Oak Park

Memorandum

TO: Kevin J. Jackson, Village Manager

FROM: Alvin Nepomuceno, Information Technology Director
Dan Yopchick, Chief Communications Officer
David Baker, Civic Information Systems Commission Chair

FOR: Village President and Board of Trustees

DATE: February 24, 2023

SUBJECT: **Assessment of Community Broadband Access**

During the final months of 2022, as part of its annual work plan, the Civic Information Systems Commission (CISC) explored the feasibility of several ways that Oak Park residents can realize faster, affordable and more equitably available broadband internet. The commission's discussion addressed the 2021 Village Board adopted goal of exploring affordability of internet services and private vs. public operated utilities.

Among the available options discussed were the leveraging of the village's updated fiber WAN infrastructure, along with wireless solutions such as community Wi-Fi and the newly expanding 5G home service offered by private providers. Investigation of internet solutions offered by various taxing bodies in Oak Park was also considered, in addition to improving access to incumbent providers.

No motion was taken on a single recommended path that the Village should take to achieve internet affordability and equity, but a general consensus was reached in terms of how Oak Park should prioritize these and other connectivity options moving forward.

Wireless Hotspot Lending

Early on in discussions, it was discovered that some Oak Park taxing bodies offer free or affordable broadband access solutions to eligible residents. The Oak Park Library offers free wireless hotspot internet access on a first-come, first-served basis with no income restriction. According to library staff, demand is outpacing available funding for this program. School District 97 offers similar hotspots to students eligible for free lunch programs, while District 200 offers internet access through Comcast affordability initiatives. Demand also appears to be high at D97 according to their IT staff. No usage data was obtained from District 200.

According to the library, borrowers are generally using their devices 24/7, which is not the intended use (typical usage is 3-4 hours at a time). This type of continuous usage has forced the library to throttle back data speeds to contain costs, which creates a situation where user speeds may be insufficient for daily needs. Because of the unconventional device usage and long waiting list at the library, and the high device demand at D97, it appears that there may be an overall internet access equity problem in Oak Park. Measurement metrics would need to be clearly defined and studied in order to determine the extent of any Village-wide inequity.

Overall, the CISC believes that continuation or even expansion of these library and school programs would be very beneficial for the village, but feels it is not appropriate as a Village advisory body to comment on how other taxing entities should implement or alter their programs. Notably, the Oak Park library director has mentioned that she might be willing to share costs with the Village in a broader internet access equity program, stating also that the library is currently equipped to only support residents with temporary internet that arises from a gap in service (i.e., as the result of a move).

The commission feels that any intergovernmental relationship should be pursued by direct communication between each governing body, without the involvement of the CISC. Consideration of whether multiple taxing bodies should take on the task of funding these hotspots, versus creating an environment where just one body funds this type of program, is a philosophical discussion that the Village Board may also want to have.

Oak Park Fiber WAN Scenarios

In 2020, Oak Park built a fiber WAN infrastructure that was designed to improve Village IT network redundancy and reliability, as well as the bandwidth needed to support current core systems and the interconnectivity of village satellite locations. Extra capacity was added to support connectivity for other village governing bodies' networks, and School District 97 is currently leasing bandwidth on this infrastructure for a fee to the village.

An additional benefit of this infrastructure is that it can accommodate more fiber expansion, allowing access to competing internet providers in order to better serve Oak Park residents. Revenue would be available to the village via a leasing arrangement, and residents would enjoy more provider choice. The Illinois Century Network (ICN), a technology office affiliated with the State of Illinois that makes community broadband recommendations to municipalities, has acknowledged that pursuit of this arrangement would be a positive investment for Oak Park to make, given the location of our fiber and the small incremental cost to add additional fiber relative to what the total cost to build this infrastructure was in 2020.

