

TELECOMMUNICATIONS COMMISSION

Monday, June 29, 2020

Electronic Regular Meeting – 5:30 PM

Zoom Meeting Platform

Electronic Meeting

(Pursuant to Iowa Code section 21.8)

An electronic meeting is being held because a meeting in person is impossible or impractical due to concerns for the health and safety of Commission members, staff and the public presented by COVID-19.

You can participate in the meeting and can comment on an agenda item by going to

<https://zoom.us/meeting/register/tJctcO2hrD4rHdeqkcJ2fGKwfMjnZDXRdu0Q>

via the internet to visit the Zoom meeting's registration page and submit the required information.

Once approved, you will receive an email message with a link to join the meeting. If you are asked for a meeting or webinar ID, enter the ID number found in the email. A meeting password may also be included in the email. Enter the password when prompted.

If you have no computer or smartphone, or a computer without a microphone, you may call in by telephone by dialing (312) 626-6799. When prompted, enter the meeting ID. The ID number for this meeting is 930 7492 5173.

Once connected, you may dial *9 or click the "raise hand" button to "raise your hand," letting the meeting host know you would like to speak. Providing comments in person is not an option.

Agenda

1. Call to order
2. Approval of minutes
3. Announcements of Commissioners
4. Short public announcements
5. Municipal broadband research and report
6. Adjournment

If you will need disability-related accommodations in order to participate in this program/event, please contact Ty Coleman at 319-356-5454 or ty-coleman@iowa-city.org. Early requests are strongly encouraged to allow sufficient time to meet your access needs.

Electronic Meeting (Pursuant to Iowa Code section 21.8)

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Minutes

Iowa City Telecommunications Commission
June 1, 2020 – 5:30 P.M.
Via the Zoom remote meeting platform

Call to Order: Meeting called to order at 5:33 P.M.

Members Present (via Zoom): Matthew Brenton, Adam Stockman, Gina Reyes

Members Absent: Andrew Austin, Kyla Paterson

Staff Present (via Zoom): Ty Coleman

Others Present: none

Recommendations to Council: None

Approval of Minutes:

Stockman moved and Reyes seconded a motion to approve the April 27, 2020 minutes as presented. The motion passed unanimously.

Announcements of Commissioners:

None.

Short Public Announcements:

None.

Municipal broadband research:

Brenton said he had created a report document based on the group's earlier discussion. The document included a section on why broadband matters, including information about the digital divide between those with access to broadband and those without, the impact on employment, access for students, and broadband access as a social determinant of health. The section also included comments on the COVID-19 crisis and how the school district had spent money to provide internet service to many students, noting that the issue had more to do with the lack of bandwidth than the lack of technology or an internet connection altogether.

Brenton included a section on future technologies with information based on articles he had previously shared. He said the information included details about the differences in low, mid, and high band 5G technology. He said he found a Des Moines Register article stating that Verizon had already rolled out 5G service in Des Moines. Brenton said he looked at a T-Mobile 5G coverage map, which claimed that half of Iowa City had access to 5G, but noted that it was likely low-band 5G, which can be slightly faster than 4G. He noted in the report document that there isn't really a way to know when full 5G service would be available in Iowa City and how much it would cost.

Brenton said he included information about the low earth orbit (LEO) satellite technology he had found in an article. He said that as of April 22, 2020, SpaceX had claimed it had 422 satellites in the Starlink constellation, which is more than what is required for minimal coverage and noted that 800 satellites are needed for moderate coverage. Brenton said that while the service may be appealing to those in areas with

not as many options for broadband service, it wouldn't likely be an improvement for those who already have access to cable or DSL service.

Stockman said he would take the information gathered from the survey of municipalities with their own broadband networks and put it into a narrative for the document. Stockman wondered if the report document could be made into a shared document so that each member of the Commission could add their portions to the report. Coleman said he would need to check to see if such a strategy would be in violation of open meetings laws. Brenton said it could be helpful in facilitating more progress between meetings. Coleman suggested another option could be for people to submit their portions to him, then he would pass it on to a subcommittee, who would then work with the material and put things together. Stockman said he would be willing to assist Brenton with this task.

