Building Sustainable Communications Infrastructure for Municipal ITS
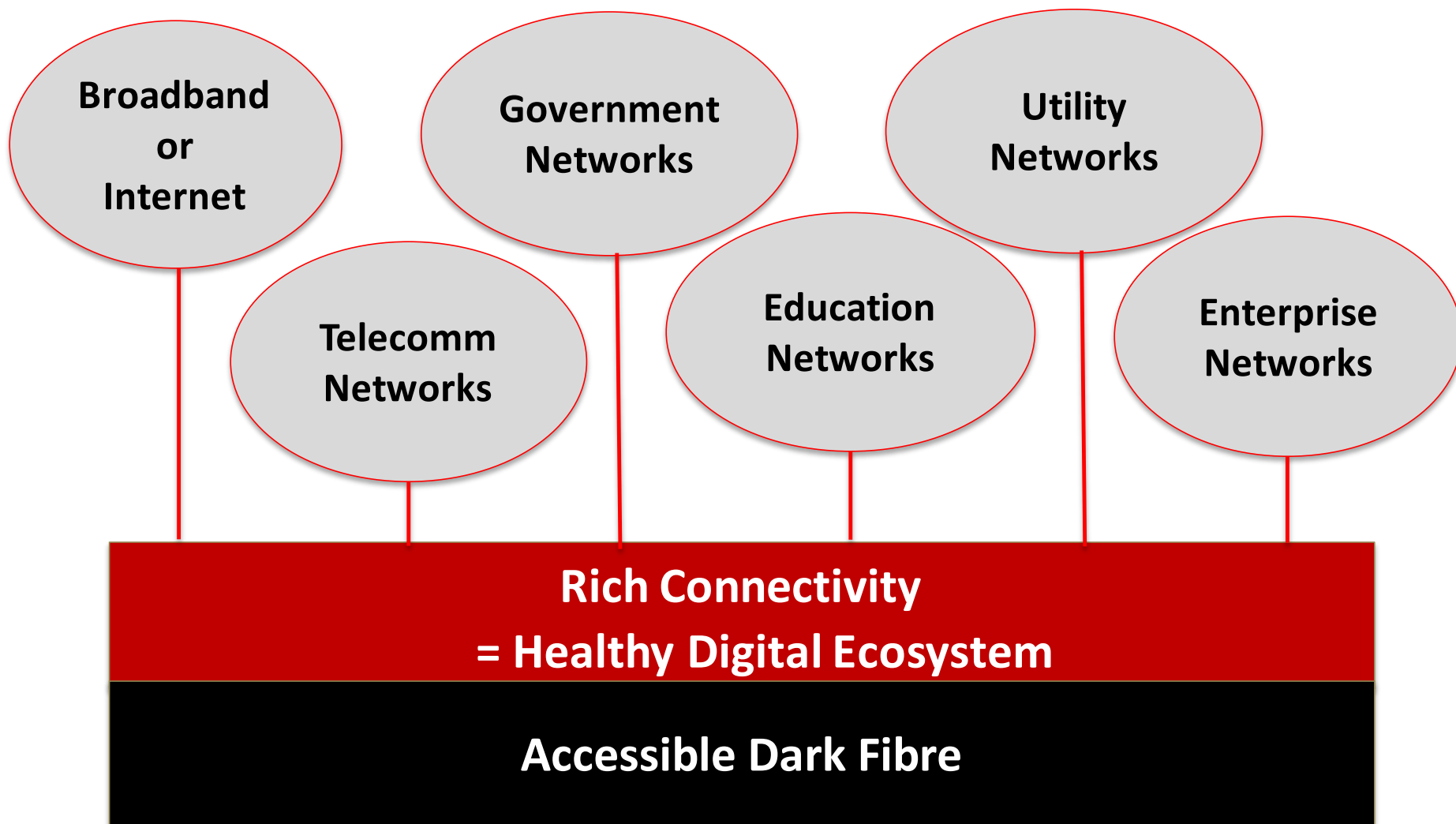
The City of Calgary
