ITEM #__22___

Staff Report

COMMUNITY INTERNET IMPROVEMENTS

November 27, 2018

BACKGROUND:

At the City Council's 2018 Goal Setting Session, the Council adopted an objective to explore possible improvements in internet options for residents and businesses related to availability, reliability, cost, speed, customer service, and policy (e.g., net neutrality, broadband privacy).

The Federal Communications Commission (FCC) defines "broadband internet" as speeds exceeding 25 megabits per second (Mbps) download and 3 Mbps upload. The speeds offered by service providers in the Ames community vary from location to location. In some locations in Ames, the FCC indicates download speeds up to 1 Gbps (or 1,000 Mbps) are available. However, the speed of a particular customer's connection can be limited from one location compared to the next, depending on the infrastructure in place, the customer's own equipment, and—potentially—the activities of other users in the area. Therefore, the theoretical, or advertised speeds of an internet service provider can often be significantly greater than a user's actual speeds.

As internet users access increasingly greater volumes of data, greater speeds are required. For example, Netflix offers guidance regarding the minimum speeds recommended to access its content: 3 Mbps is recommended for standard definition quality streaming, 5 Mbps for high definition quality, and 25 Mbps is recommended for Ultra HD quality.

Home and business internet in Ames is provided by two main service providers: Mediacom, which offers cable internet service, and CenturyLink, which offers digital subscriber line (DSL) service. A third provider, ICS Advanced Technologies, provides internet services primarily for multifamily housing units throughout the community. Other providers generally have limited service in the community.

The ability for a customer within the community to access high-speed internet can dramatically vary depending on the particular location of that customer. Resources exist to identify the general internet providers that can service a location, such as the FCC's Broadband Map (https://broadbandmap.fcc.gov/#/). However, even this map indicates service providers who, when contacted for further details, often do not actually serve the selected address, or cannot serve the selected address with the advertised service levels.

City staff has inquired of the two major existing internet providers (Mediacom and CenturyLink) regarding whether maps can be provided outlining 1) the areas of the Ames community that have access to service, and 2) the available speeds of service where it

exists. This was in an attempt to better identify where gaps exist of residents who are unable to access any high-speed internet service.

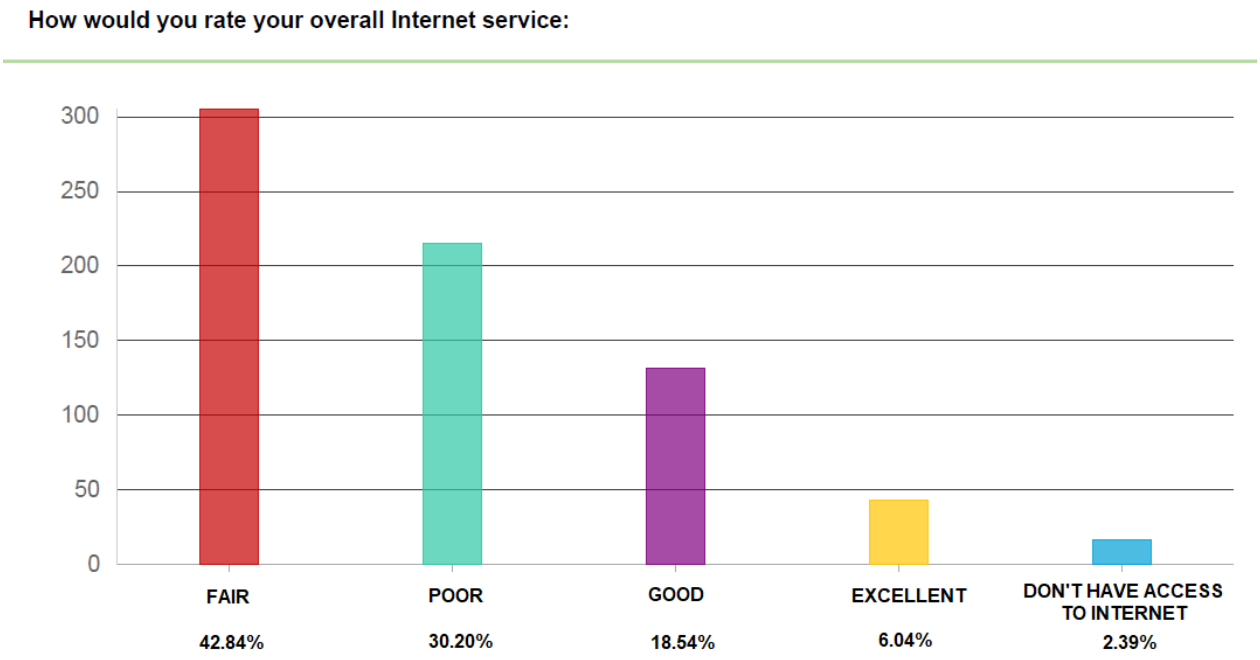
City staff met with Mediacom representatives on June 8th to request this information. Additionally, staff asked Mediacom to outline what the impediments were to providing access more universally through the community, and to identify any unique policies or initiatives in other communities within its market which have helped to improve service and satisfaction. Mediacom representatives indicated they would respond to the City's request for the information, and despite numerous attempts to gather it, City staff has not received a response with this data. Representatives from CenturyLink have not responded to a request for information or a meeting with City staff.

