

2021 Annual Report

**CONNECTING TODAY.  
CREATING TOMORROW.**

## Vision

Helping create equitable access to high-speed internet

## Mission

Expanding open access to high-speed internet throughout York Region

## Focus

Planning, building and operating an affordable, reliable and sustainable fibre network across York Region

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# A message from the 2021 Chair of the Board



The year 2021 began much like 2020, and we were once again confronted with uncertainties and challenges as the world entered the second year of the COVID-19 pandemic. As we resume normal activities, I look back at 2021 with a sense of accomplishment and pride, because despite all that we faced, YorkNet achieved so much and continued to connect communities and create opportunities.

This past year, we added nearly 90 kilometres of dark fibre to our network, bringing high-speed internet to more residents and businesses. At the same time, we added 150 more reliable, secure and fast connections in support of essential community services such as policing, paramedic support, traffic control and public transit.

The pandemic has amplified the critical importance of high-speed internet access. From going to work and attending school to receiving health services and meeting with loved ones, reliable and fast connectivity has become increasingly necessary in many aspects of our lives. That's why YorkNet remains steadfast in our commitment to bridging the digital divide in York Region and reaching our underserved communities in the years to come.

Work is already underway to add an additional 70 kilometres to the network and connect close to 150 essential and public services by the end of 2022. We are also pursuing federal, provincial and regional funding opportunities to expand our network, as well as collaborating with private and public organizations to make the most of our network.

There is ample capacity in our dark fibre network to enable innovative technologies — a true infrastructure for the future. As we continue to work together, YorkNet will inevitably become an infrastructure of the future.

2021 Chair of the Board  
Mayor, Town of Georgina

“... I look back at 2021 with a sense of accomplishment and pride, because despite all that we faced, YorkNet achieved so much and continued to connect communities and create opportunities.”

# Governance

YorkNet is one of three York Region-owned corporations and is funded by the Region. It is governed by the *Ontario Business Corporations Act*, the *Municipal Act Regulation* and Shareholder direction.

## 2021 Board of Directors

Reporting to the Shareholder (Regional Council), Directors of the Board are required to oversee - YorkNet's business and affairs, approve the annual business plan and budget, appoint or hire officers of the Corporation and delegate day-to-day management to officers.

### Board of Directors



Chair of the Board  
**Margaret Quirk**  
Mayor  
Town of Georgina



Vice Chair of the Board  
**Steve Pellegrini**  
Mayor  
Town of King



Director and CEO  
**Wayne Emmerson**  
York Region  
Chairman and CEO



Director  
**Virginia Hackson**  
Mayor  
Town of East Gwillimbury



Director  
**Frank Scarpitti**  
Mayor  
City of Markham



Director  
**John Taylor**  
Mayor  
Town of Newmarket



Director  
**Iain Lovatt**  
Mayor  
Town of Whitchurch-Stouffville



Director  
**Jim Jones**  
Regional Councillor  
City of Markham



Director  
**Gino Rosati**  
Regional Councillor  
City of Vaughan

### Executive Leadership Team



**Dino Basso**  
Vice President



**Laura Bradley**  
General Manager



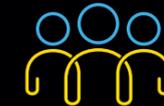
**David Di Giovanni**  
Chief Financial Officer

# Mandate



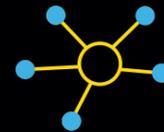
## Growing York Region's dark fibre network

Improve the delivery of Regional services, such as traffic management, transit systems, water/waste water control management, security monitoring, policing and cloud-enabled applications



## Collaborating with public-sector organizations to improve high-speed internet service

Work with municipalities, hospitals, libraries, fire halls, schools, community centres and other public sector organizations to improve broadband services they deliver using our network



## Providing private-sector organizations with open access to the network

Drive economic and social benefits and enhance broadband service for the Region's residents and businesses, particularly in rural and underserved areas of the Region



# Dark fibre for a bright future

Imagine YorkNet’s dark fibre network as paths. The dark paths are where data travels as light—in essence, lighting the paths. YorkNet’s limitless possibilities lie within these dark paths, which significantly outnumber the lit ones, waiting to be lit by the future.

## The superiority of fibre

To truly appreciate the power of fibre, a comparison with copper wires – historically the most common way data is transmitted – is necessary. Data travels through fibre as light signals, whereas it travels through copper as electronic signals; this makes a world of difference in their durability, scalability and sustainability.

