TELECOMMUNICATIONS COMMISSION
Thursday, August 27, 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://us02web.zoom.us/meeting/register/tZ0uceivrz4vHtFH8rPwDeEGijVgOSoysGed 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 893 6171 5545.

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. Election of officers
6. Council request for information regarding broadband affordability and access
7. 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)

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

Minutes
Iowa City Telecommunications Commission
June 29, 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 June 1, 2020 minutes as presented. The motion passed unanimously.

Announcements of Commissioners:
Brenton noted that his three-year term with the Commission was ending. Coleman said that James Pierce, who had previously been on the Commission, would be joining the group starting in July 2020.

Short Public Announcements:
None.

Municipal broadband research and report:
Brenton said he and Stockman had edited and put together the report document, found in the meeting packet, for the City Council. He said they didn't feel that a recommendation by the Commission was necessary. He said the report would provide the Council with information so that they could decide the best course of action.

Brenton said they did not include the notice from the Iowa City Community School District (ICCSD) in the section about the current state of broadband in Iowa City since the ICCSD was mentioned in the "why broadband matters" section.

Brenton noted that the federal and state grants that had been identified were not currently accepting applications and that funding was not currently available, however, this information was stated within the report.

Brenton said the report covers the bases of all of the broadband options that are out there, including wireless mesh, 5G, and low earth orbit technologies.

Reyes said the report did a good job of summarizing the Commission's previous discussions.

Coleman asked if the group would want to consider adding a closing statement to the report and referred to

an earlier discussion, where the Commission had suggested the idea of mentioning to the Council that they would be available to discuss the report further. Coleman said he would check with Assistant City Manager Ashley Monroe about the best way to present the report document to the City Council, whether by simply putting it in an upcoming information packet or by Commission members presenting it at an upcoming meeting.

Brenton said the next step after submitting the report document to Council was to wait to hear back from them. Brenton wondered if that meant the Commission would not need to meet until it hears from Council.

Brenton said he envisioned a few potential responses from Council that might be received. One is that members of the City Council could express interest in setting up an advisory board. Another response could be that they decide to proceed with a cost assessment. Another could be that they come to a decision to not pursue the topic further at this time.

Stockman suggested the group provide the Council with the three options in the report's conclusion. He said that if the Council is interested in pursuing things further, the Commission would likely play some kind of role.

Brenton said he added page numbers to the document during the meeting and added the following statement at the end: "*This concludes the ICTC research into municipal broadband. The ICTC will wait for feedback from Iowa City City Council on what the next step is and whether it should involve the ICTC."*

The Telecommunications Commission voted on whether the document, after implementing the changes discussed, was ready to be sent to the City Council. All members of the Commission who were present voted in favor of sending the amended document to Council.

Adjournment:
Stockman moved and Reyes seconded a motion to adjourn. The motion passed unanimously. Adjournment was at 5:50 p.m.

TELECOMMUNICATIONS COMMISSION
12-MONTH ATTENDANCE RECORD

		Reyes	Brenton	Stockman	Pierce
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
06/29/2020	o	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

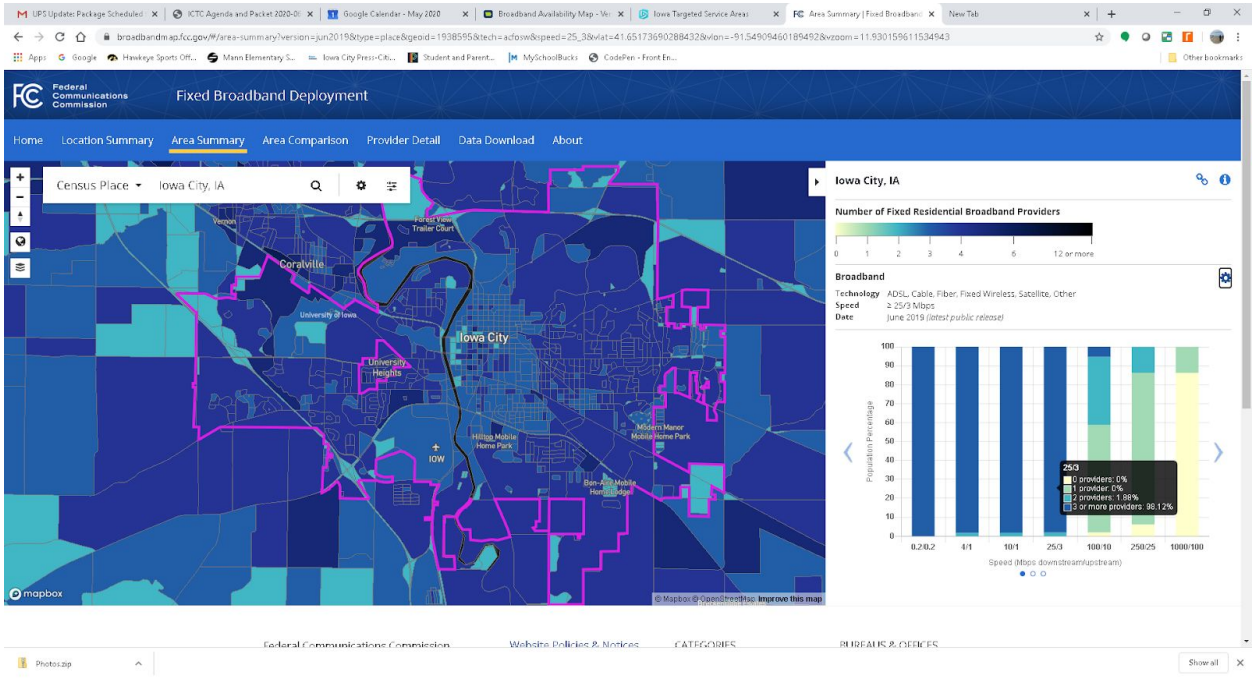
Broadband access has become essential to daily life for many Americans. The inequity between those who have access to broadband and those that don't is commonly referred to as the "digital divide". There have been a variety of studies linking home broadband access to economic and scholastic success. 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