RESIDENT FEEDBACK:

In response to a workshop held in 2017 with local internet providers, the City Council suggested gathering data from residents to help providers understand the potential demand for internet service in a way that could include geographic information.

Online Survey:
City staff created a survey linked to the City's website that mapped respondent location, and also collected information about participant satisfaction levels with internet access, dependability, reliability, and options. The survey, which was on the website in September 2017, attracted more than 700 participants with 54% reporting to be Mediacom subscribers, 35% from Century Link, with the remaining 11% selecting other providers.

Nearly two-thirds of participants (64%) were not satisfied with their internet speed and 70% were unsatisfied with their internet reliability. Only 36% expressed satisfaction with customer service, and 64% were not satisfied with cost. When asked if they were satisfied with their internet options, 85% of respondents said no. When asked to rate their internet service, 73% responded fair or poor, with the most common complaints being unreliable (34%) and too slow (31%).



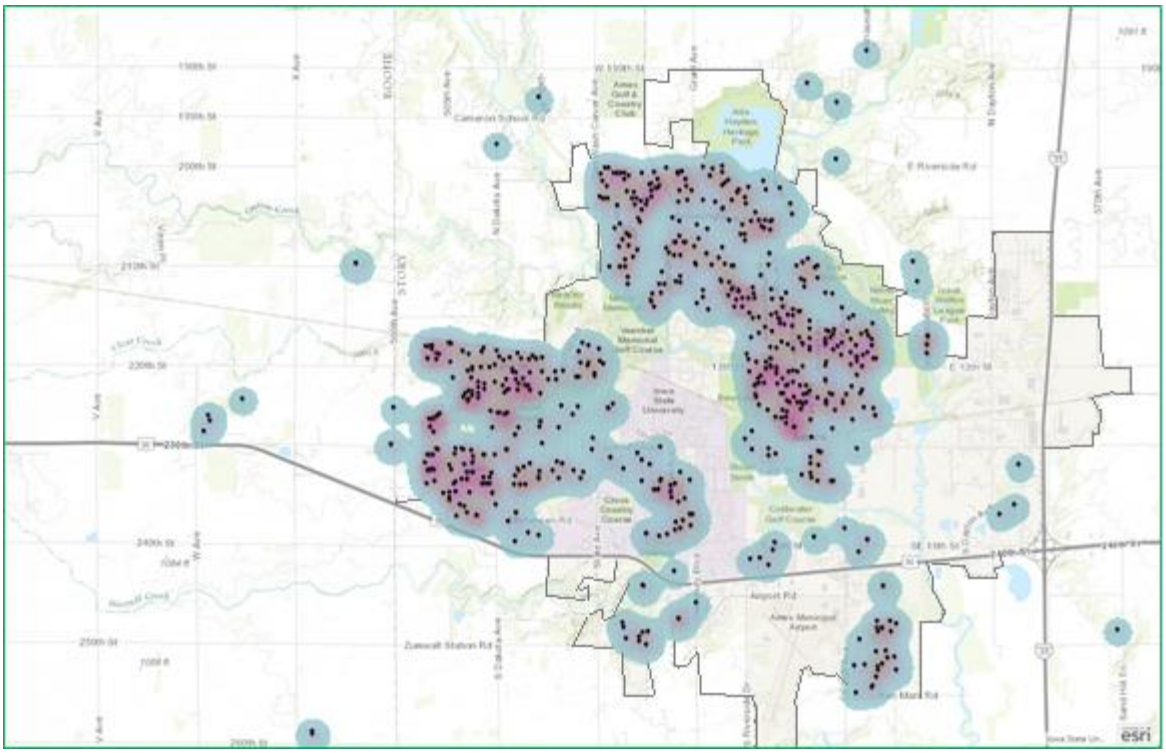
Monthly internet fees ranged from $50 to $75 for 42% of respondents, with 30% reporting $30 to $50. Only 15 percent were paying more than $75 per month. When the 712 respondents were asked what amount they would pay to solve all internet concerns, 17% were willing to spend $0-$30 per month, 26% were willing to spend $30-$50 per month, 29% were willing to spend $50-$75 per month, and 14% were willing to spend more than $75 per month (9% selected "other" and 5% had no response). Some comments included:

- *"I think the reliability for internet and phone should be a service component and not necessarily an added cost to make sure it is reliable. If we had more choices and competition in providers, we might get better."*

- *"Right now I pay for 7 mbps, but I get closer to 1 mpbs or less. I'd like to get the amount that was advertised. What I pay now ($55/month) should get me much faster internet."*

- *"I pay good money every month to have a good internet package that barely ever works. Mediacom pretends like nothing is wrong. Meanwhile that increase rates every year. For what? Not for faster internet that for sure. Need the whole city on fiber optic."*

Several participants who responded to the survey did not actually live within the Ames corporate limits. When looking at those respondents within Ames, complaints appear to be coming from all parts of the City. In addition, accessibility can be inconsistent from house-to-house, with respondents on the same street saying they did and did not have a choice of providers. Each dot on the map below represents a survey respondent.



Additional comments include:

- *"We live in the heart of west Ames and Mediacom refuses to install cable for unknown reasons."*

- *"I have no problem with the service of my current internet provider (Mediacom), but they are my only viable choice. Other providers' maximum speed is not fast enough. There can be no competition regulating prices if there is only one viable option."*

- *"This should be a utility service at least. The internet is a necessity for anyone in school, holding a job, or seeking a job."*

Summary information from respondents to the survey are attached to this report.

Focus Group:
In October, City staff organized a focus group of residents to share their experiences and concerns regarding accessing internet at their homes in Ames. The focus group was organized for those Ames residents who have contacted Council Members regarding their internet concerns. Although staff reached out to approximately two dozen individuals, only twelve attended the hour-long focus group.

Seven of the participants specifically mentioned that they work from home and internet reliability was critical for their jobs. Two users are software engineers/developers; two work for Iowa State University and use VPN (Virtual Private Network) to download large

files; one does freelance editing and uploads/downloads large files; and another user does stock trading and his wife audits government health documents and requires a secure remote server.

The Mediacom users said they selected Mediacom as their internet provider primarily because they believed it was the only company that offered the high speed internet they desired. Many consider their selection of Mediacom as forced due to a "monopoly." One participant, who works in real estate, noted there are new developments in Ames with no internet accessibility and no options. His concern was not his own internet connection, but with business decisions being made by a company with no competition and no incentive to invest in infrastructure.

- *"Providers are behind the curve. The City could be involved in order to connect developers with the ISPs (Internet Service Providers) so we know internet would be available. We need to extend the nodes and be ahead of the curve – not behind it. Unfortunately I see business decisions being made that result in poor customer service."*

- *"Fast developing areas are skipped over for internet"*

Nearly every Mediacom user expressed that they were unhappy with their internet reliability and customer service. Additionally, several said they were frustrated at the constant "game" of negotiating a lower price after a rate increase.

- *"If you threaten to quit, they will negotiate with you. That doesn't seem right."*

Due to their internet needs, outages for many focus group participants were not just inconvenient - internet reliability affects their jobs. When outages did occur, the Mediacom users were frustrated at the lack of effective customer service.