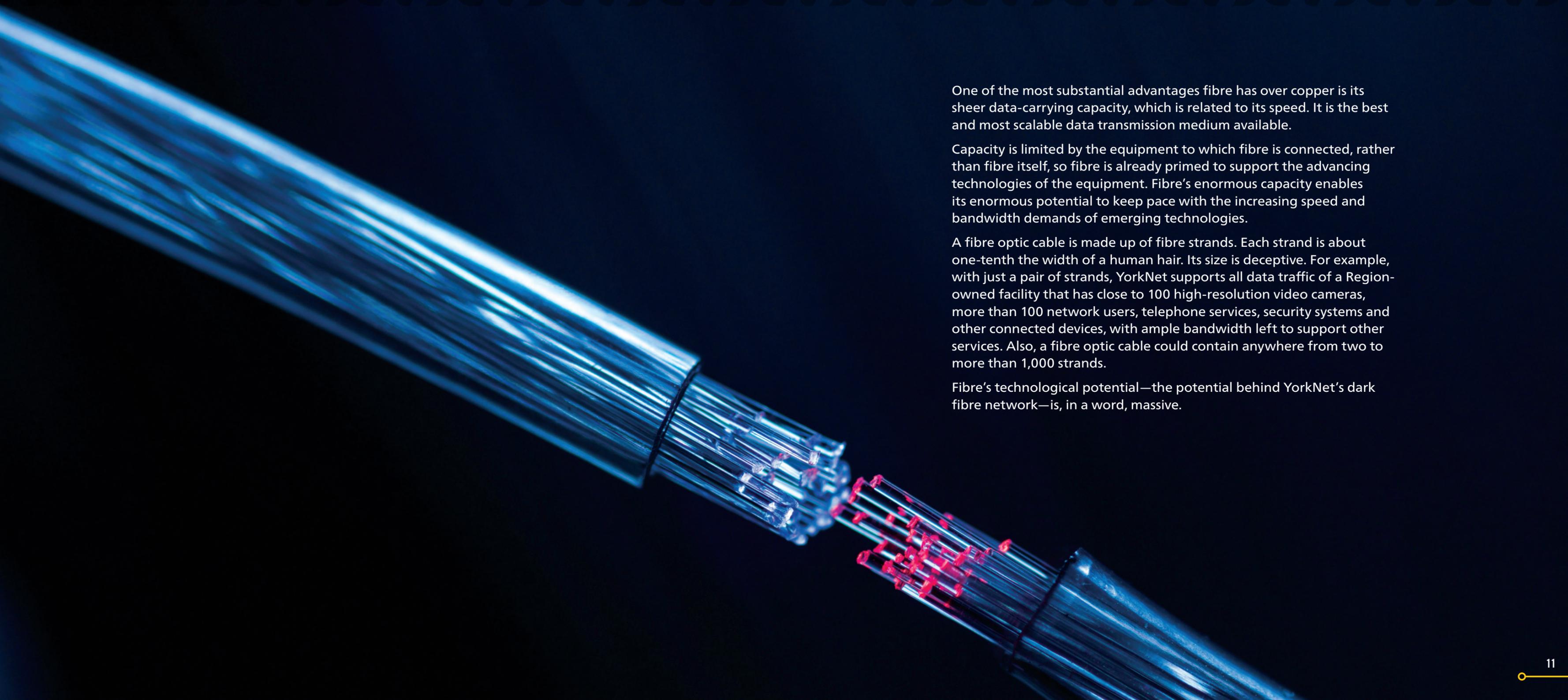
**SPEED**  
The speed at which data travels in fibre is exponentially faster than in copper

**DURABILITY**  
Fibre is non-metallic so it is resistant to corrosion

**RESILIENCE**  
Fibre is impervious to harsh weather conditions, such as drastic temperature changes or contact with water

**SAFETY**  
Because light, rather than electricity, travels through fibre, heat is not generated, reducing the risk of fire

## The fibre optic strand



One of the most substantial advantages fibre has over copper is its sheer data-carrying capacity, which is related to its speed. It is the best and most scalable data transmission medium available.

Capacity is limited by the equipment to which fibre is connected, rather than fibre itself, so fibre is already primed to support the advancing technologies of the equipment. Fibre's enormous capacity enables its enormous potential to keep pace with the increasing speed and bandwidth demands of emerging technologies.

A fibre optic cable is made up of fibre strands. Each strand is about one-tenth the width of a human hair. Its size is deceptive. For example, with just a pair of strands, YorkNet supports all data traffic of a Region-owned facility that has close to 100 high-resolution video cameras, more than 100 network users, telephone services, security systems and other connected devices, with ample bandwidth left to support other services. Also, a fibre optic cable could contain anywhere from two to more than 1,000 strands.