ICN reasoned that private internet providers would most likely be willing to pay for access to Village fiber while assuming the additional "last mile" cost to connect fiber to residents' homes. Under this cost structure, ICN believed new providers could remain competitive. Furthermore, ICN would then assist these providers with their final required "middle mile" links from the Oak Park network to the broader internet.

In considering this scenario, the CISC remained hesitant to recommend investment to support this model without a sense of the number of providers that might find this approach cost effective. There is also little understanding of the total return the Village could see on this infrastructure investment through the leasing of its fiber. A feasibility study might more accurately answer these questions, though it is uncertain how such a feasibility study would look and how much it would cost.

As an alternative scenario, the CISC considered five communities where the village government was the prominent ISP, in order to better understand a municipal-managed internet provider model. Although many of these communities reported significant resident support of local government investment in terms of more improved speeds (gigabit speeds in most cases), competitive rates and quality of service, a common thread among each case study was the significant up-front cash investment required, on the order of tens of millions of dollars, which was typically financed by municipal bond issues.

The CISC concluded that under this scenario, the buildout costs to provide connections to each residence and all multi-family dwellings via links to the fiber WAN would probably be the most cost prohibitive to Oak Park, both in terms of the significant infrastructure expansion and the cost of new IT and support staff to manage the day-to-day operations of the Village ISP. While this option may be a noble investment in terms of resident benefits, the current tax environment in the village would make municipal-managed broadband a difficult sell to residents in the near term, whether it be fiber expansion or even a community-wide wireless solution.

Acknowledging cost concerns with both investing to accommodate outside competitors as well as investing in Oak Park's own ISP, an RFP for each case may provide answers. ICN suggested that an RFP could solicit feedback from prospective providers on specific financial needs that must be met before they could consider Oak Park a place to compete. Additionally, a custom-tailored RFP could determine who might be able to expand out the village's network to each home to realize a municipal ISP or similar model at little or no cost to the Village.

As an example, the city of Hudson, OH is soliciting public/private arrangement proposals via an RFP (https://www.hudsonvelocity.com/rfp/), with the goal of determining if a private provider could achieve a net zero fiber buildout cost to the town through revenue sharing or other means. Please note the CISC does understand that issuance of RFPs requires significant Village staff time that might not be feasible under current staffing levels in the IT Department.

Dark Fiber

It needs to be noted that there exists "dark fiber", or underground unused fiber from private providers, throughout the Village that can possibly be accessed at relatively low cost. There has been minimal CISC research on location of dark fiber in the Village, and perhaps with staff help, a better decision could be made on whether it is worth pursuing access to that fiber to offset any costs to run new fiber. However, as alluded to earlier, expanding out a fiber network by Oak Park could still be prohibitively expensive without a creative solution, and it remains uncertain how any incumbent ISP competition would be able to fit utilization of this dark fiber into a competitive business model.

Wireless 5G Home Internet
Private wireless solutions such as 5G home internet are rapidly becoming available locally and were addressed in CISC discussions. As of early December 2022, no CISC member was using wireless 5G as their personal or business internet solution, so little experiential data was available at that time. In late December 2022, CISC Chair David Baker began a two-week trial with T-Mobile 5G Home Internet after his home address became available for their service, which I intended as a replacement for a very slow DSL connection in a multi-dwelling unit.

Baker's recent experience with home 5G, to give a bit of context of what residents can expect after signing up with this new technology, has been mixed. While reliability and data speeds vary throughout the day, with highest speeds attained during very early morning hours, overall bandwidth is much improved over DSL connectivity and comparable to what incumbent providers might offer using a cable or fiber model at the same price point.

However, Baker believes the urban density of Oak Park will continue to pose a challenge to 5G home connections to cell towers as the frequencies required to maintain a high speed 5G connection do not traverse easily through obstructions such as buildings or trees. Baker's experience has proved less than optimum with weak signal strength in his multi-unit dwelling.