ITS CANADA
May 4, 2016
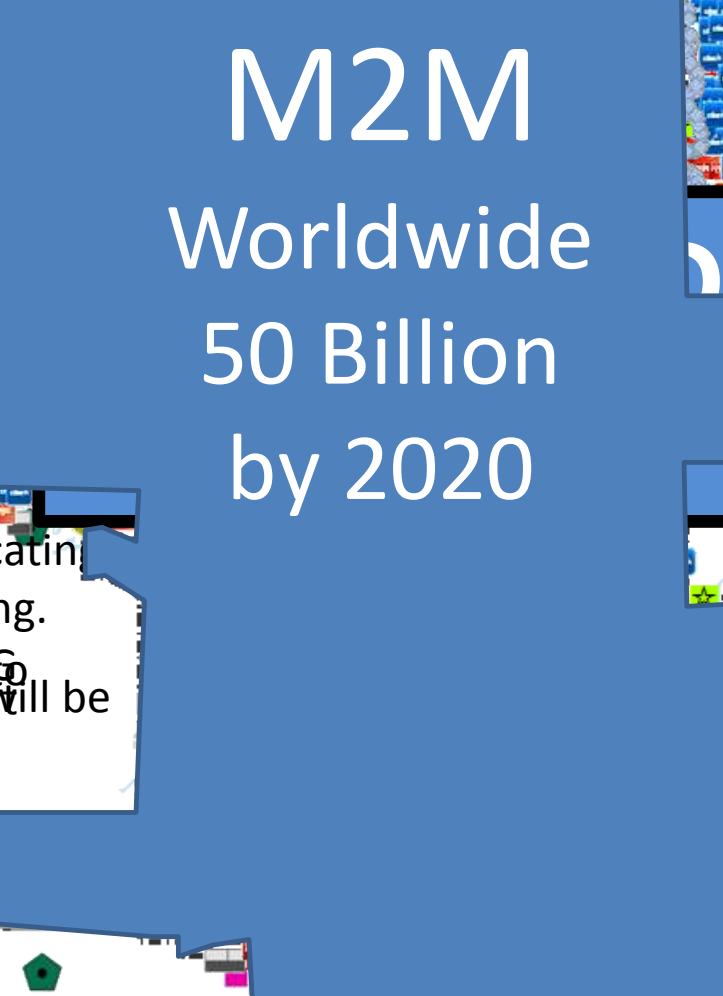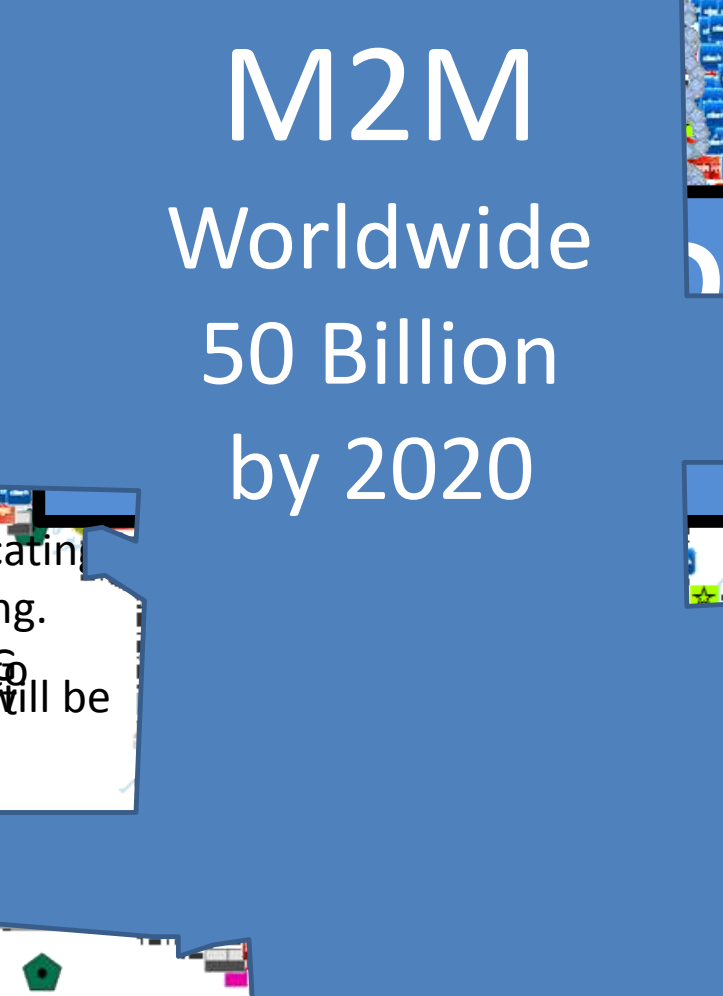
Source: istockphoto.com