Fibre's technological potential—the potential behind YorkNet's dark fibre network—is, in a word, massive.

# 2021 accomplishments

CONNECTING TODAY.

Bringing York Region together in another year of the COVID-19 pandemic.

**85KM+**  
new network added

**600KM**  
approximate length of dark fibre network being funded through federal and provincial programs

**159**  
municipal, Regional, hospital and third-party connections completed

**6**  
providers that help connect people and businesses

## 2022 key priorities

Since its incorporation in 2017, YorkNet has built an expansive dark fibre network that improved access to high-speed internet to many communities in York Region. This growth will continue in 2022 and well beyond.

**CREATING TOMORROW.**

### EXPAND

fibre network by 70 km

### CONNECT

150 Regional, municipal, public sector and third-party connections to the network

### COLLABORATE

with third-party partners to achieve efficiencies from joint construction and optimize the use of YorkNet's fibre network

### INITIATE

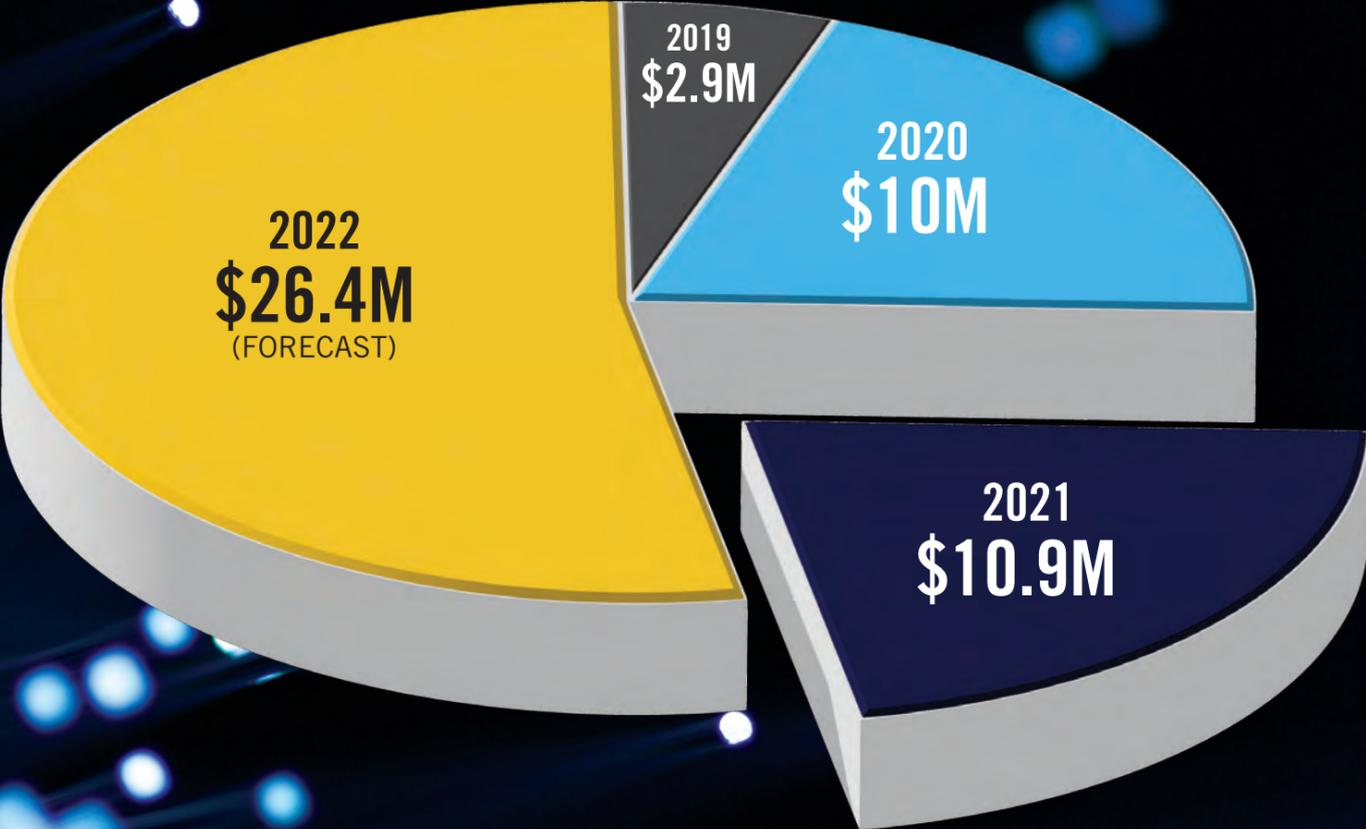
construction funded through the federal, provincial and regional governments to expand into rural communities to further bridge the digital divide in York Region

