THE CITY OF

SpringHill
KANSAS

BROADBAND
INTERNET
FAQ

GLOSSARY

anchor institutions — Flagship community institutions, including but not limited to: schools, health care centers, and libraries. Anchor institutions are sometimes connected to fiber even when fiber service is not commercially available in the community. Because of this, they can act as a connection to the internet backbone.

asymmetrical — Internet connections have two components – a downstream and upstream. When the two speeds are not comparable, the connection is termed asymmetric. Typically, phone and cable companies offer much slower upload speeds than download, in part because the Internet tended to be a download-centric system in the 90's and early 00's. However, users increasingly need faster upstream connections to take full advantage of modern applications.

backhaul — A general term for the segment of a network between the core and the edge. An example: the connection from a community network hub in a small town to a carrier hotel where it connects to the Internet backbone.

bandwidth — The rate at which the network can transmit information across it. Generally, higher bandwidth is desirable. The amount of bandwidth available to you can determine whether you download a photo in 2 seconds or 2 minutes.

bit — The base unit of information in computing. For our purposes, also the base unit of measuring network speeds. 1 bit is a single piece of information. Network speeds tend to be measured by bits per second – using kilo (1,000), mega (1,000,000), and giga (1,000,000,000). A bit is a part of byte, they are not synonyms. Bit is generally abbreviated with a lower-case b.

broadband — A speed benchmark set and updated by the Federal Communications Commission. The benchmark was last updated in 2015 to define broadband as 25 Mbps download speeds and 3 Mbps upload speeds. "Broadband" is generally shorthand for quality internet service.

BTOP — Broadband Technology Opportunities Program – established by the 2009 stimulus legislation, a program to disburse $4.7 billion to improve broadband access and literacy throughout the country.

byte — The base unit for file storage. Comprised of 8 bits (just to confuse you – if you don't like powers of 2, stay away from computer science). A 1MB (megabyte) file is made of 8 million bits. Bytes generally refer to the size of storage whereas bits are used frequently when discussing how rapidly files may be moved. Byte is generally abbreviated with a capital B.

cable modem system — Cable television companies have offered Internet access via their cable system for more than a decade. The network architecture uses a loop that connects each subscriber in a given neighborhood, meaning they all share one big connection to the Internet. Over time, needs have increased faster than capacity on these networks. Because the cable network shares the last mile connection among hundreds of subscribers, a few bandwidth hogs can slow everyone's experience.

conduit — A reinforced tube through which cabling runs. Conduit is useful both to protect fiber-optic cables in the ground and because one can place the conduit underground when convenient and later "blow" or "pull" the fiber cabling through the conduit.

dark fiber — Unused fiber infrastructure that has not been "lit" with internet service. When someone is building

a fiber network, the cost of adding more fiber than immediately required is negligible and the cost of having to add more fiber later is very high. Therefore, many include dark fiber in projects – fibers that can be leased to others or held in reserve for a future need.

DOCSIS — This is a technical specification that allows modern cable networks to offer two-way data transmissions. Every few years, the standards are improved to offer higher speeds. DOCSIS has historically offered much slower upstream and downstream but that is expected to change for very high speeds in both directions in the years after 2020.

downstream — Internet connections have two components – a downstream and upstream. Downstream refers to the rate at which the user's computer can receive data from the Internet.
Synonyms: download

DSL — Digital Subscriber Line — or Internet access offered over the phone lines. DSL allows users to use the Internet at speeds greater than dial-up while also using the phone line for telephone conversations. DSL uses frequencies not used by human voices. Unfortunately, these frequencies degrade quickly over distance, meaning customers must live within a mile or even much closer to the central office to get the fastest speeds. In any event, upstream speeds over DSL tend to top out at 5 Mbps.

fiber-optic — A system that uses glass (or plastic) to carry light which is used to transmit information. Typically, each side of the fiber is attached to a laser that send the light signals. When the connection reaches capacity, the lasers may be upgraded to send much more information along the same strand of fiber. This technology has been used for decades and will remain the dominant method of transmitting information for the foreseeable future.

fixed wireless — A connectivity model that uses stationary wireless technology to bridge the "last mile" between the internet backbone and the subscriber.