Some CISC members feel that wireless internet could be the future of home connectivity, and this could certainly be the case as Verizon and T-Mobile are actively expanding their networks to serve more addresses in Oak Park. Wireless home internet will be something to watch as the technology evolves and improves.

Improved Access to Incumbents
A potential starting point in addressing equitable internet access in the village is the pursuit of getting the two (2) incumbent providers of AT&T and Comcast into each multi-dwelling unit in the village. While some may debate that two (2) providers are not enough choice for adequate competition, it is definitely a start in addressing the problem of many residents having only one or perhaps no affordable fast internet choice.

A high percentage of Oak Parkers live in multi-dwelling rental units, many of which refer residents to only one provider for their internet. In my personal experience, some management companies have no interest in bringing in a competing provider. The reasons for the lack of interest are unknown, and may involve reluctance to upgrade old wiring in many of these historical structures at high cost to building owners. A benefit of living in a condominium, townhome or single-family residence is the absence of impediments to signing up with a competing provider; there is no added requirement of securing permission with a landlord, a luxury which renters do not have.

It would make sense for Oak Park to ensure each building in the village has access to at least two (2) providers, before investing in a more ideal and thriving environment where there could be multiple providers. There is the question of whether the village should incentivize landlords to allow competition from another provider for their tenants, or whether it should make access to incumbents mandatory. While there certainly would be pros and cons to each approach,

the CISC feels that ensuring access to two providers in every structure is a worthy goal, even if the path to that end is unclear.

Infrastructure Funding Opportunities

In considering potential reimbursement for fiber buildout costs, the CISC determined that grant opportunities for broadband expansion exist under President Biden's Federal Infrastructure Act of 2021, including two grants that would most likely apply to Oak Park. One grant promotes broadband to underserved groups and covers 90% of program costs. The other subsidizes general buildout and construction of internet infrastructure and covers only 30% of program costs.

The CISC has no real sense of Oak Park's eligibility for the more desirable grant that covers 90% of cost, and would need more information to determine who in the Village is considered "underserved". Some CISC members reasoned that due to the high community-wide presence of fiber providers such as AT&T (they have fiber infrastructure in village rights of way, but it is not necessarily connected to adjacent multi-dwelling units), Oak Park may not be considered a community that is truly underserved in the eyes of state or federal government agencies. This may make application for grant funding a challenge moving forward.

At present, there is also no sense of the statewide competition Oak Park might face in securing this funding should it decide to pursue a grant application.

Conclusions

The CISC reasoned that the cost to expand and scale existing Oak Park taxing body internet access programs would likely be much less expensive overall for the community than deploying any significant infrastructure on a municipal level. This reasoning is based on the known industry cost of providing hotspot devices and their accompanying data, and the cost assumptions of the staff needed to help administer the programs. Of course, any taxing body program expansion would depend on the respective Boards' decisions as to whether they should raise their tax levies, or pursue grants or alternative budgeting means to fund the expansions. At this time the CISC feels that the first priority should be getting internet service from at least two (2) providers into every structure in the village. As mentioned earlier, the steps to be taken to make this happen are uncertain, and there may be legal constraints under current village rules as to if or how the Village could mandate access in every dwelling. A more reasonable path may be to somehow incentivize property owners to make access to two (2) providers available.

Other Considerations

Oak Park businesses can also attempt to pool resources toward investment in mesh networks, making internet access affordable for all participants. Resident groups may also be able to do the same. Perhaps a consortium like Downtown Oak Park, who have a strong track record of business collaboration, can get creative to serve their business community by helping to offset access costs. The Village may also see a way to incentivize businesses in this direction before larger community-wide projects are considered.

The CISC intends to revisit this discussion in the very near future, as new information regarding options becomes available, and will be sure to follow up with the Board and staff should recommendations change.

Please contact either Alvin Nepomuceno, IT Director, at anepomuceno@oak-park.us or 708-358-5452 or David Baker, CISC Chair, at dgb@toast.net with any questions.

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