Reyes said her sections for the report include the current state of broadband in Iowa City as well as opportunities for grant funding. She said she described how the FCC obtains its information on how many people have broadband service.

Reyes said the map she will include shows all of Iowa City as being covered with broadband service, according to the FCC's definition of broadband, which includes a minimum of 25Mbps download and 3Mbps upload speeds. She said the map allows users to adjust the upload and download speeds to see which areas have access to higher speeds and found that as you increase the speeds, fewer areas have access.

Reyes said the funding and grant options section includes information about federal grants related to expanding broadband access, noting that there is grant funding available that will match state investments in infrastructure or in subsidies for making broadband more affordable. She said she put in some information about State of Iowa opportunities, noting that most are for increasing access in rural areas, but that there are some tax exemptions and smaller grants to keep an eye on.

Reyes also said she included information about how Iowa City Community School District students without internet access at home could obtain a Chromebook or receive internet access. Brenton asked if the school district could be asked if what they have provided has met the need or if there are still students without access. He said he would reach out to the District to see if they had any additional information they would be willing to share with the Commission.

Brenton said he found an article suggesting that the FCC's definition of broadband was antiquated. He said it would be interesting to look for information on the speeds actually needed for conducting various online activities, such as video conferencing, working remotely, distance learning, etc.

Reyes said another important point to stress is that even if the infrastructure is in place, providing access to the internet for residents, it doesn't mean that it is affordable for everyone.

Brenton said he could put something together for a section in the report on mesh wireless technology.

Brenton asked if any of the municipalities who responded to the survey were subsidizing internet service or if they all only built their own networks. Stockman said he recalled those who responded said they built their own, but said he was pretty sure he had heard of a case where a municipality had worked with an existing service provider to use their infrastructure as the backbone of their system, leasing the infrastructure and operating the service themselves.

Brenton asked if the City Council was looking for a recommendation from the Telecommunications Commission on municipal broadband. Stockman said he recalled that the Council essentially asked the Commission to conduct some initial fact-finding and to gather information to review.

Brenton said that with COVID-19, the City's budget is likely more constrained, but that there is likely a much

greater need for broadband access for those who don't have it.

Brenton noted that none of the responses to the survey sent to municipalities with broadband networks indicated that cities were providing much cheaper broadband service than existing providers. He said that even if Iowa City owned the infrastructure, the inexpensive service would essentially be accomplished through a subsidy. He said that there isn't a clear justification for the City to build its own wired infrastructure and that it would take at least three years for a full deployment. Reyes noted that ImOn would be done with its build-out in Iowa City by then.

Stockman said that based on the information provided by the Commission to the City Council, the Council will likely decide to either end its consideration of the topic or to move forward with an official cost analysis for potential solutions. Brenton said that cost analyses can be quite expensive, in the tens of thousands of dollars.

Brenton suggested that rather than looking further into options for building a wired broadband system, the Council would be better off looking into potential options for subsidizing existing connections for low-income residents and people who don't have access to broadband. Reyes agreed that it was a reasonable conclusion based on the information the group had found. Brenton said technology is changing too quickly to recommend conducting a cost analysis for building a traditional, wired system.

Stockman recalled that when the Commission had presented its proposal to the City Council last year, the idea was that either the group would look into the topic of broadband or it would disband. Stockman asked if the Commission would present its findings to Council and be done. If the Council was interested in looking further into subsidies or similar options, Stockman asked if the group would potentially do the work of looking more into what is available.

Brenton said he had wondered about the future of the Commission and said it might make sense for an action committee or advisory board to be created as needed, should the City wish to investigate subsidies or other options, rather than maintaining an ongoing commission. He said that once the Commission presents its findings, the group's mission is complete unless it states a new mission. Brenton asked whether the group would continue to meet until it receives a response from City Council.