FTTH — Fiber-to-the-home. As most telecommunications networks use fiber in some part of it, FTTH is used to specify those that use fiber to connect the subscriber. Some claim they have a fiber-optic network because they use fiber to the node even when they use phone lines or a cable network over the last mile. FTTH may be more expensive to install but offers significant savings in terms of maintenance when compared to copper alternatives.

FTTP/FTTU — Fiber-to-the-Premise or Fiber-to-the-User are used somewhat interchangeably with FTTH to describe full fiber networks.

Gbps — Gigabits per second – or one billion bits per second. 8 Gbps means that 8 billion bits are transferred each second. 1 Kbps (Kilobits)<1 Mbps (Megabits)<1 Gbps

Gig — Shorthand for 1 Gbps (1,000 Mbps) download speeds. More colloquially, a speed fast enough that any number of applications can use the network without creating congestion.

Kbps — Kilobits per second – a measure of speed. 8 Kbps means that 8 thousand bits are transferred each second. Using an 8 Kbps connection, it would take 1 second to transfer a 1 KB (Kilobyte) file – a text file, for instance. 1 Kbps<1 Mbps (Megabits)<1 Gbps (Gigabits)

GLOSSARY

last mile — Describes the final leg of a connection between a service provider and the customer. In DSL and cable systems, this is the most frequent bottleneck and the most expensive to resolve. The service provider may run a faster fiber-optic network into the neighborhood but deliver the last mile (which could be considerably less than a mile - "last" is the operative term) with a phone lines that cannot sustain fast speeds.
Synonyms: first mile

latency — The amount of time it takes for a bit to move from point A to point B. In the words of Dr. Stuart Cheshire: "If you want to transfer a large file over your modem it might take several seconds, or even minutes. The less data you send, the less time it takes, but there's a limit. No matter how small the amount of data, for any particular network device there's always a minimum time that you can never beat. That's called the latency of the device."
lit fiber — Fiber infrastructure that is being used to provide internet service.

Mbps — Megabits per second – a measure of speed. 8 Mbps means that 8 million bits are transferred each second. Using an 8 Mbps connection, it would take 1 second to transfer a 1 MB (Megabyte) file – a photo, for instance. Don't get lost in the details – when it comes to Mbps, more is faster. 1 Kbps (Kilobits)<1 Mbps<1 Gbps (Gigabits)

middle mile — Middle mile is a term most often referring to the network connection between the last mile and greater Internet. For instance, in a rural area, the middle mile would likely connect the town's network to a larger metropolitan area where it interconnects with major carriers.

NATOA — National Association of Telecommunications Officers and Advisers. NATOA is comprised of local government officials and employees that work on cable and broadband issues – from public access television to managing the community's rights-of-way.

NTIA — National Telecommunications and Information Administration – a division of the Department of Commerce in Washington, DC.

symmetrical — Internet connections have two components — a downstream and upstream. When the two speeds are comparable, the connection is termed symmetric. Fiber-optic networks more readily offer symmetrical connections than DSL and cable, which are inherently asymmetrical. Ultimately, purely symmetrical connections are less important than connections which offer robust connections in both ways. However, modern asymmetrical connections via DSL and cable networks offer upload speeds that are too slow for a household to concurrently use modern applications.

T1 — A data circuit that transmits at 1.544 Mbps.

upstream — Internet connections have two components – a downstream and upstream. Upstream refers to the rate at which the user's computer can send data to the Internet. DSL and cable networks frequently offer upload speeds at only 1/10 of the downstream speeds. This is one of the main reasons DSL and cable networks are insufficient for the modern Internet.
Synonyms: upload

HOW DID WE GET HERE?