- *"Sometimes my internet goes down on the weekend. I have no service, and I have to call and tell them it's down, but all I get is a busy signal."*

- *Multiple times a week, my internet stops working, and Mediacom blames me. I shouldn't have to tell them I don't have internet. They should know when I don't have internet.*

- *"I do trading - sometimes rapid fire transactions - and reliability is huge. When we don't have it, there are big problems."*

The entire group rallied around the idea that internet should be considered a utility – no different than electricity or water. In fact, several participants said they would prefer to be a day without water rather than internet. All participants mentioned the growing need for connectivity including banking, shopping, healthcare, research, homework, and the huge growth in IoT (Internet of Things) such as appliances, thermostats, child/pet monitoring, and security.

- *"Essential needs are being met by the internet. As the demand keeps growing, reliability grows more important."*

The group believed internet offered in Ames is inferior to residential service offered in other places, and that there are needed improvements to infrastructure. It was suggested the City of Ames consider implementing a "community standard" for Internet that would require certain technical minimums for service. Overall, the group consensus was that lack of fast, reliable internet was affecting the quality of life for Ames residents and was becoming a factor in where people are opting to live.

It should be emphasized that both the online resident survey and the focus group provide perspectives from people who self-selected to participate and are generally dissatisfied. Therefore, the results may not accurately reflect the feelings of the entire Ames community. More meaningful feedback should come from randomly selected internet users, designed to represent the larger community.

MODELS OF CITY INVOLVEMENT IN INTERNET SERVICE:

The lack of clear, publicly available data regarding the ability for each property within the community to be served by private internet providers makes it difficult to determine where non-served properties are. This in turn makes it difficult to determine what options might exist to improve access to service. This situation appears to be common in other communities where few private providers compete to provide service.

In response to this, some communities have chosen to enter the market as partners or service providers. Outlined below are four business models municipalities have utilized to develop their own broadband network and or to encourage the deployment of broadband services. Each model presents its own opportunities and challenges. It is important to note that these models exist on a spectrum, and communities may combine aspects of various models to build their network and/or to encourage the deployment of broadband in their communities.

Retail Model:

In the retail model, the municipality provides services directly to end users. Such action requires the municipality to finance, build, and maintain the physical network infrastructure. The municipality competes with existing providers (if any) by managing the pricing, speed, customer service, and coverage. Since this model requires the most resources, municipalities that typically undertake this endeavor have their own electric utility and usually provide a type of FTTX (Fiber to the premises/home/building) system.

This model offers the City the most control over internet access, service, speeds, and fees for the customer. It requires the largest infrastructure investment, therefore making it the costliest model. In addition, unlike other city utilities with protected service territories, the model will require the City to compete with private sector providers. Therefore, this model presents the greatest financial risk to the City.

Comparable communities that have implemented this model include Wilson, NC (Greenlight), Ocala, FL (Ocala Fiber Network), and Taunton, MA (TMLP).

Wholesale Services Model:
Under the wholesale model, the municipality builds and operates a network for use by private sector internet service providers. The private providers pay for the use of the City-owned network infrastructure, which they use to reach their individual customers. Other agreements regarding who bills customers and terms of payment may also be negotiated. The types of agreements under this model vary and are unique to each municipality.

In this model, the investment by the City is less than in the retail model, and also presents lower financial risk since there is not direct competition with private sector providers. This type of partnership limits the control the municipality has over price, speed, customer service, and coverage. In addition, there is no guarantee that the private sector providers will want pay for the right to utilize the City-owned infrastructure, rather than build and own the network themselves.

Comparable communities that have implemented this model include Eagan, MN (AccessEagan), Palm Coast, FL (FiberNET), and Centennial, CO (FiberWorks).

Franchise Model:
In the franchise model, the municipality provides private service providers access to conduit and to the public right-of-way in exchange for a franchise fee. In Ames, there is a franchise agreement with Mediacom for cable television (which shares much of the infrastructure Mediacom uses to provide internet services to its customers). However, there is no franchise agreement in Ames with providers for internet service.