Connected Ecosystem

Broadband or Internet

Government Networks

Utility Networks

Telecomm Networks

Education Networks

Enterprise Networks

Rich Connectivity
= Healthy Digital Ecosystem

Accessible Dark Fibre

M2M

Worldwide

50 Billion

by 2020

OWC

Remote Offices

Traffic Controller:

• Open 1200 Traffic Controllers

Machine to Machine Communication

• of businesses rely on Camera

• lawn mowers

Calgary

80-85% of the Cost of fibre is putting conduit in the ground

Source: City of Calgary

The Municipal Advantage

A Better Way!

Conduit for Traffic Communications

Conduit for Traffic Power

LRT Duct Banks

Conduit for Street Lights

Conduit for Sanitary, Storm and Water

SANITARY   STORM   WATER

Fibre Optics can be installed in: Traffic and LRT Conduit
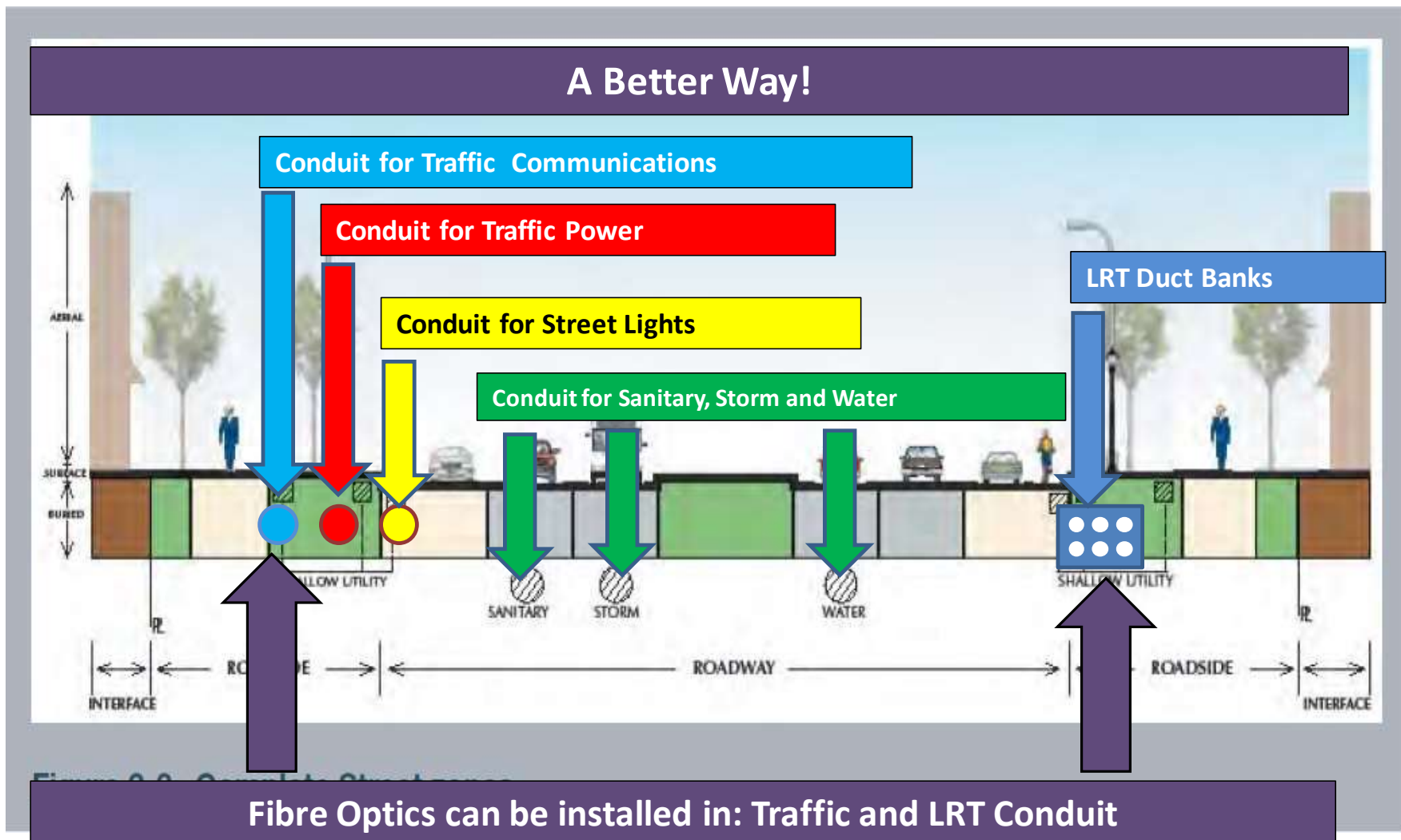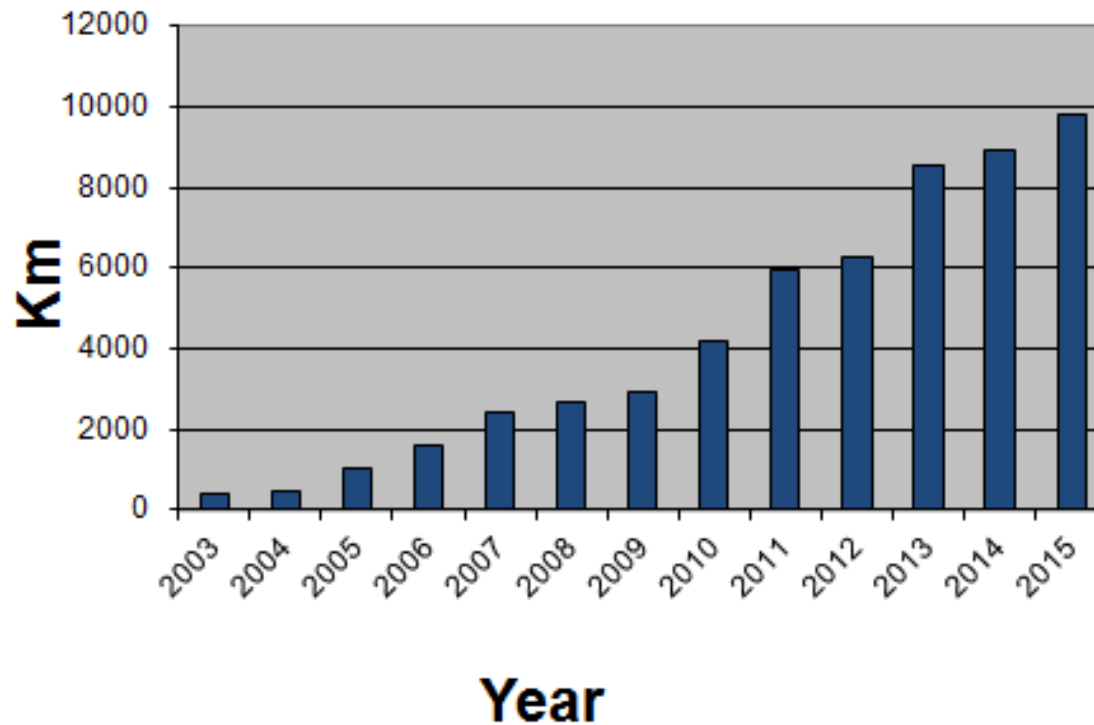
How Much Fibre Does Calgary Use?

