fiberhood plan. However, the cities of Urbana and Champaign started by applying for and receiving federal funding to build FTTP in the poorest parts of its planned network footprint—thus beginning with the least economically viable neighborhoods rather than the most." While we recognize the differences between these scenarios—a federally funded network as opposed to a private sector initiative—we focus here on the end results and on the fact that both scenarios involve local prioritization of local funds for broadband.

Issue for Consideration: Is this an appropriate commitment of the City's fiber infrastructure?

With respect to the fiber Wicked requests, we recommend the City consider the opportunity cost of leasing such a large volume of fiber to Wicked (at essentially no cost) relative to the other uses (and potential revenues) for the fiber.

The City's fiber is limited. Leasing decisions should consider that scarcity and should ensure that the City maintains enough capacity to meet its own future needs. On this topic, City staff should be consulted to demonstrate how much of the existing fiber is indeed "spare" and unlikely to be necessary for optimal City operations in the future.

Leasing decision should also consider how granting a single company access to significant numbers of City fibers would reduce the City's ability to lease fiber to competing companies in the future. In our experience, many public fiber owners choose to limit how much of their fiber one entity can lease so as to maintain equal capacity for other potential competitors.

Frankly, the Wicked proposal also means that the City forgoes some potential revenues, however modest. The potential value of leased fiber is difficult to estimate without a competitive process or some other mechanism to quantify the local market. Pricing of dark fiber is more of an art than a science. Looking at pricing from other municipalities and agencies is useful and provides insights, but is in some ways like pricing real estate in Lawrence based on the valuations in other real estate markets. That said, we can offer insights on an approximate range of value for the lease that Wicked has requested.

Dark fiber from municipalities is typically leased on a 20-year indefeasible right of use (IRU) or on a short-term month-by-month lease. In suburban markets we have seen one-time payments for IRUs range from \$1,500 to \$3,000 per mile per fiber, plus \$250 to \$300 per year per route mile for maintenance. Additional fiber count is frequently offered with volume discounts. Assuming a 30-year IRU, Wicked's request would entail foregone revenues of perhaps \$10,000 to \$30,000 for each mile of 12-strand fiber leased. (For 24 strand fiber, the valuation range would increase but not double, assuming volume discounts on incremental additional fiber count.)

In the same markets, we have seen short-term lease prices range from \$10 to \$40 per strand per mile per month. For higher count fiber, the cost increases but not proportionally; generally, significant volume discounts are offered. 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).

In the event that the City does go ahead with the fiber leasing mechanism proposed by Wicked, we suggest some reasonable constraints. For example, we note that Wicked's request for a portion of future fiber installations is open-ended; we would advise the City to limit the duration of any such agreement. We also recommend that the City require fiber

reciprocity such that the City would receive 24 strands any time that Wicked builds new fiber over the time period.

Issue for Consideration: Is there risk with respect to security and control over the City's fiber and that of its collocated partners?

The City should take into account security and operational issues that arise from providing physical access to City fiber.

Wicked seeks permission to splice the City's fiber using in-house staff and to co-locate splice cases in the City's handholes. We urge extreme caution with respect to any arrangement of this sort with any private user of the City's fiber.

In our experience (working with national, state and local governments in planning, designing building and operating fiber optic networks, and overseeing the work of private companies on behalf of localities), fiber network owners require other users of their fiber to use approved contractors for any changes to the fiber so that the fiber owners is able to manage, control, and protect its fiber. This is the case with respect to both public and private fiber network owners.

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.

These restrictions are important because of the critical nature of the applications operating over the City's fiber, including public safety communications and private tax and other data regarding Lawrence citizens. In addition, these parameters are important for maintaining the City's partnerships with other public entities such as Douglas County and the University of Kansas. Like the City, these entities are required to meet technical parameters for security and secrecy that would be compromised by third-party service provider access to City fiber.

Issue for Consideration: What is the industry-standard technical framework for leasing of fiber and what costs are associated with it?

The following is a framework for how, in our experience, potential private users of City fiber, such as Wicked, can readily and efficiently access the City's fiber without creating risks. We recommend that the City require any private user of its fiber to work within this framework, which protects all users of City fiber.

A fiber optic network should have a single “owner” responsible for maintenance, repairs, documentation, planning and upgrades. The owner entity needs to include both operational responsibility (in-house or contractor) and executive leadership.

The owner needs to have real-time knowledge of the entities using the fiber (such as the city department operating the electronics and any public or private fiber customers) and needs to have the ability to contact at any time a representative of those entities, in order to notify of any changes, maintenance, or failures.

The owner is accountable for immediate tactical decisions. These would include items such as repairing cuts, coordinating with other utilities in the right-of-way, and coordinating with pole owners.

The owner is also responsible for intermediate-term decisions. These include when and how to schedule maintenance or new connections; qualifications of staff; equipment needed to maintain or add connections; and how to notify user entities.

Finally, the owner is also responsible for strategic decisions such as how and whether to allocate fiber for future uses; types of technologies for pole attachment and fiber access; how to enter facilities; how to charge for fiber; and determination of guarantees and warranties to customers.

In a fiber optic operational environment, only the owner’s in-house staff or a contractor selected by the owner should have contact with the fiber, maintain the fiber, or connect to fiber in the outside plant. This is both to ensure the integrity of the fiber network and to have clear accountability in the event of damage or outages.

In order to maintain both integrity and accountability, the fiber owner designates demarcation points between its fiber and the customer, with the demarcation clearly indicating who is responsible for operating and maintaining fiber.

In a traditional fiber lease environment, fiber is provisioned to an indoor panel at a customer premises or a meet point, such as a central office or Internet hotel. The fiber owner is responsible for everything on its side of the panel, and the customer plugs into the front of the panel.