### IMPLEMENT

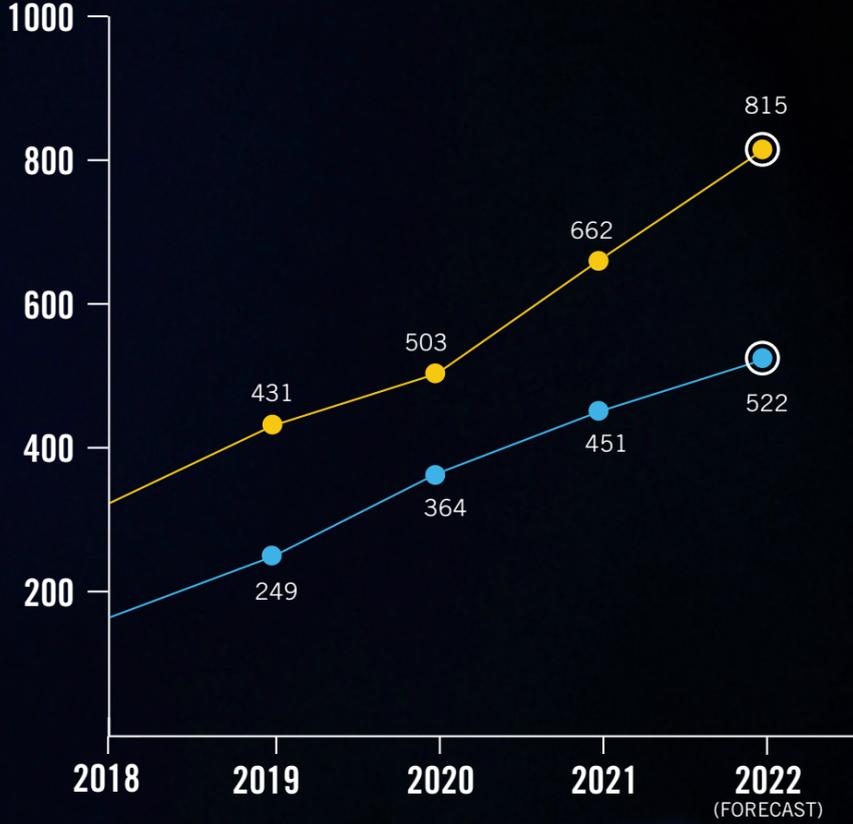
a system to monitor the integrity of YorkNet's dark fibre network

# The evolution of YorkNet

## BUDGET SPENT



## NETWORK CONNECTIONS & KILOMETRES BUILT



● Network Kilometres Built    ● Network Connections    ○ Forecast

# YorkNet Expansion Project

In 2021, as the world entered another year of the COVID-19 pandemic, affordable, reliable high-speed internet became more necessary for work, schooling, healthcare, business, shopping and socializing. This has made YorkNet's effort to close the digital divide even more urgent.

