# Agenda Item Report

DATE:  *May 24, 2022*
FROM: *Patty Francour*
RE:     *Redundant Fiber Loop Capital Request*

## General Description:

The redundant fiber loop would allow the County to construct a second fiber path between critical locations to create backup for our network traffic and Internet connectivity.  If this project is approved, the funding will be asked for in two phases – this year, engineering and 2023 construction.

## Action Requested:

Motion to approve phase one of the CIP two-year project request.

## Procedural Steps:

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|---|---|---|
| Committee of Jurisdiction  <u>Information Systems</u> | Meeting date: | 5-24-22 |
| Action taken: <u>passed</u> | Vote: | <u>4-0</u> |
| Other Committee:  Personnel & Finance | Meeting date: | June 2, 2022 |
| Action taken: _____ | Vote: | _____ |
| County  Board | Meeting date: | June 21, 2022 |

## Background:

Winnebago County started investing in private fiber infrastructure around 2000, and currently owns approximately 35 miles of fiber connecting more than 20 buildings.  Employees rely heavily on resources on our own network, but more and more functions depend completely on access to the Internet.  The logical picture of our fiber connections would look similar to a hub and spoke type of configuration, so damage along any part can result in multiple functions being down.  Information Systems is proposing another segment of fiber between CAB and SO, our two main data centers, in order to create a 'loop'.  We also have two locations that allow the County to get to the Internet – UWO and Menasha PD.  With a loop in place, a cut along either of the two segments connecting CAB and SO would not interrupt Internet service and would allow network traffic to utilize either direction to get to the desired network resources.  Some examples of critical network traffic include, but are not limited to, public safety data, video conferencing between the jail and Courts, backups, segregated public Internet traffic, and County business Internet traffic.

The connection between CAB and SO is critical to maintain Internet access as well as complete data backup.  Nightly backups are incremental (only what has changed since the last backup), they utilize a 10 GB connection, and they require most of the night to finish.  Full backups require the entire weekend to complete.  These two data centers are used for redundancy while performing upgrades which allows us to keep critical servers up and running.  Having all the County buildings connected allows us to pay one Internet provider versus each location having one.

This request was put into the CIP intending to complete the engineering in 2022 and the construction in 2023. It may not be possible to include all County buildings with this loop, but we will work to maximize the backup coverage as we plan the fiber path. The plan has to be engineered and approved as far as road rights-of-way and aerial connections, so our path will be determined by outside factors as well. Once we know the final approved path, we can bid out the construction more exactly.

There will be on-going maintenance costs related to the fiber. Any aerial connections incur an annual, nominal fee per pole from the utility pole owner. Also, we pay Digger's Hotline and a locater nominal fees per call to mark the fiber if underground work is near the path. Overall, the redundant loop will help us maintain County services between critical locations. We have had several examples of damage that caused downtime in the past – three different mouse chews, one squirrel chew, storm, and a backhoe.

The IS Committee, as it existed in Jan 2022, had voted 4-0 to approve the project. It was presented to the Board on May 3, 2022. It will be reviewed by the new IS Committee on May 24, 2022.

**Policy Discussion:**

The main alternative to installing County-owned fiber would be to rent from another provider. Two quotes were obtained for a similar solution from Spectrum and AT&T. The cost from both providers was approximately $8,200 per month plus the necessary edge equipment to protect the data utilizing the Internet versus owned fiber. A rough estimate of this edge equipment would be $20k – 30k at each site as well as on-going annual maintenance. At most, this County owned fiber project would pay for itself in two years.

**Attachments:**

CIP document