• **Why did the City get involved?**

 o Spring Hill residents and businesses consistently expressed concern over internet service in Spring Hill from the two existing internet service providers. Those concerns, confirmed by an information survey of residents and businesses, included:

  • Slow internet speeds between the hours of 3 p.m. and 8 p.m.
  • The inability to stream without buffering
  • New service requests being turned down in areas where only one provider existed
  • Extended delays for technicians responding to service issues
  • Existing businesses using costly T-1 (see definition) lines for faster speeds
  • Cost of internet service options
  • Inability to work from home
  • Inability to run a small business from home
  • Inability to take online classes

• **Did the City talk to the existing internet providers before moving ahead with this project in 2017?**

 o Yes, the City spoke with both local internet service providers in Spring Hill. Both companies acknowledged their difficulty in adding more service locations (residential and business addresses serviced) and difficulty in increasing speeds. At that time, they also indicated that their companies were no longer investing capital infrastructure dollars in Spring Hill.

• **Did the City talk to other internet providers before releasing the RFP?**

 o Yes, prior to releasing the RFP, the City spoke to numerous internet service providers and related service contractors. Some of those companies were requested by the Broadband Task Force to make presentations in 2017 to educate members of the Board about broadband options.

• **Do existing internet service providers in Spring Hill have fiber networks?**

 o The City does not receive infrastructure designs/plans from utility companies or internet service providers in Spring Hill. However, we understand through conversation that there are small areas within Spring Hill that may have fiber.

• **Why is fiber important?**

 o Fiber transmits data at speeds far exceeding current DSL or cable modem speeds, typically by tens or even hundreds of Mbps. Fiber is scalable and "future-proof" technology according to many leading industry professionals.

  • Broadband wired connects:

   • Fiber
    o Fiber is transmitted over fiber-optic lines.
    o Typical speeds range from 250-1,000 Mbps and is expandable "future-proof" technology.

   • Digital Subscriber Lines DSL
    o DSL is transmitted over traditional copper telephone lines.
    o Typical speeds range 5-35 Mbps which are not as fast as cable or fiber.

   • Cable Modem
    o Cable Modem uses the same coaxial cables that deliver pictures and sound to your TV set.
    o Typical speeds range from 5-50 Mbps. Cable isn't as fast as fiber and speeds sometimes slow during "peak use" times and broadband is generally shared with neighbors.

   • Broadband Over Powerlines BPL
    o BPL is transmitted over existing low- and medium-voltage electric power distribution network.

- https://www.fcc.gov/general/types-broadband-connections#fiber
- https://broadbandnow.com/guides/dsl-vs-cable-vs-fiber#:~:text=DSL%20(digital%20subscriber%20line)%20internet,as%20cable%20or%20fiber%20internet.

• Why is gigabit speed important?
- o Gigabit-speed internet is becoming more important as homeowners and businesses rely on streaming videos, conference calls, cloud services, online education, and online chat. With gigabit-speed internet, you can download files, watch movies and TV shows, run point of sale systems or home security systems, connect to business headquarters outside the city, and store information digitally without delays or buffering issues.
  - 1 gig = 1,000 Mbps

• What due diligence was performed?
- o Informal community survey
- o Meetings with local, state and federal organizations
- o Joined/Communicated with groups such as Broadband Technology Opportunities Program (BTOP), National Telecommunications and Information Administration (NTIA), Next Century Cities (NCC), Institute for Local Self-Reliance (ILSR)
- o Met with multiple agencies in Johnson County seeking solutions
- o Worked with Miami County Economic Development
- o Broadband Task Force created
- o Conducted Feasibility Study

• What was the purpose of the Broadband Task Force?
- o At the Nov. 10, 2016, City Council meeting, Mayor Ellis proposed establishing a Broadband Task Force which was approved by the City Council. City Council member Andrea Hughes was tasked with the role of Broadband Task Force liaison. The Broadband Task Force — a group of resident volunteers — was responsible for examining and evaluating the feasibility of establishing either a public broadband utility or a public/private partnership. The Task Force worked through a feasibility study with CTC Technologies, learned about broadband from internet service providers, deliberated about the best options for the residents of Spring Hill, and made a recommendation to the City Council.