Coleman asked if the Commission would, along with a written document, present its findings in person to the Council. He suggested that it would provide an opportunity for dialogue and for questions to be answered more quickly. Brenton suggested that when the group submits its research, it could tell the Council that it could be available to come to a council meeting or work session, but that it wouldn't meet until then. Brenton said they could include in the document that the Commission would wait to hear feedback from the Council and that if Council was interested in meeting, the group could accommodate that - or if Council decided it didn't need to meet with the Commission, the group would meet one final time and disband.

Consumer Issues:

Brenton mentioned the one item in the Cable Complaints report that dealt with availability of fiber-based internet in Iowa City and noted that Coleman had responded to the resident with information about the current state of internet providers in Iowa City.

City Cable TV Office Report:

Coleman said the Cable TV Office had recently been recording concerts for the Summer of the Arts organization for its virtual Arts Festival event. He said that with the current public health crisis, video had become an even more important element for keeping people connected with the community.

Adjournment:

Stockman moved and Reyes seconded a motion to adjourn. The motion passed unanimously. Adjournment was at 6:25 p.m.

TELECOMMUNICATIONS COMMISSION 12-MONTH ATTENDANCE RECORD

		Reyes	Brenton	Stockman	Pierce
06/03/2019 Meeting not held due to lack of quorum.	vacant	-	-	-	-
06/24/2019	vacant	x	x	x	o
	Austin				
07/22/2019	x	x	x	x	resignation
08/26/2019	o/c	x	x	x	vacant
					Paterson
09/23/2019	x	x	x	x	o
10/28/2019	x	x	o/c	x	o
11/25/2019	o/c	x	x	x	o
12/16/2019	o/c	x	x	x	o
01/27/2020	x	o/c	x	x	o
02/24/2020	x	x	x	x	o
03/23/2020 Meeting not held due to COVID-19 pandemic.	-	-	-	-	-
04/27/2020	o/c	x	x	x	o
06/01/2020	o/c	x	x	x	o

(x) = Present

(o) = Absent

(o/c) = Absent/Called (Excused)

ICTC Municipal Broadband Research

Executive Summary

This paper explores why broadband matters to Iowa City residents and examines various metrics that can be used to determine whether current access is sufficient. It provides a summary of results based on a questionnaire sent out to 26 municipalities in Iowa providing internet access, and examines funding and grant options available to help offset the cost of municipal broadband deployments. Lastly this paper then compares the technologies currently available as well as those that will soon be available for providing broadband access to Iowa City residents.