Annual Growth in Fibre Usage

City of Calgary Fibre Infrastructure Strategy

1. Accelerating fibre to stranded City facilities (450 Traffic Controllers and numerous remote sites)

2. Green Field Communities (City buildings) – 75% savings

3. High Tech Business Parks – e.g. Aurora and Transit Oriented Developments

4. Dark Fibre Provider

Calgary

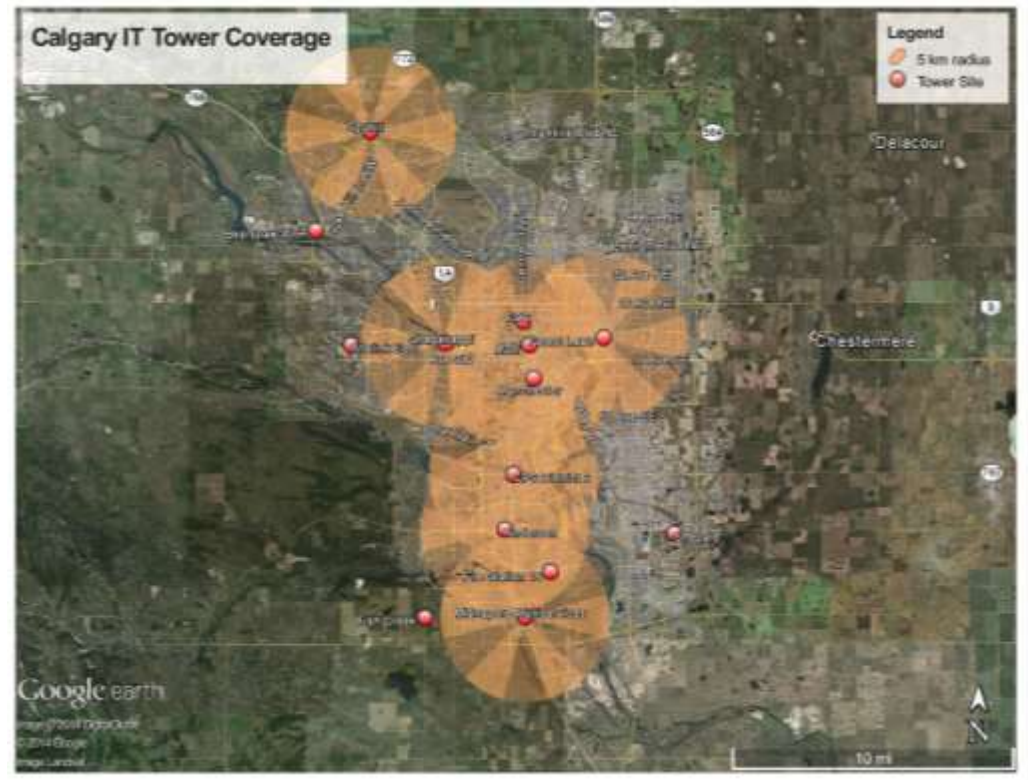**Foot Print of Sustainable Communications Infrastructure for City Services**
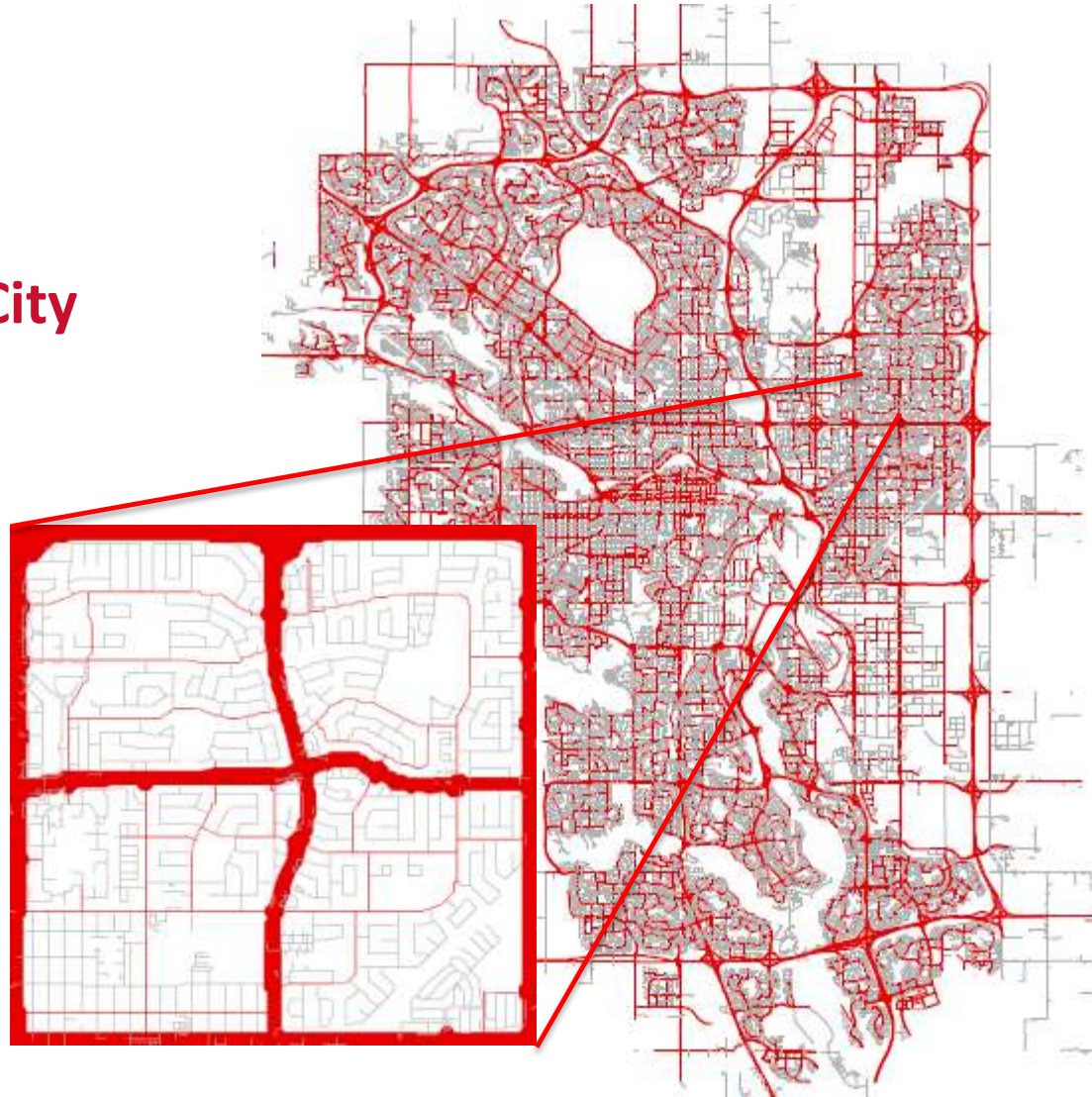
Calgary City Net (CCN)
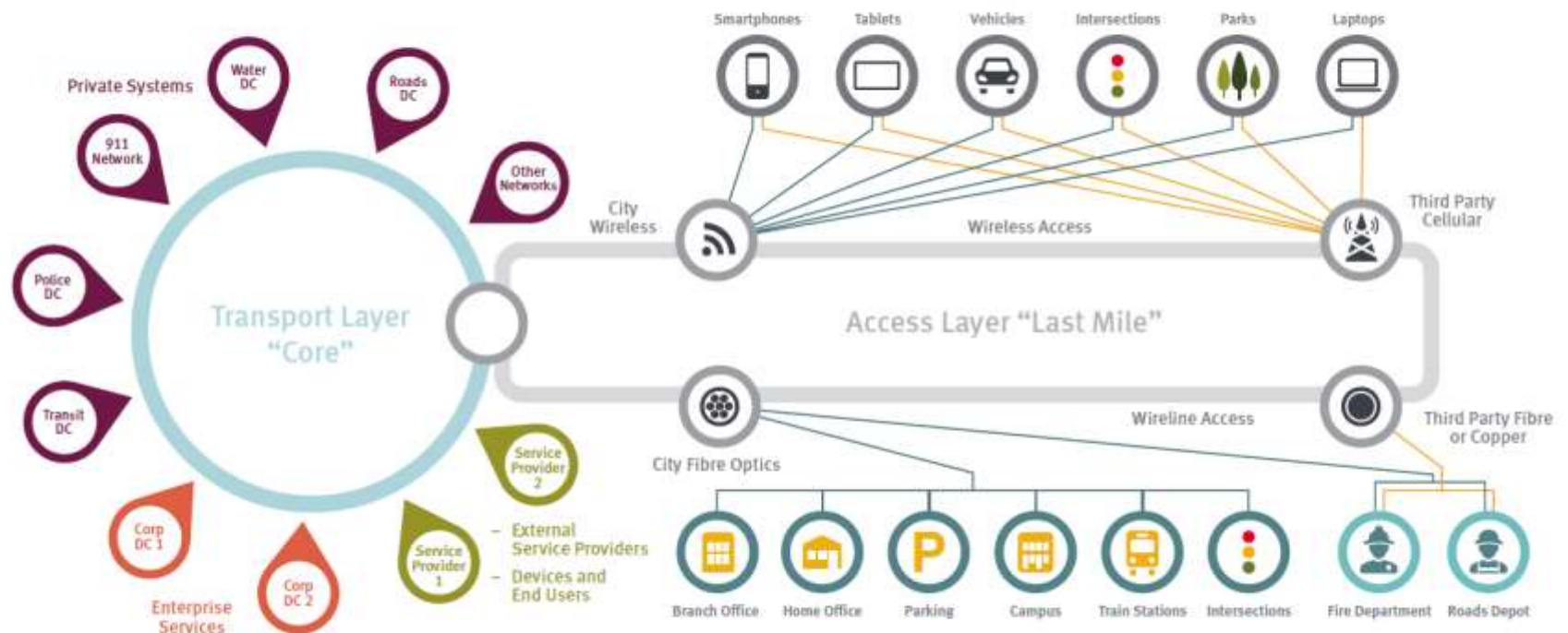
Smart City Infrastructure
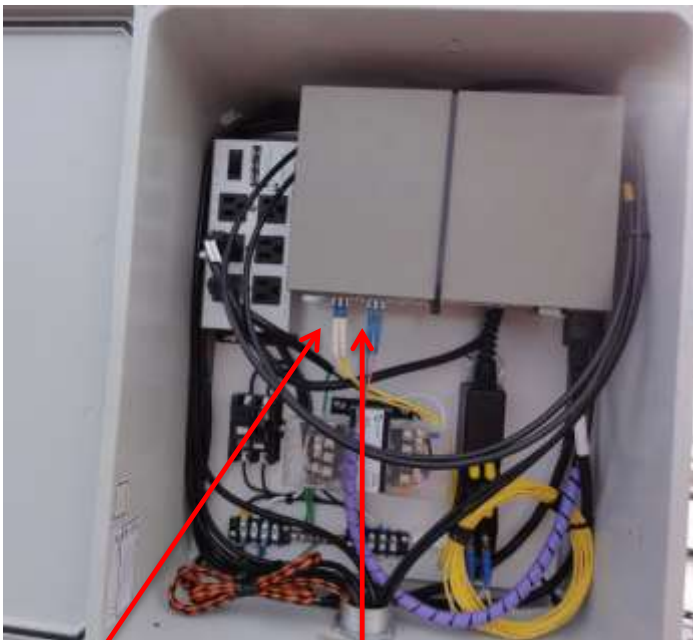
Where are we now?