• Why was a feasibility study performed?
- o The City Council selected CTC Technologies as the firm to conduct a feasibility study determining whether the city should consider creating, owning and operating an internet service utility or to partner with a company to provide additional internet options in Spring Hill.

• What is a feasibility study?
- o A feasibility study is performed to evaluate whether a specific action makes sense from an economic or operational standpoint and answers the question, "Should we proceed with the specific action plan?" The study provides an understanding of the risks and can provide management with crucial information that could prevent the company from entering blindly into risky businesses.
- o Elements of a Feasibility Study
  - Understanding stakeholder needs
  - Understanding the existing infrastructure
  - Conducting market research
  - Engaging with potential providers
  - Determining a model and network design
  - Conducting a cost analysis and creating a business plan
  - Evaluating financing and funding availability
- o CTC Technology and Energy Broadband Feasibility Study prepared for the City of Spring Hill, Kansas

• What was the recommendation made by the Broadband Task Force?

  o The Task Force determined that it was not in the best interest of the City to own and operate an internet utility. Instead, they recommended that the City put effort into finding internet service providers to come to Spring Hill and determine if a public/private partnership requiring city funds was necessary.

    o The Broadband Task Force recommendation was made to the City Council on Feb. 15, 2018.

• Why did the Broadband Task Force disband?

  o The original resolution establishing the Broadband Task Force was a six-month term and was later extended through Sept. 30, 2019. At the Task Force meeting on Sept. 24, 2019, the Task Force felt they fulfilled their original task to make a recommendation to the City Council and voted to not request an extension of their term date.

• What areas does this project impact?

  o The areas within the city limits of Spring Hill are impacted by the Broadband Project and the City will continue to work with surrounding jurisdictions to benefit the areas adjacent to our city limits.

• Is the City going to own the internet service?

  o No, the City will not own nor operate a broadband (internet) utility.

• Why not wireless?

  o The Task Force reviewed the possibility of Wireless, Wi-Fi, as an option for the residents of Spring Hill. Ultimately, CTC recommended that fiber-to-the-premise (FTTP) was the recommendation for Spring Hill; however, wireless was a temporary option offered for consideration in the Task Force recommendation.

  o In short, Wi-Fi is great for mobility, but is not a replacement for a full fiber-to-the-home network. Additionally, wireless community solutions require a fiber backhaul to the point where wireless is streamed from.

• Why did Spring Hill have a launch event for RG Fiber?

  o On Sept. 17 (one month after the RFP was released, but before the RFP top recommendation was announced) RG Fiber had a free event at the Spring Hill Civic Center. RG Fiber had placed signs around town indicating a website where residents could show interest in the RG Fiber internet products. Note the City archived news indicating that RG Fiber/Gigabit Service "could be arriving soon."

  o Spring Hill has and continues to encourage Broadband Internet Providers to consider moving to Spring Hill or updating their current services here in Spring Hill.

  o The City was under the impression that RG Fiber intended to build in Spring Hill regardless of the RFP process.

BROADBAND RFP

• What is a Request for Proposal (RFP)?
     o RFP is a request for proposal, which is a detailed specification for goods or services required by an organization, sent to potential contractors or suppliers.

• Does an RFP obligate the City to act?
     o No. An RFP provides information and, in some instances, costs for comparison and consideration for possible action by the City.

• Why did we issue a Request for Proposal (RFP) instead of a Request for Information (RFI)?
     o The purpose of an RFI would have been to simply identify internet service providers that may have been interested in providing service in Spring Hill.
     o In the Broadband Task Force recommendations, an RFI was suggested to market Spring Hill to potential internet service providers that may find interest in doing business in Spring Hill. An RFI would result in further discussions and an eventual RFP. After further research, and input from internet service providers, we learned that many companies will not invest their time into responding to an RFI for various reasons and that an RFP was recommended. An RFP evaluates the merit of each proposal and a decision is then made based on the proposals submitted.
     o City staff reviewed the reasons for issuing an RFP with the Broadband Task Force and the City Council and both agreed that an RFP was the appropriate next step.