There do exist alternatives that allow outdoor connections to the fiber. Again, integrity and accountability are preserved by providing a clear point of demarcation, with the customer separate from the owner.

If the customer is seeking to connect to the owner’s aerial fiber, the standard practice is for the owner to place a new splice enclosure at the points of customer interconnection. The new customer splice enclosure is connected over a short stretch of cable to the owner’s splice enclosure (or the owner’s new mid-sheath splice point, installed by the owner specifically for this interconnection).

The new customer splice enclosure is mounted on the pole, in a new surface pedestal, or in a new underground vault. This new splice enclosure is provided, along with a key, to the customer, and the fiber that the customer leases or purchases is available to the customer inside that new customer splice enclosure. The new customer splice enclosure is equivalent to the indoor panel. The customer can then interconnect the fiber to its own fiber, which will either travel on the customer's own, separate attachment on the pole or through the customer's own underground cable pathways.

If the owner's fiber is underground at the meet point, the standard practice is for the owner to connect a small stretch of fiber from its own splice enclosure, in its own vault or enclosure, to a vault or enclosure owned by the customer. As with the aerial interconnection, the customer's fiber is made available in the customer's enclosure, and the customer does not touch or have access to the owner's enclosure.

If these standard industry practices are used, there is total separation between the owner's fiber and the customer's fiber, and clear demarcation of maintenance and operational responsibilities. If the fiber requires repair, the customer contacts the owner, and the repair is the owner's responsibility. If the customer wants new fiber or to change its use of the owner's fiber, the customer contacts the owner, the owner reviews and approves the change according to its own processes, and documents the change.

It should be clear from these requirements that leasing fiber means that the City commits to significant effort and interaction with the fiber customer for as long as the agreement is in place. Ordinarily, the fiber owner's costs for undertaking the steps discussed above would be borne by the customer. In the case of Wicked or any other entity to which the City might grant cost-free access to the fiber, the costs associated with these steps will accrue to the City and should be built into the City's consideration of the leasing arrangement. Indeed, granting any private company access to the City's fiber is not a one-time decision; it would create for the City an ongoing set of administrative and technical tasks that will require staff and effort.

Issue for Consideration: What insurance protections are required to protect the City?

In any circumstance where the City allows a private entity to use its fiber, we recommend that the City ensure that the private entity has good credit, and carries appropriate insurance (to be specified by the City's risk counsel).

The significance of a contractor or partner's insurance coverage should not be understated. If a municipality hires a contractor to provide tree-trimming services, and the crew accidentally drops a tree limb on a resident's car, the municipality will face liability. If a contractor were to forget to replace a manhole cover after working on underground fiber, and a resident fell into the open hole, the City would face liability. It is very likely that both the contractor and the City would be sued in scenarios like this—and even if the contractor

indemnified the City, the City (which may be the party with the greater financial wherewithal) still is vulnerable to significant risk.

Accordingly, we recommend that the City consult with its counsel regarding an evaluation of Wicked's insurance coverage and insurability, and what level of insurance the City would require that Wicked maintain throughout the duration of any potential agreement.

Issue for Consideration: Are the necessary contractual protections in place to protect the City's investment and policy goals?

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.⁴

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.

Further, we recommend that the City ensure that, in the case of default or bankruptcy by the awardee, title to all City-funded equipment and fiber revert to the City. Similarly, we recommend the City ensure that, if Wicked or any other awardee were to sell the network partially funded by the City, the City would be reimbursed for its financial contribution rather than the value of the City's economic development investment converting to private profit.

To further protect the City's policy-driven investment, we recommend that the City require that the open access (competition) provisions (such as those proposed by Wicked) be on reasonable terms to be approved by the City—so as to ensure that the “open” fiber is not priced so as to make it unaffordable by competitors. To further secure the open access goals, the awardee should commit that the open access (competition) obligations will transfer to any new owner in the event the network is sold in the future.

Issue for Consideration: Would funding the Wicked proposal entail greater risk than other broadband strategies?

We cannot opine on legal risk but, based on our experience observing the development of public broadband in the United States over the past two decades, we can offer insight into the potential political, public relations, and other risks that the City may encounter under different strategies.

⁴ A wide range of contractual protections are necessary in any fiber lease or funding agreement. We cannot and do not give legal advice in that regard but strongly recommend that the City seek qualified counsel. The guidance here is from the standpoint of broadband policy and planning, not legal sufficiency or risk.

Based on our experience, we believe that the Wicked proposal would rank fairly high on a scale of risk. We believe it likely that incumbent providers will claim that the City is disturbing the workings of a competitive marketplace; that the City is providing an unfair advantage to Wicked over other companies; that the City awarded the funds and fiber access without a competitive procurement process; or that the City's funding favors particular demographics or wealthier residents (i.e., the neighborhood chosen for FTTP deployment).

Frankly, we believe there is little merit to most of these charges but we anticipate they will arise nonetheless and that the City should build that consideration into its planning.

Issue for Consideration: Is there a means by which the City can use existing processes to further evaluate the proposal and protect the community?

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.

Either process would enable the City to develop more specific data from Wicked to properly evaluate the proposal (and the opportunity costs associated with it); would potentially enable comparison among multiple interested vendors (or, in the event that no other vendor replied, would establish that Wicked's interest is unique); would enable the City to ask for bids responsive to its policy agenda and desired outcome rather than those suggested by a single vendor; would use the possibility of competition to optimize the outcome for the City and maximize the value of its investment; and would serve to protect the City against claims that it did not open the opportunity to other vendors.

An RFI process would allow the City to seek information for planning purposes; an RFP would enable it to clearly compare options offered by different vendors. In either case, the City would be in a position to consider the proposal presented to it by Wicked on the basis of far more data than it currently holds.