- Fibre
- CCN
- Wireless
- Data centres

**Smart City Concepts
Fibre to the Traffic Controllers**

Traffic Controller

Pull Box and FOSC

Fibre Network

Source: City of Calgary

Smart City Concepts
Intelligent Intersections

Roads Camera

Wireless antennae

Secure Networks

MPLS Network

Fibre

Source: City of Calgary

Conclusion

1. Accessible Dark Fibre / Operator Neutral is the foundation for a healthy digital ecosystem

2. The digital ecosystem serves both public and private interests

3. Long term planning can mitigate risks and enable next generation City services.

Roads Communication Proje

- Background
- Copper to Fibre Replacement Program
  - Controller Upgrade Project
  - 5 Avenue RLCS
  - 4 Car C-Train Comm
  - Cycle Track Project
- Fixed Wireless Program
- Cellular Modem Project 2016

- Total number of Signalized Intersections- **1000**, 125- PTZ cameras, 200- DMSs

- 60% have comm and connected to Control Traffic Control System- 600

- Comm uptimes are significantly low – due old copper network-

MIST COMM STATUS

- MIST Comm Working
- MIST Comm Not Working
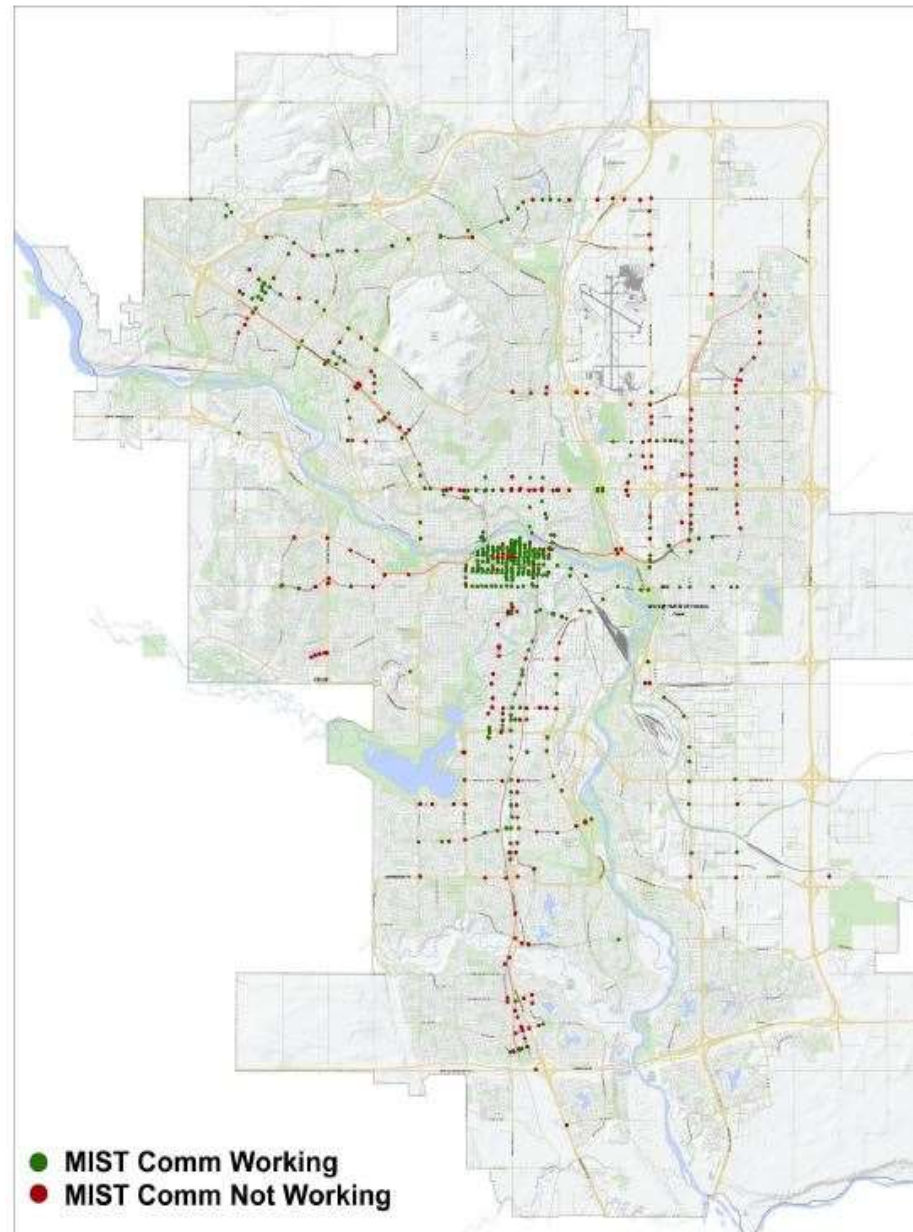
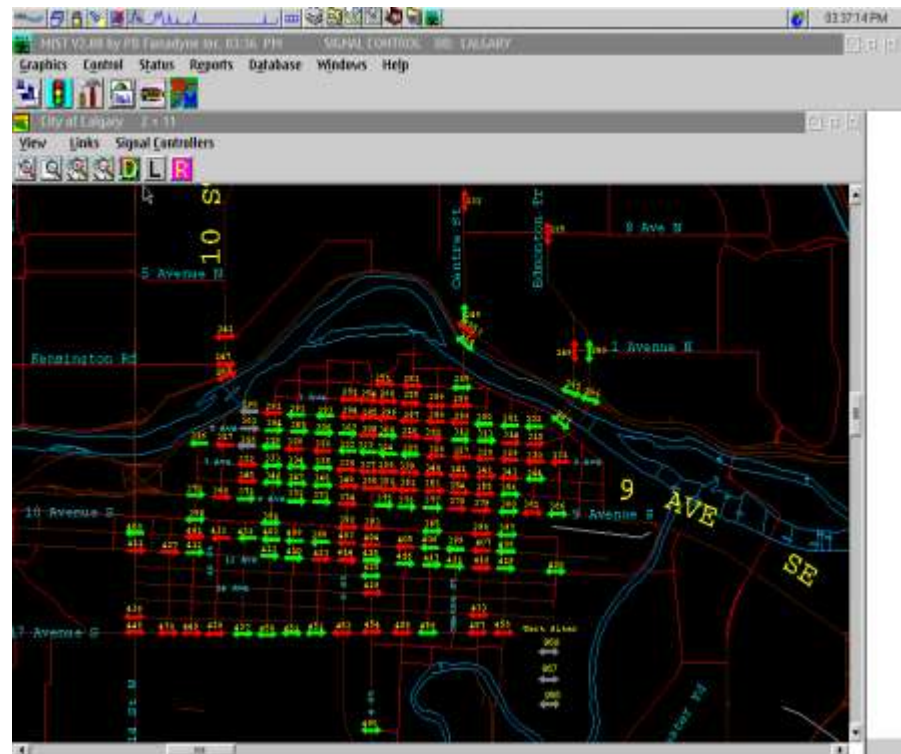# Why communication to signal controller is important?