Why Broadband Matters

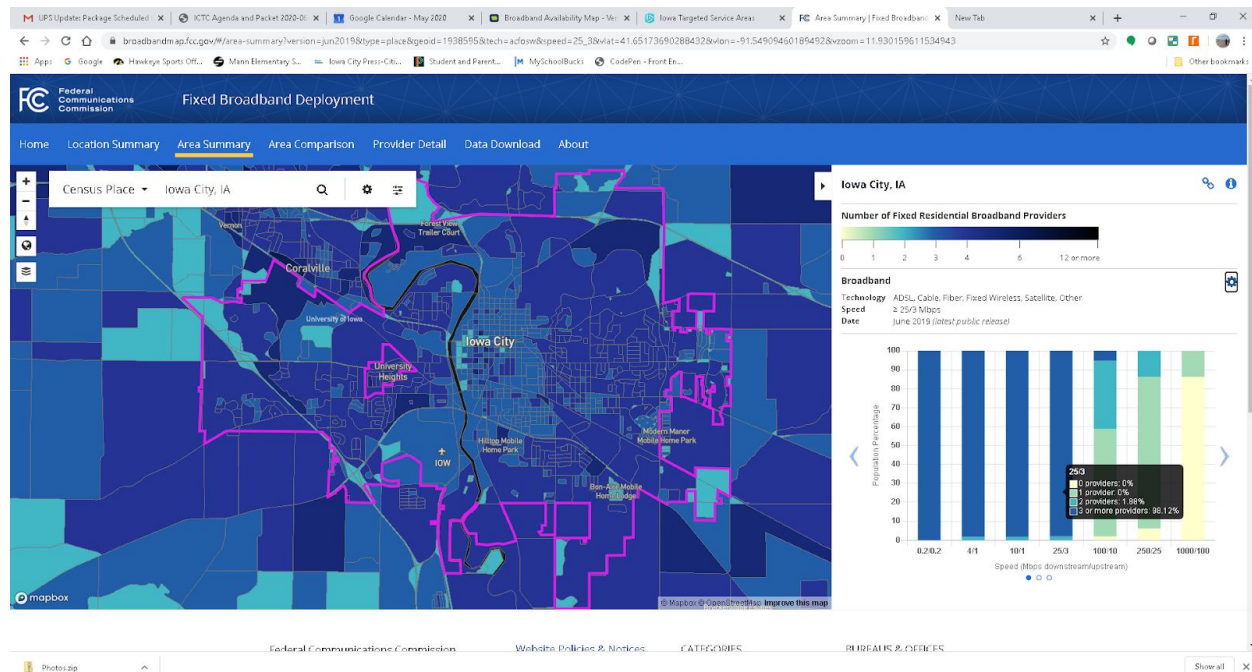
Broadband access has become essential to daily life for many Americans. The inequity between those who have access to broadband and those that don't is commonly referred to as the "[digital divide](#)". There have been a variety of studies linking home broadband access to economic and scholastic success. A [2015 Pew Research study](#) highlights the difficulties those without broadband access have in seeking employment. A [2017 Senate Joint Economic Committee study](#) refers to the lack of home broadband access for students as the "homework gap"; this gap affects 12 million U.S. school-aged kids who are at risk of falling behind their peers, since 7 in 10 teachers assign homework that requires broadband access but nearly 1 in 2 households don't have broadband access. A [2019 research article](#) published in The Journal of Law, Medicine & Ethics goes so far as to call broadband access a public health issue, since broadband access intersects with several social determinants of health.

COVID-19 has made the impact of lack of internet access even more apparent. [The Daily Iowan](#) reports that the Iowa City School District "has provided cellular hotspots to nearly 750 students in grades K-12 and has provided internet service directly to the home through Mediacom to another 130 students", at an estimated cost of \$5,000 to \$7,000. Superintendent Stephen Murley explains the primary issue with students learning from home during the pandemic is lack of bandwidth rather than access to technology. [InformationWeek](#) reports that the temporary shift to work from home due to COVID-19 is likely to become permanent for many. They cite a Gartner study indicating that 74% of CFOs intend to move at least 5% of on-site workforces to remote post-pandemic. Additionally, 17% responded that 20% of those who shifted to work from home will remain there permanently once the COVID-19 crisis has resolved.

Current State of Broadband in Iowa City

The FCC collects detailed information about broadband availability across the US. The data is collected from internet providers through use of a required Form 477, which providers must file twice a year. The latest publicly available data set is generated from June 2019.