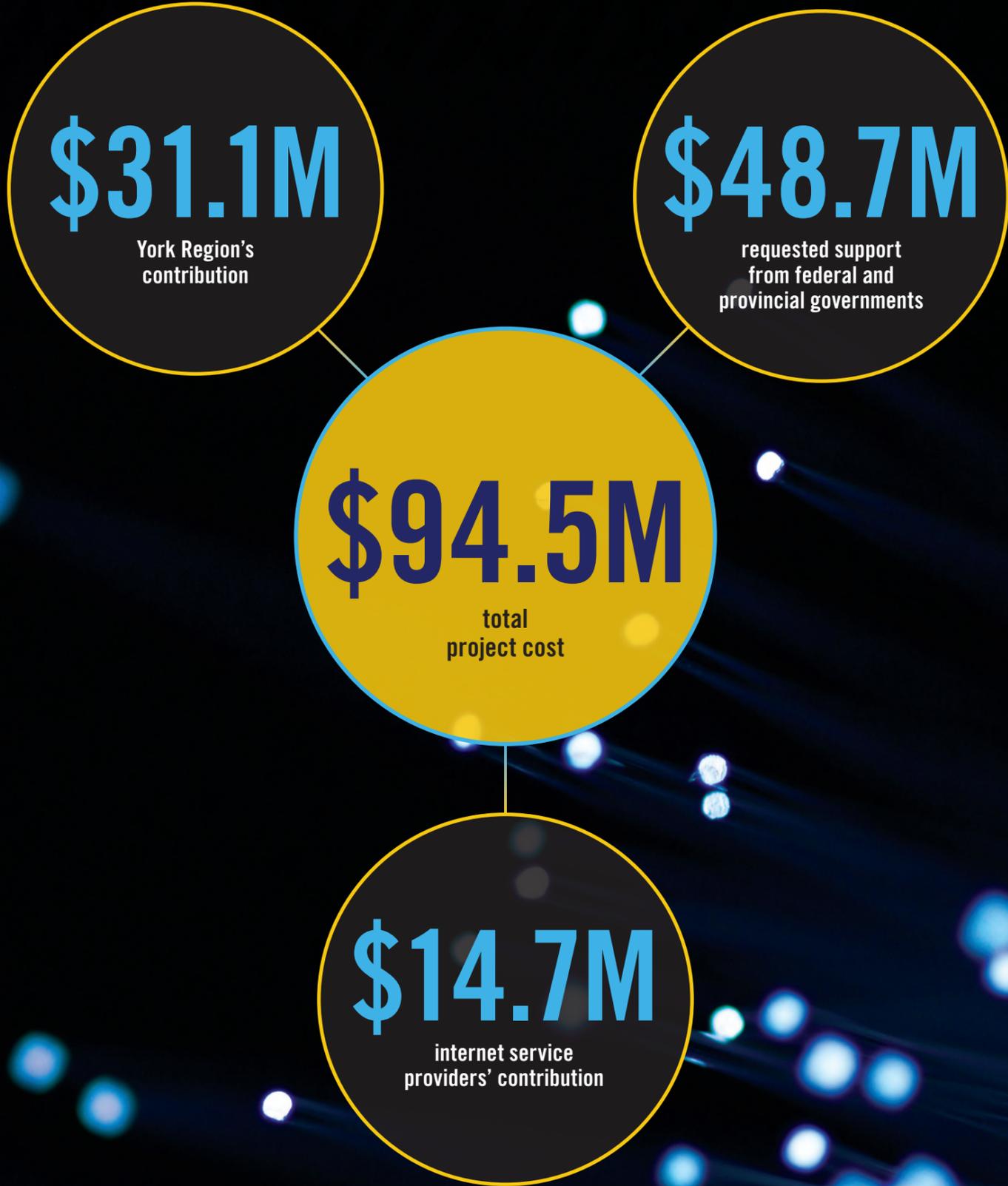
YorkNet has already made considerable progress to connect the Region's underserved communities, but much work is still needed to connect every corner of the Region. YorkNet is making this a reality with its YorkNet Expansion Project.

To achieve this large-scale goal, the organization has submitted funding applications to the Improving Connectivity Ontario program and the federal government's Universal Broadband Fund program to support the Project, which entails:

- Expanding the network by approximately 600 kilometres (to a total of 1,525 kilometres), serving more than 5,000 underserved homes and 1,000 commercial or industrial properties;
- Bringing the potential for high-speed internet to thousands of additional homes and businesses by enabling internet service providers to connect to YorkNet's open-access network; and
- Preparing York Region to be ready for future technology by providing the foundation of connectivity.



— Completed Network  
— Capital Plan 2022 - 2030



Estimates are based on 2021 pricing.

# Supporting essential services

## A message from York Regional Police

YorkNet is a key strategic partner for York Regional Police. Over the last several years, the continued expansion of YorkNet’s network has allowed York Regional Police to connect multiple locations into a private wide area network.