- Stop controller drifting and have proper coordination between the intersections

Studies found slight drifting in the controller can result in up to 25% increase in the delay at the intersection.
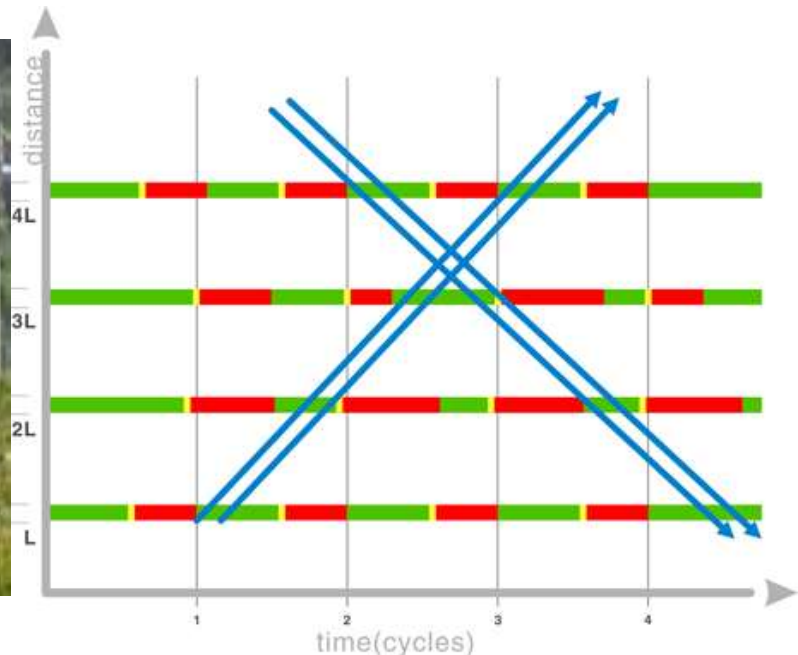
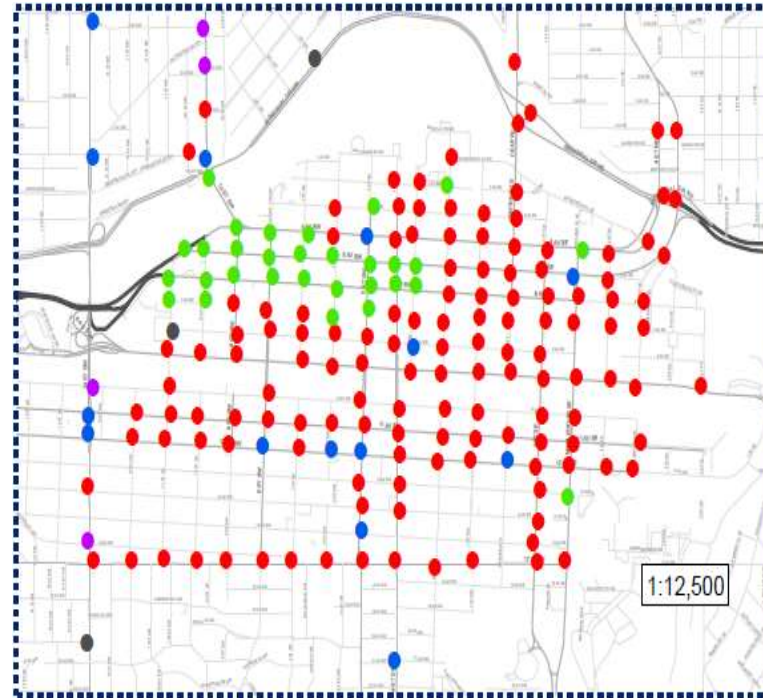# Why communication to signal controller is important?

- TMC can change signal timings remotely
  Huge efficiency by not dispatching trouble crew to change timings locally.

- Logs can be retrieved remotely.
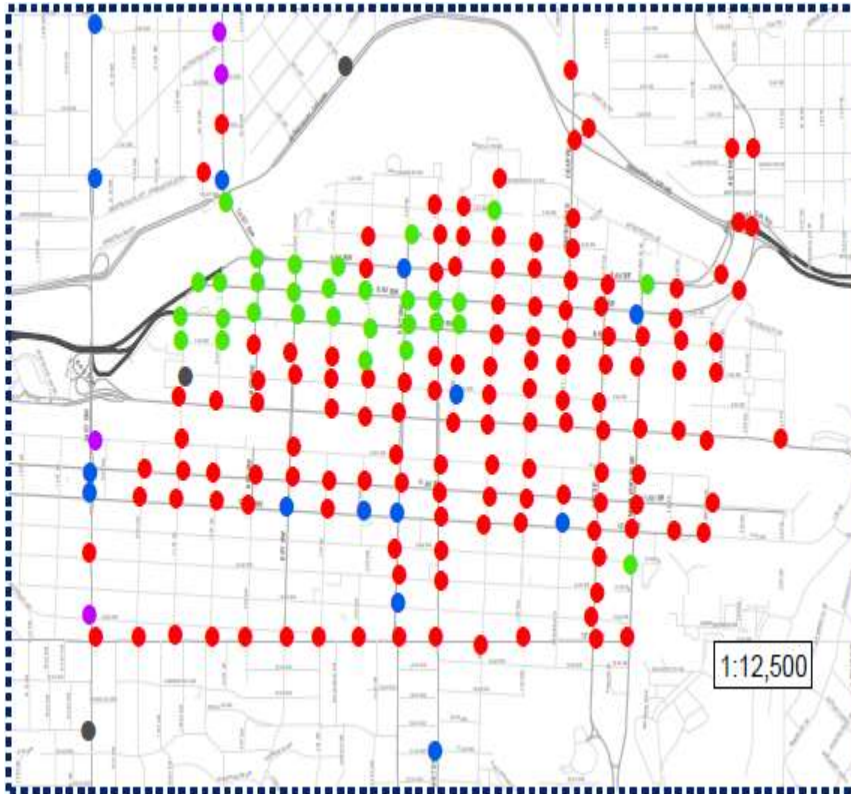
- Status verification without crew dispatch