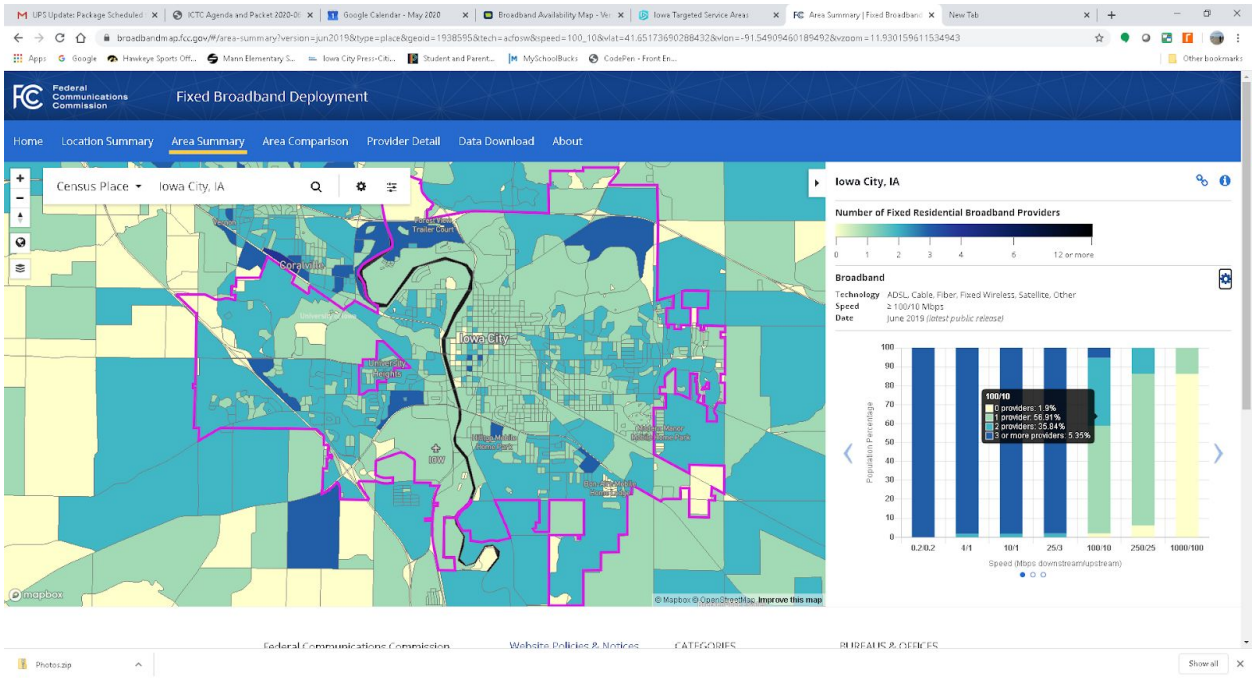
The FCC collects detailed information about broadband availability across the US. The data is collected from internet providers though use of a required Form 477, which providers must file twice a year. The latest publicly available data set is generated from June 2019.

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 Mpsps 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=acfosw&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=acfosw&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 Gwyne 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.

Conclusion

This concludes the ICTC research into municipal broadband. The ICTC will wait for feedback from Iowa City City Council on what the next step is and whether it should involve the ICTC.