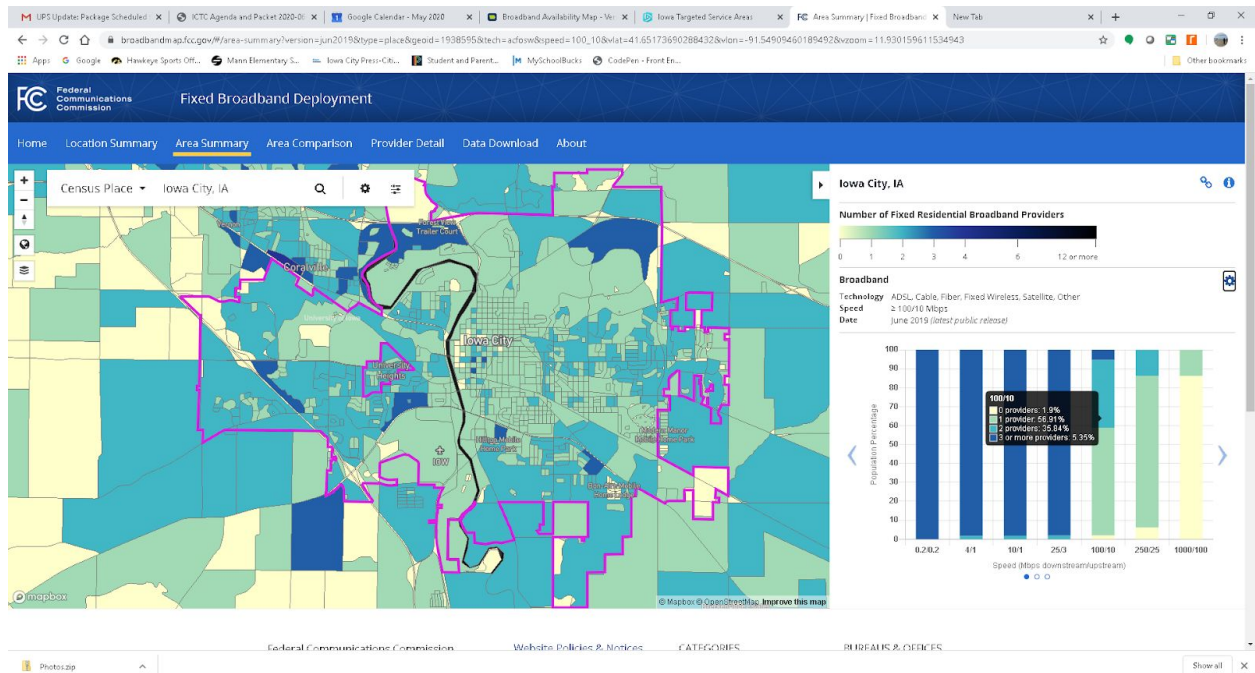
The data is distilled into a searchable map available at broadbandmap.fcc.gov. The figure below shows the results of broadband availability, using the definition of 25 Mbps / 3 Mbps download/upload speed. It shows that all areas in Iowa City do have access to 25/3 Mbps.



Source:

https://broadbandmap.fcc.gov/#/area-summary?version=jun2019&type=place&geoid=1938595&tech=cfsow&speed=25_3&vlat=41.65173690288432&vlon=-91.54909460189492&vzoom=11.930159611534943

Increasing this to the next available data rate shows availability beginning to diminish. 1.9% of households do not have access to 100 / 10 Mbps.



Source:

https://broadbandmap.fcc.gov/#/area-summary?version=jun2019&type=place&geoid=1938595&tech=acfsow&speed=100_10&vlat=41.65173690288432&vlon=-91.54909460189492&vzoom=11.930159611534943

The table below summarizes this data. It shows that the infrastructure for lowest speed broadband is available in Iowa City. However, subscribers may not be able to afford the service in their area. Additionally, higher speeds networks are not available to all residents.

Speed (Mbps, upload/download)	Percentage with 0 Providers
25 / 3	0.0 %
100 / 10	1.9 %
250 / 25	6.1 %
1000 / 10	86.2 %

Source: <https://broadbandmap.fcc.gov>

Other Municipal Broadband Deployments in Iowa

In an attempt to learn from the experience of other Iowa communities who have implemented municipal broadband, a survey was developed and sent to key contacts at each of the 26 municipalities identified as offering broadband service. The response rate was low, with only 4 municipalities responding - Indianola, Osage, Vinton, and Waverly. The full survey results are included in a separate PDF document.

In summary, the four responding municipalities are far smaller than Iowa City with the largest population being reported as approximately 15,000 in Indianola. The cost of feasibility studies were reported as ranging from \$20,000 to \$60,000. Approximate total costs to build the broadband networks were reported to range between \$10 million and \$15 million. Cost to residential customers for 100 Mbps download speed broadband ranged from approximately \$50/month to \$64/month, this is comparable to the cost of existing broadband options available in Iowa City.