In this model, the municipality has little to no control over coverage, prices, speeds and customer service. The City also has little to no investment cost. It should be noted that in Ames, there are already few policy barriers to using the right-of-way for private utilities. For example, no permit fees are charged to place non-City utilities in the right-of-way. Right-of-way users are only required to move their lines out of the way when they interfere with a City project in the right-of-way. In other communities, it is more common to reserve the right-of-way for City utilities or charge permit fees. In some communities, utilities such as telecommunications are required to obtain separate easements at their own cost. Therefore, this model would not likely make a substantial impact on internet access in Ames.

An example of this model is the City of Lincoln, Nebraska agreement with Allo Communications.

Community Ownership and Deployment Model:
Under the community ownership and deployment model, the municipality along with other community anchor institutions (e.g. university, hospital, school districts, DOT) co-invest to create a broadband network. A non-profit is typically formed from this coalition to oversee

the funding, deployment, and operations of the network as well as act as the internet service provider.

In this model, the initial investment and the risk is shared by the participating institutions. Local control of services is maintain by the community. However, identifying other entities with the same interest and willingness to finance a city-wide network may be difficulty.

An example of this model is the collaboration between the University of Illinois and the cities of Urbana and Champaign (Urbana-Champaign Big Broadband (UC2B))

LEGAL AND FINANCIAL ISSUES OF CITY-OPERATED INTERNET UTILITY

Implementation of a retail or wholesale internet model as described above would likely take several years for substantial build-out of a network. Even then, there is no assurance that a municipal utility would be able to provide better service at a lower price compared to private providers. The steps required and some of the issues related to a City broadband utility are outlined below. These steps mostly apply to the retail model, but some are also applicable to a wholesale utility model.

Establishment of a Municipal Broadband Utility

Before any steps could occur towards establishing a City-owned utility through the retail or wholesale models, a feasibility study would need to be conducted. Such a study would utilize professional expertise to identify the market for the various potential models of City-owned internet service, and to determine the thresholds of customers required to make the operation financially feasible.

Following a feasibility study, if the Council chooses to establish a broadband utility, Iowa law requires a referendum election, which may proceed on a simple majority. If the referendum fails, the ballot question may not be submitted to the voters again for a period of four years. The referendum can be called by a resolution of the Council or by the submission of a petition by eligible electors of the City equal to or greater in number than 10 percent of the number who voted in the last preceding regular City Council Election (Iowa Code 362.4). The structure of the governance of the broadband utility would also need to be decided (i.e., governed by a separate board or under the direction of the City Council).

Capital Funding of a Municipal Broadband Utility

Establishing a broadband utility requires significant capital investment, and there are limited sources of funding for the City. General Obligation Bond funding requires passing a referendum and pledging of property taxes. A referendum to issue bonds requires 60 percent voter approval. The nature of a municipal broadband utility is significantly different than other City utilities. It is not an “essential service” like water, sewer, or electric and the City is not the only provider of service within our service territory. Because of this, it is highly unlikely that that City would be able to issue revenue bonds backed by the revenue of a municipal broadband utility.

The most practical financing option would be negotiated direct placement of debt or a bank loan. This type of financing requires a significant portion of capital for the new utility to be in the form of contributed equity from the City. Some communities have taken advantage of their electric utility and piggybacked on the electric utility's plans to build a city-wide network for services such as smart metering or smart grid technology. The remaining funds needed to complete an internet network would need to be borrowed for a municipal broadband utility.

The Council should note that internet infrastructure deployment that relies on the electric utility is limited to the electric service territory. In Ames, while the electric service territory covers most of the community, it does not extend to all Ames residents. In addition, there are no immediate plans to implement smart metering technology on a large scale for Ames Electric Services customers, and it is likely that if pursued, smart metering could be accomplished in less costly ways without fiber infrastructure.

Funding the Operations of a Municipal Broadband Utility

Iowa Code section 388.10 strictly prohibits any operating subsidy for a municipal utility providing telecommunications services, which is defined by Iowa Code to include internet access services. A City that owns and operates a municipal broadband utility is required to prepare and maintain records to show the full cost of providing services including the cost of capital. The City must also adopt rates that reflect the actual cost of providing services. Any City operating a broadband utility is also required to make an annual certification of compliance with the Code section and review of compliance must be part of the annual audit. This could create financial and compliance problems for a utility with competitive service providers.