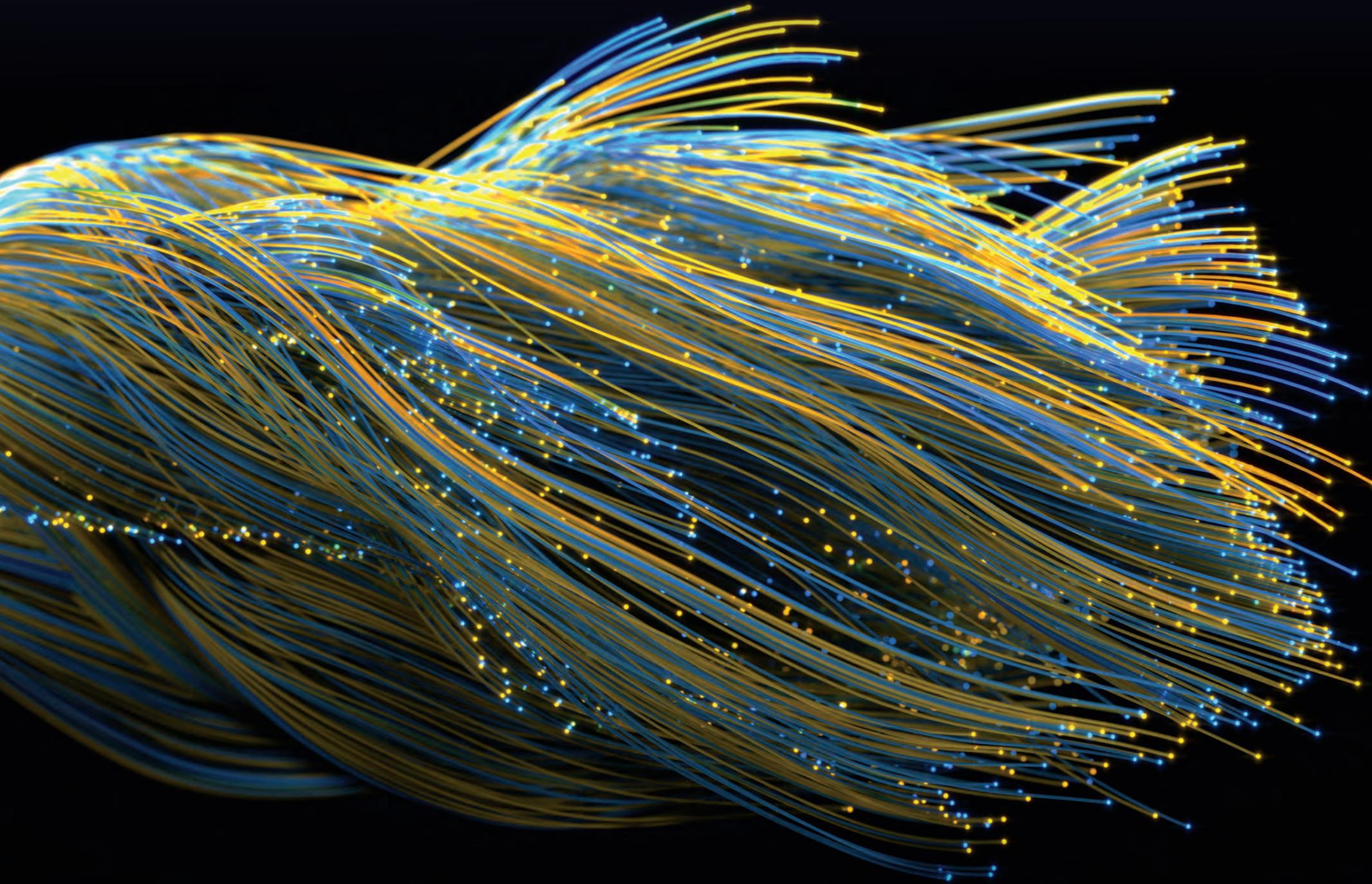
The year 2021 was an exceptional one, with six new connections added, including our northernmost location in Georgina. Additional diverse paths were added to existing locations to increase availability in case of disruptions. The infrastructure continues to be exceedingly reliable. When there have been disruptions caused by outside forces, the support response has been quick, no matter what time of day.

We look forward to this continued partnership in the years to come.

Richard Cooke #5474  
Acting Assistant Manager  
IT Infrastructure & Client Services  
York Regional Police



# Growing the YorkNet infrastructure



## Key connections in 2021

With the addition of just under 90 kilometres of dark fibre network in 2021, YorkNet has bridged the digital divide for underserved communities in York Region:

### Regional locations

- Five Paramedic Response Stations
- Maple Health Centre, a Regional long-term care facility (redundancy network connection)
- Nine properties for Housing York Inc., the Region's housing corporation
- 9060 Jane Street in the City of Vaughan, providing critical public health services
- 13 supervisory control and data acquisition sites, supporting security cameras and monitoring systems
- 38 traffic controls to support the Roads and Traffic Operations Centre (see page 32)
- Vaughan Mills Bus Terminal

### Local municipal connections

- Four Fire Stations (Georgina Island, King and two in Richmond Hill)
- Nine City of Richmond Hill facilities
- East Gwillimbury Operations Centre
- Georgina Civic Centre
- Four Township of King facilities

# The Georgina connections

With the combined funding contributions from York Region and the federal government's Connect to Innovate (CTI) program, YorkNet expanded its network into the northern end of the Region in 2020, bringing broadband to two long-underserved communities of Udora and the Chippewas of Georgina Island First Nation. In 2021, the communities continued to reap benefits from this infrastructure.

The Town of Georgina has partnered with internet service providers to connect to YorkNet's network and provide high-speed internet services to residents and businesses in the town. This is a big step toward advancing the Town's Broadband Strategy to deliver affordable and reliable broadband connectivity to all residents and

businesses, foster economic development and fulfil municipal needs.