• Why was a Mutual Confidentiality and Non-Disclosure Agreement included?
     o Use of this document was initially requested by a local Internet service provider in order to secure their design plans from competition. The City prepared a standard document as an exhibit to the RFP in order to save future legal fees on contract reviews that would have been necessary if each respondent had submitted their own document.

• What were the stated goals of the RFP and when was it released?
     o The City prioritized a partnership that:
          • Balances financial risk. The City seeks creative solutions where investment can be beneficial to future city infrastructure needs while supporting the overall project. The City anticipates investments into network infrastructure through a successful partnership where both parties will have a financial stake in the project's success.
          • Sustainable, affordable, scalable approach. A financially sustainable business model will ensure that businesses, residents, and community anchor institutions can access affordable, market-leading broadband services. As the City grows - both in population and commercial/industrial development - the solution should be scalable to meet the increased needs.
          • Community-wide deployment. Residential and business-class service are equally important, offering service options to all members of the community regardless of income level. Service to every Spring Hill residential subdivision, current and future, is key to a successful project, not just key areas or customers that may provide a quicker return on capital investment.
     o The RFP was released on Aug. 12, 2019.

• Why were incentives important to the RFP process?
     o Feedback from service providers indicated that access to City-owned assets were important to a successful roll out in Spring Hill. After review of City-owned assets, it was determined the City does not own the necessary land, towers or utility poles often needed for this type of project.

• **What incentives were offered in the RFP?**

o In exchange for a comprehensive, city-wide solution that serves all Spring Hill residents, the following incentives will be considered by the City:

• Waiver of right-of-way permit (ROW) and inspection fees, granted under Resolution 2019-R-14, for internet providers who deploy gigabit-capable broadband services for sale to residents, businesses, and governmental entities in the city limits of Spring Hill.

• Assist the Partner in navigating necessary permitting requirements to streamline planning and construction efforts.

• Dedicated resources to support our selected Partner(s) through plan review, coordination, and inspection services to assure an expedited approach to construction and installation in the public ROW and will work with the Partner to facilitate work.

• Access to non-public resources that identify City infrastructure and, where available, access to existing conduit infrastructure. Such information includes but is not limited to traffic, sewer, water, and storm-drainage facilities.

• Assist Partner to facilitate conversations and collaboration with other jurisdictions or entities that may govern the Partner's access to necessary infrastructure, poles, rights of way, and other components necessary to successfully deploy a robust FTTP network. Additionally, the City acknowledges that municipal-funded investment into infrastructure is necessary to ensure success of the Project or advance the timeline for service availability.

• The Partner may benefit from the city's planned project to construct dark fiber between city facilities, see Appendix B for map and addresses of City facilities, estimated to take place in 2020, by reducing their own capital costs to serve those areas in the following ways:

• Contract with the City to design and construct dark fiber between city facilities as outlined in Appendix B in a project estimated at $350,000, with the potential for increased budget dependent upon addition of optional facilities. Partner may use open ground to install its own fiber in cost-sharing or cost-covered agreement; or

• Partner may use open ground to install its own fiber during city construction of dark fiber project through cost-sharing or cost-covered agreement.

• **Who was the RFP distributed to?**

o Due to an extensive research process, agencies both in the state of Kansas and nationally offered to assist Spring Hill in distributing the RFP. Many agencies listed below distributed to providers across the nation.

— Community Networks
— Symmetrical Networks
— Smart Wave Technologies
— Sifi Networks
— Nokia
— Tucows
— Ting
— Lode Rock
— Midco
— Kwikom
— Next Century Cities

— AT&T
— Google
— Kansas Fiber Network
— Charter Cable
— Consolidated Communications
— Comcast
— Ervin Cable
— BHC Rhodes
— Sure West
— Schatz Underground
— K&W Underground

— ValuNet Fiber
— Fiber Broadband Association
— Coalition for Local Internet Choice
— Craw-Kan
— CenturyLink
— Altice (Suddenlink)
— Really Good Fiber (RG Fiber)
— NTIA (National Telecommunications and Information Administration)
— H & B Communications
— Kansas Department of Commerce