Funding and Grant Options

Several grant opportunities exist for building infrastructure, and/or subsidizing access to new or existing networks. These exist at the Federal, State and Local levels.

Federal Grants

The NTIA currently handles about \$4 billion in projects related to expanding broadband access. This includes \$120 million in grants to match state investments.

NTIA no longer has funding available and is not accepting applications for these programs at this time. It could be worthwhile in the future to investigate future grant opportunities if funding is made available again at <https://www.ntia.doc.gov/category/grants>

State of Iowa

The state also has resources to further broadband access including grants, rural initiatives and tax exemptions.

Unfortunately, the state website states that there are no grant opportunities at this time. Future grants will be published on the Office of the Chief Information Officer of Iowa's website at <https://ocio.iowa.gov/broadband-grants>

Municipal Broadband Deployment Options

This is a relative comparison of currently available and soon to be available technologies. A feasibility study would have to be conducted in order to determine whether any of the deployment options would be a good fit for Iowa City.

Currently Available Technologies

Wired

There are three wired options for delivering broadband service - digital subscriber line (DSL), cable, and fiber.

DSL is the transmission of data over copper telephone lines. While this technology does meet the requirements of being designated as broadband, its bandwidth is limited and may not be suitable for the needs of some consumers.

Cable broadband is generally faster than DSL, better suiting the needs of a wider range of consumers. A disadvantage to cable broadband is that multiple consumers on the same network segment share the connection. This shared connection can slow down significantly during peak usage times when multiple residents are accessing the internet at the same time.

The third wired connection technology is fiber optic cable, also known simply as fiber. Fiber uses pulses of light to transmit data. Fiber provides a higher bandwidth and has a lower cost of maintenance. Installing fiber can be extremely costly.

Wireless Mesh

A wireless mesh network is a network consisting of multiple radio nodes connected in a mesh topology, meaning each node can connect to any other node in range. In general there tend to be two major topologies for mesh networks - community (decentralized) and municipal (centralized).

[Wireless community networks](#) are decentralized networks with multiple gateway nodes (those with direct internet access). This model requires internet subscribers willing to share their access. These subscribers can be companies or individuals.

[Municipal wireless networks](#) are centralized networks in which there is an operator acting as a wireless internet service provider. This model is typically architected as a partnership between the local government and a private firm.

Advantages of wireless mesh are they are relatively low cost and can be architected with redundancy. They are low cost because they don't require extensive cabling, which is costly both in raw materials and installation cost. Wireless mesh radios are also relatively inexpensive. Mesh networks can be designed for redundancy, though in a typical municipal deployment there are fewer gateways than in a community network, meaning lower redundancy.

Disadvantages of wireless mesh are reliability and latency. Wireless connections are simply less reliable than wired connections since they are impacted by other signals sharing the same frequency, physical obstacles, and even weather. Wireless mesh networks can also have significant latency depending on the number of nodes between the end user and a gateway.

Technologies Being Developed

There are a couple significant technologies that are being actively developed at this time that have the potential to offer broadband connections without the need for conventional infrastructure.

5G Wireless

The first technology is fifth generation cellular networking, commonly referred to simply as [5G](#). 5G networks operate on up to 3 frequency bands, low, medium, and high. The three bands are deployed depending on desired bandwidth and coverage:

- Low-band 5G – download speeds of 30-150 Mbps, similar frequency range and coverage as current 4G cellular networks.
- Mid-band 5G – download speeds of 100-900 Mbps, higher frequency than 4G with each tower covering up to several miles radius.
- High-band 5G – download speeds of up to 1000 Mbps (1 Gbps), much higher frequency than 4G and due to lack of signal penetration will only be deployed in dense urban environments and areas where large crowds of people are expected to congregate.