Across Lake Simcoe on Georgina Island, it has been more than a year since 16 institutional buildings were connected to YorkNet and began using broadband to deliver essential public services. Broadband will also arrive in 2022 for the Island's long-underserved 295 households. This was made possible through provincial and federal funding provided through the Universal Broadband Fund Rapid Response Stream to extend the infrastructure across the Island.

This extension has enabled an internet service provider to provide the Island's residents with a fast and reliable broadband connection on par with any urban area.



# Better connecting York Region Transit

Reliable and secure connectivity is essential for York Region Transit (YRT) to provide safe and efficient public transportation for residents on more than 100 travel routes that span close to 5,000 bus stops and cover more than 1,700 square kilometres.

YorkNet connected YRT's Vaughan Mills Terminal in 2021. Using a Region-owned network provided significant financial benefits by eliminating the cost of third-party telecommunications vendors. The stability and security of the infrastructure also means fewer network outages because of YorkNet's backup-loop system that supplies constant connectivity even when there is a network disruption.

"As soon as we started using YorkNet as a backbone system, everything became more reliable," said Chun Huang-fu, TMS Officer (On-Street Systems), Transportation Services at York Region, "its centralized and isolated network enhances our overall security."

Every time a transit customer purchases a ticket through a YRT Ticket Vending Machine or presses the emergency call button, data is transmitted through the YorkNet network, and each time a message or alert is displayed on the variable message signs (VMS), YorkNet is at work once again—providing a seamless customer experience and uninterrupted transit services.

But the most significant improvement brought to the terminals is one that is unnoticeable to

customers. YRT's terminals and bus stops are equipped with cameras for the safety and security of customers and staff, as well as to monitor service performance. YorkNet enables real-time monitoring and recording of videos at the YRT Control Centre, where the terminals are monitored 24/7 so officials could be dispatched when needed.

Since connecting to YorkNet, the improved bandwidth allows high-resolution and data-heavy videos to be sent from the cameras to the YRT Control Centre at a rapid speed—a sharp contrast to the poor-quality and lagging videos previously experienced due to bandwidth restrictions. "The difference is night and day," said Huang-fu, "and the crystal clear pictures with no video lagging allow officials to identify and respond to issues in real-time."

YorkNet's bandwidth is significantly more robust and much more affordable than what is available through third-party providers. Huang-fu added, "the cost-saving is huge, and on top of that, YorkNet provides great support. They are always quick to respond and notify us well ahead of time before any maintenance or service disruption."

YRT and YorkNet will continue to collaborate to serve the transportation needs of the Region's growing communities.

//  
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and day...the crystal clear  
pictures with no video  
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identify and respond to  
issues in real-time.  
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# Care through connections

## Improving care at York Region long-term care homes

Newmarket Health Centre and Maple Health Centre are York Region's two long-term care homes that provide nursing and personal care services for adults who are no longer able to live in their homes or have complex care needs.

Reliable connectivity is vital for the homes to provide care for their residents. Onsite pharmacy services, for example, use an electronic system to manage physician-ordered medications and dosage administrations for residents. When connectivity outages happened in the past, staff had to use paper or phones to provide critical patient care.

To prevent disruptions to this critical healthcare service, YorkNet has built network redundancy for the homes so safeguards are in place, including a backup connection in the event there is an issue on the primary network.

## Connecting Paramedic Response Stations

In 2021, YorkNet connected five Paramedic Response Stations. This was a long-awaited broadband solution for the stations, which had been using Digital Subscriber Line (DSL) for connectivity. DSL is a technology that uses traditional telephone lines and its speed and stability are far below that of YorkNet's network.

This improvement in bandwidth and reliability empowers the stations with functionalities that are unfeasible on a DSL connection. Security cameras on the premises are now using YorkNet to transfer videos without data limitation, alleviating the need to minimize image quality. Online training—integral to maintaining professional standards and certifications—was excruciatingly slow and cumbersome previously, but can now be seamlessly conducted over YorkNet. Even something as fundamental as WIFI connectivity was only available after York made the connections.

Like other public services that have connected to YorkNet, the underlining benefit is cost-saving. Simply put, YorkNet can deliver increased bandwidth, enhanced security and strong reliability at a lower cost than third-party telecommunications companies.





## **YorkNet and traffic control management**

By the end of 2021, of the 890 traffic controllers managed by the Region, 248 were connected to YorkNet. But what does this mean?