Net Neutrality

The City Council has also inquired about improvements to customer privacy and net neutrality. Net Neutrality required that internet service providers (ISPs) like AT&T, Verizon, CenturyLink, Mediacom, or Windstream treat all network traffic equally, not slowing or speeding up, or charging differently for any particular sites or content.

On February 26, 2015, the FCC's Open Internet Rules (Net Neutrality) went into effect, with the FCC designating the internet as a telecommunications tool. These rules prohibited internet service providers from blocking, throttling, or paid prioritization of internet traffic for both fixed and mobile broadband services. On December 14, 2017, the FCC voted to reverse the Net Neutrality rules, and on June 11, 2018, the Net Neutrality rollback officially went into effect.

The FCC repeal of Net Neutrality has the potential to turn the cable and telephone companies into gatekeepers creating fast and slow lanes on their fiber that connects to internet content. Although a locally operated internet infrastructure could be operated in a neutral manner, that infrastructure must connect to infrastructure operated by other internet service providers, who may provide preference to certain internet traffic. **Therefore, eliminating the preference when internet traffic reaches or leaves a local**

ISP may have little impact on net neutrality if the backbone of the system sets preferences on traffic.

POTENTIAL CITY POLICIES TO IMPROVE INTERNET SERVICE IN AMES:

Short of pursuing one of the four internet service models reflected above, the City could explore policies that encourage private providers to provide service in the community. These could include:

1. **Accommodating internet fiber cabling in City electrical conduit**

   When new underground electrical service is extended to Ames Electric Services customers, the conduit used could provide space for private internet providers to run fiber optic cables. Fiber optic cable is not affected by electrical interference, and the cost of putting separate conduit in the ground is a substantial cost barrier to extending internet infrastructure throughout the community. **Because this would be a new practice for Electric Services, there would need to be further study of the methods used to provide fiber access to electrical conduit.**

   The City would have to determine whether to charge internet providers a fee for accessing the conduit or if the cost should be absorbed by the Electric utility. In addition, this service would not improve internet access to residents who live within Ames but outside the Ames Electric Services territory.

2. **Reduce or eliminate pole attachment fees for internet fiber cable**

   Electric Services charges $13.05 per pole, per month for a private service provider to attach cabling to a utility pole. There are approximately 6,200 City-owned poles in the community. Revenues from pole attachment fees assist with the cost to maintain and replace poles. In instances where attachment of more cables to the poles would cause the cables to be too close together or too near the ground, the service provider requesting the attachment is required to pay for the over-sizing of the pole. Telecommunications providers and other electric utilities use the City's poles to carry their cables.

   The City could explore whether reducing or eliminating the pole attachment fee would encourage internet service providers to fill in service in areas where it does not exist. Staff would need to explore what affect this would have on the Electric utility's finances and whether any state or federal regulations would apply to this policy decision. Staff would further need to explore whether it would be permissible to charge a different fee for a telecommunications provider compared to another electric provider.

3. **Implement subdivision requirements to provide high-speed internet service**

   The City's subdivision code identifies the expectations for a developer to bring streets, sewers, water, streetlights, and other infrastructure into an area. The City Council could require that a developer also provide access to internet service as a condition of subdivision. Mediacom representatives have indicated that in most developments, the developer contacts Mediacom to arrange for infrastructure to be installed when utilities are being installed.

   Requiring some type of high-speed internet access to be installed by the developer would ensure that new subdivisions in the community are able to be served. The City could explore setting standards for internet speeds and infrastructure to be installed. This approach would not resolve gaps in internet access in existing subdivisions, and it may increase the cost to provide housing in the community (if the assumption is that the developer would not already ensure internet access as part of the project).

NEXT STEPS:

Now that this initial background report has been provided, direction from the City Council is required. The core questions for the Council to answer are:

Does the City Council wish to pursue community internet improvements as a major policy initiative at this time?

If yes, the Council will need to answer further questions regarding what service model(s) to explore, what City policies to consider amending, and/or what other information is needed to assist the Council in deciding its next steps?

Should the Council choose to explore a retail or wholesale internet service model, the initial steps should be to 1) determine the cost of a feasibility study, 2) allocate funds for the study, 3) prepare and distribute a Request For Proposals for a study, and 4) hire a consulting firm to conduct the feasibility study to determine the market, costs, revenues, and other information that must be identified before a final decision is made by the City Council.