Based on these descriptions Iowa City and surrounding areas should expect to see some combination of low-band and mid-band. Although low-band download speeds qualify as broadband per the FCC's definition (set at 25 Mbps download/3 Mbps upload), [some argue this is too low](#). An [Ars Technica article](#) from 2019 makes the argument that 5G does have the potential to replace home broadband, depending on the type of deployment. 5G in various forms has already been deployed in many major population centers, and according to some carriers is already available in [Des Moines](#) and [other parts of Iowa](#). While there's little doubt that 5G will provide increased cellular network coverage and speed for most Americans, when that coverage will include Iowa City and what speeds at what cost are yet unknown.

Low Earth Orbit Satellite

The other technology is low earth orbit (LEO) satellite, the biggest player in which is SpaceX's Starlink. LEO satellite differs from conventional satellite connections in that the satellites orbit the earth at a much lower altitude, significantly reducing latency. This technology has the potential to provide coverage to hard to reach areas, including rural areas in which traditional wired infrastructure is far too costly to deploy.

SpaceX has stated that 400 satellites are needed for minimal coverage, and at least 800 are needed for moderate coverage. On April 22 of this year [SpaceX launched 60 satellites](#) to bring the total number in the Starlink constellation to 422. Fewer details are available about the Starlink service, though it has been tested by the U.S. Air Force Research Laboratory since 2018, and [has demonstrated a data throughput of 610 Mbps](#) to a U.S. Military aircraft in flight. As of last year, SpaceX has claimed they will start offering the service to consumers in 2020. Pricing has not been announced, though SpaceX COO Gwynne Shotwell has specifically mentioned millions of people in the U.S. pay \$80 per month to get "crappy service", leading some to speculate the service could cost around that amount.

Municipal Broadband questionnaire (Responses)

Name of municipality	Your name	Your job title	Population	Number of high-speed broadband Internet providers (excluding your own service)
Vinton Municipal Utilities	Tom Richtsmeier	General Manager	5257	
Osage Municipal Communications Utility	Brandon Halsne	Telecommunications Supervisor	3500	1551
IMU Fiber	Kurt Ripperger	Communications Superintendent	15000	2
Waverly Communications Utility	Jeff Magsamen	Telecom Director	10,000	2

Municipal Broadband questionnaire (Responses)

What are the primary factors that led your municipality to consider building its own broadband network?	Approximate cost to build your broadband network	Approximate project duration from first dig to first customer	What factors contributed to the feasibility of creating your own broadband network?	What were the biggest hurdles your community had to overcome in order to get the project moving forward?
No incumbents with fiber infrastructures that provide true high speed internet	\$10 million			
			Being able to leverage bonding using the electric utility.	
The need for high-speed broadband connections throughout the entire town	We bonded 15 million for outside plant, capital expenses and working capital.	14 months		
Economic Development, Remote reads of Utility Meters(electric, Water, etc.) Poor system availability and customer service from incumbent providers,	\$15M	1 Year	Cost, Economic Development, Customer Service	Time and Money. The community of Waverly approved a Communications Utility in 2000. The Board of Trustees did not provide the go ahead until 2014. The gap was primarily due to the high infrastructure costs. Costs came down and community feedback regarding incumbent providers drove the Board to approve the formation and project to activate services for Waverly Electric customers

Municipal Broadband questionnaire (Responses)

Monthly cost for residential customer for service around 100Mbps download	Who manages the operation and customer service for your broadband network?	Is operating your broadband network profitable or is it also supported by funding other than customer payments?	If your municipality conducted a feasibility study before deciding to construct its own network, what was the approximate cost?	How has accessibility been impacted by the implementation of municipal broadband?
			\$40,000-\$60,000	
49.95	All operations are done in house	Yes, all operations are covered by customer payments.		Provided competition, as well as provided service to areas that otherwise would not be serviced. Between our HFC, FTTx, and Fixed wireless platforms, Osage and the surrounding rural areas have greatly benefited.
64	I'm in charge of operations and we have a customer service manager who is charge of customer service	It is designed to be self sustaining		
60	Waverly Utilities	We expect to be profitable in 2020	\$20,000-\$40,000	Waverly Utilities has over 2,800 residential and business broadband customers. Any customer in our Electric Territory can get our broadband services.