The roads in York Region are a part of an interconnected system that is constantly working behind the scene to improve the time, reliability and safety of road travel. For example, many drivers may be surprised to learn that the timing of a traffic light changes depending on who is approaching the intersection.

Along with YorkNet, the Region's Transportation Services and Various departments at the Region continue infrastructure to improve traffic flow.

## Roads and Traffic Operations Centre

The Roads and Traffic Operations Centre is the control centre for the Region's traffic network. Operating around the clock all year long, the Centre uses state-of-the-art technology to improve and optimize travel for everyone who uses the Region's roads—from drivers, first responders, public transit operators, road maintenance crews to pedestrians—helping people get to where they are going safely and efficiently.

In addition to improving traffic by reducing disruptions, the Centre manages traffic control by sharing live road and weather conditions with municipalities and other public services, such as York Regional Police (YRP), Paramedic Response Services, road maintenance and snow-removal operators.

## Moving traffic through fibre

The Centre continuously makes timely and appropriate decisions to respond and adapt to traffic conditions based on an abundance of data that is collected across the Region. Increasingly, this data travels through YorkNet's fibre network.

One of the Centre's most significant data-collecting systems is in the form of traffic signal cabinets, which are located at traffic intersections. There are about 400 Bluetooth sensors embedded in these cabinets across the Region, collecting a billion records a year for analysts and algorithms to derive critical information.

For instance, real-time data is used to identify traffic disruptions, flows and patterns—as well as travel time—providing the Centre with the intelligence to make the correct decisions and find the best traffic solutions, such as dispatching road maintenance or notifying the proper services.

Connecting the cabinets directly to YorkNet creates a private and secure connection that is both fast and reliable, and at the same time eliminates the cost of, and reliance on, third-party providers. Unconstrained by cost and empowered by high bandwidth, the infrastructure has almost no data limitation, and more data means more capability for analysis, resulting in more useful and accurate information and intelligence.



### A better picture

YorkNet's low-cost and high-bandwidth connection is especially beneficial in the circulation of videos that are captured on cameras installed at traffic intersections. Due to bandwidth limitations, video quality had traditionally been restricted during data transmissions, but with YorkNet's plentiful bandwidth, high-resolution videos with clear image quality can now be transferred quickly, reaching not only the Centre but also partners such as YRP.

### More than meets the eye

In an increasingly interconnected world, data drives decisions and fosters innovation, and this is especially salient at the Roads and Traffic Operations Centre, whose connection to YorkNet enables a vast amount of data to be transmitted. Additionally, the Centre's growing database is a valuable historical record of insights for long-term transportation and community planning. In the past two years alone data collected has been used to study the impact that the COVID-19 pandemic has had on residents, providing municipalities with important insights to plan for, and adapt to, the ever-changing needs of communities in the Region.



## YorkNet infrastructure at work

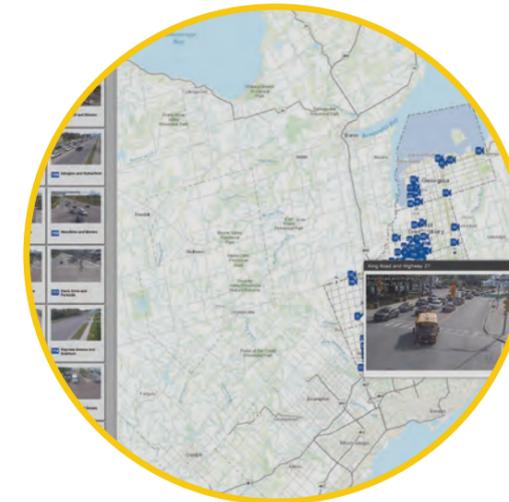
Increasingly, data that powers traffic technology such as those below is carried by YorkNet's fibre network infrastructure.



### Smart traffic lights

During an emergency, every second matters for paramedics, YRP and fire departments. The Emergency Vehicle Preemption system adjusts the signal time of traffic lights to turn green as quickly and as safely as possible for the approaching emergency vehicle. In a less critical scenario, when a public transit vehicle falls behind schedule, the Transit Signal Priority system adjusts the signal time on traffic lights to improve the vehicle's travel time.

Both systems also ensure that pedestrians have enough time to cross the streets safely while the systems are activated. This delicate balancing act is made possible by the significant amount of data collected and sent to the Centre for analysis.



### Live traffic cameras

Live images of some traffic interactions in the Region are available <https://www.york.ca/transportation/traffic/traffic-cameras>. These images are updated every three minutes to help travellers better plan their trips.

[york.ca/yorknet](http://york.ca/yorknet)

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