Downtown ENMAX manhole fire

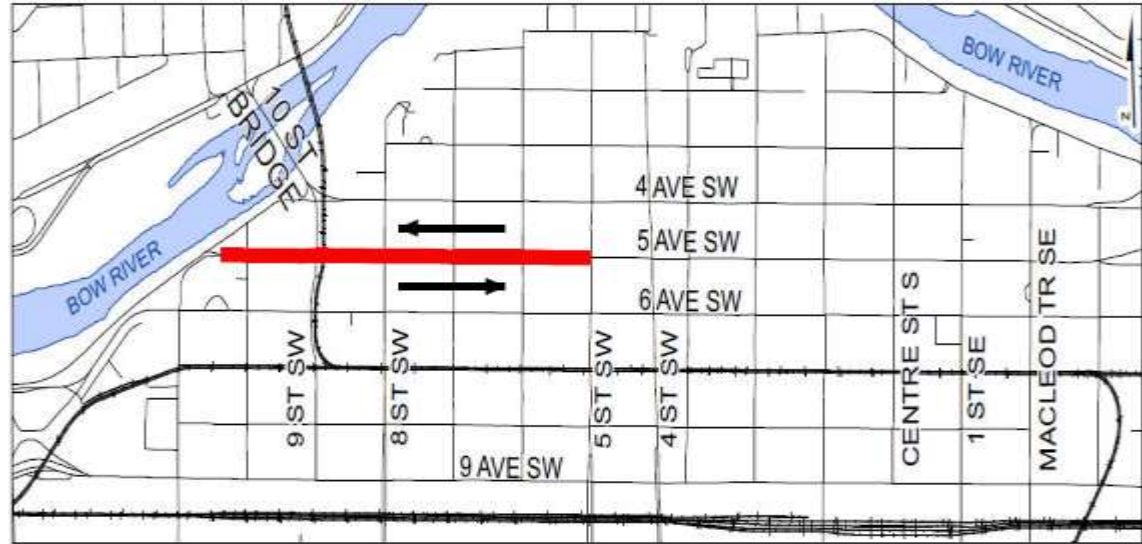- 35 Copper Comm locations impacte

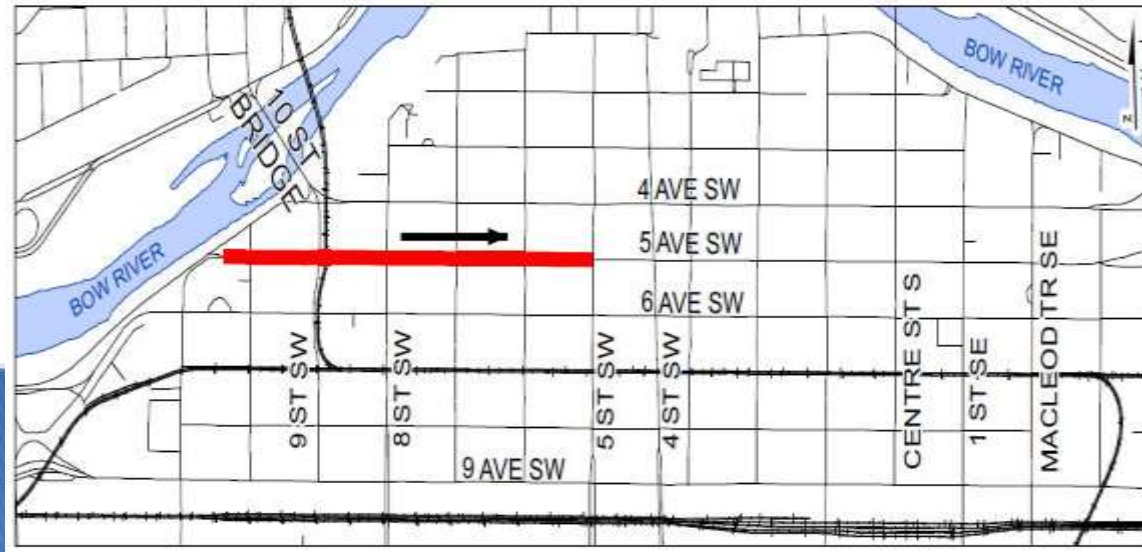# Downtown Traffic Signal controller replacement program- 140 locations

Pilot
Project
May 15,
2015

Two-way operation - All times except 6 a.m. - 9 a.m. weekdays

One-way eastbound - 6 a.m. - 9 a.m. weekdays

5 Avenue Lane Reversal

Pre-emption Upgrad for 4-Car C-Train for 9th Street