• **Who responded to the RFP?**

— Allo Communication
— Altice/Suddenlink
— Copilot
— EntryPoint, LLC
— GrayBar
— K&W Underground

— KS FiberNet
— Lux Network
— Midcontinent Communications
— RadioLED
— RG Fiber
— Ubiquity Partners

• What steps were involved in the selection process?
   o Committee formed
   o Review of each proposal
   o Conducted interviews with 8 respondents whose proposal met criteria of RFP
   o Matrix prepared
   o Research conducted on top proposals
   o Recommendation prepared

• Was a rating matrix completed during the proposal review process?
   o City of Spring Hill rating matrix

• What was the committee recommendation?
   o Review sheet presented at Jan. 23 meeting
   o PowerPoint presentation from Jan. 23 meeting

• Why was an out of state company chosen?
   o The company's headquarter location had no bearing on the recommendation. While the selected company is headquartered in another state, their proposal met all criteria of the RFP and indicated that they will locate a service office and technicians in the Spring Hill area.

• Why didn't the City pick the lowest bid?
   o The RFP asked for proposals to bring high speed, reliable, competitively priced Internet service within a reasonable amount of time to every resident and business in the city limits of Spring Hill.
   o The selected proposal allows every resident and business in the City of Spring Hill limits access to an additional internet service provider within 18 to 24 months.
   o The proposal selected does not require any city funds for the buildout of internet infrastructure access by Allo Communications to every resident and business in Spring Hill. The city is not providing funds to a competing internet service provider for their buildout of infrastructure or service provided to residents or businesses.
   o The funds referenced by the public of the difference between $250,000 and $350,000 are directly related to the city's capital project for connectivity of city facilities. The city was not seeking bids for this capital project. The initial design for this project indicates that the cost will be $350,000 or more and just like any other capital project, until the design is complete, the city will not know how much the project will cost. The city council will weigh in on the design and will decide how to move ahead with that capital project.

• What is dark fiber?

    o Fiber is simply the infrastructure by which the internet service will travel from the internet service provider to the customer. Dark fiber means that internet service is not traveling across that fiber. When lit, the service travels from the service provider to the customer.

• Why is the City proposing a dark fiber network?

    o The City contracted with Suddenlink in 2014 to construct fiber between city facilities including City Hall, Police Department, Public Works, and the Wastewater Treatment Plant. Suddenlink owns the fiber and therefore is the only internet service provider the city can use. Suddenlink internet service for city operations are priced higher than other companies would charge, and the city cannot switch providers because we do not own the fiber between our buildings.

    o Staff began researching ways to reduce the cost of monthly internet expenses, and found that many agencies including school districts, cities and county governments own their own fiber connection between facilities and then they are able to save costs by then bidding internet service to multiple providers, ultimately driving down their cost of internet service.

    o Additional benefits are a direct and more secure connection for purposes of law enforcement information sharing between agencies and added control over the city's network.

    o The project was proposed to the City Council in 2019 while creating the five-year Capital Improvement Plan for 2020-2024 and initial cost of the design and construction were approved.

• Will the City control the residents' internet?

    o No. The City does not have any access, nor is the City suggesting that we have access, to the residents' internet.

• Will the City get internet before the residents do?

    o The Broadband RFP was solely intended to bring another internet service provider option to Spring Hill residents and businesses.

    o The Broadband RFP was not a bidding process for internet services for the City (City facilities). The installation of dark fiber between City facilities does not provide internet services between these facilities. Internet services, like all professional services, will be bid at some later date by following the City's purchasing policy.

• Why does the City need high-speed internet to the Aquatic Center and the Community Center?

    o The Aquatic Center point-of-sale system is an online system that relies on the internet. Speeds and reliability are important to the operations of the facility. Currently, the Aquatic Center has internet speeds of up to 100 Mbps up and 10 Mbps down and, like many other businesses in Spring Hill, frequently experiences outages from the internet service provider.

    o The Community Center does not currently have internet access. When seeking quotes on connection to the City's existing infrastructure, our internet service provider was unable to dedicate fiber strands for connection of this facility.