E. SMART CITY INNOVATIONS

INTRODUCTION

In the face of a rapidly changing world, cities must integrate smart technology into their systems in order to better serve residents and enhance their competitiveness as regional centers. A smart city is a municipality that uses information and communication technologies to increase operational efficiency, share information with the public, and improve both the quality of government services and resident welfare. Rochester's interdepartmental smart city team is critically examining City systems, particularly transportation and infrastructure, and implementing policies and processes that are more economical, more efficient, and more equitable for our residents.

KEY TAKEAWAYS

— Rochester seeks to improve as a "smart" city, using information, smart infrastructure, and communication technologies to better serve residents and businesses.

— Open data encourages innovation, civic empowerment, and trust between City Hall and the people of Rochester.

— Access to high-speed internet and cellular technologies connects people to opportunities.

CHARACTERISTICS OF A SMART CITY

— Efficient utility infrastructure

— Improved technological capacity among residents

— Incorporation of technology into infrastructure

— Accessible transportation systems

— Improved Data Management

— Sustainable Energy

SMART INFRASTRUCTURE

Integrating smart technology with transportation infrastructure will make it easier to analyze and track data that will ensure infrastructure is serving residents as efficiently as possible.

→ **Streets** By putting sensors in streets, traffic conditions can be tracked in real time enabling traffic signals to dynamically adjust to conditions, creating a safer, more efficient traffic flow and reducing productivity loss due to time spent sitting in traffic. Sensors can also be used to monitor condition for infrastructure maintenance purposes.

→ **Parking** Sensors in parking spaces can feed a database that displays parking capacity in real time. This will result in an ease of parking for drivers, and may reveal available parking in an area perceived to have a parking shortage, increasing the economic activity and quality of life experience in the City of Rochester. Parking meter rates can also be adjusted dynamically based on experienced demand.

→ **Streetlights** Smart streetlights use intelligent LED lights outfitted with sensors that sense when there is vehicular or pedestrian traffic nearby, and will adjust the brightness of lights accordingly. This will save energy, increase safety and decrease light pollution.

E. SMART CITY INNOVATIONS (CONTINUED)

DIG ONCE POLICY

A Dig Once Policy, or pavement management system, strategically plans when street construction occurs, so that it occurs as infrequently as possible. This is a more deliberate method of street construction that saves money and time, and minimizes negative impacts of construction. It also involves using technology to better coordinate with utility companies to combine street repair efforts with utility maintenance or installation efforts, to ensure a street will only have to be dug up once. In 2018, the City of Rochester implemented a Dig Once/Right-Of-Way policy and management program, continuing to improve street construction coordination through GIS-based solutions and introducing more predictability in future infrastructure maintenance needs.

SMART METERING

A smart meter is a device on a structure that records consumption, such as electricity, water, gas, or even parking, and communicates the information to the appropriate agency for billing purposes or alerting of possible malfunctions, leaks and other safety issues. Retrofitting structures with smart meters and encouraging new construction to install smart meters will significantly reduce the need for the manual inspections.

SOLAR-POWERED REFUSE COMPACTION

A solar-powered waste compactor uses a smart device to read a waste bin's fill-level. When a bin is filled, a mechanism automatically compacts the waste, increasing the overall capacity of the bin, and decreasing the number of times the bin needs to be emptied. Rochester currently operates four solar-powered compactors at the Rochester Public Market. Since these compactors are very expensive, significant funds are required to deploy enough of them to make a meaningful difference in the benefits of fewer pickups.

OPEN DATA

Open data encourages innovation, civic empowerment, and trust between governments and constituents. Rochester has expanded its data resources available to the public and will continue to do so over the coming years. Below are some of the more cutting-edge open data resources the City has available:

→ **Building Blocks**
The Building Blocks software integrates a variety of data sets related to the various activities associated with vacant and/or potentially problem properties.

→ **NBD Maps**
The Department of Neighborhood and Business Development has created a series of GIS maps that display data, such as property tax information, business permits, vacant land, and demolition sites.

→ **Projects and Plans App**
This app allows visitors to see current development projects, street projects, environmental sustainability efforts, and plans and studies.

→ **PlowTrax**
A web-based map that is activated during snow events utilizing GPS to track the progress of approximately 150 snow plows, and show their current locations. The map is updated every five minutes during snow events and integrated with the 311 Call Center.

→ **RPD Open Data**
The Rochester Police department has made available information on crime and crime statistics, personnel, projects, and analyses.

E. SMART CITY INNOVATIONS (CONTINUED)

FIBER OPTICS

Fiber Optic Cable is a telecommunications cable made from glass fiber strands that is used as a utility to deliver a signal such as internet to homes and businesses. Fiber optic cables differ from traditional cables because they provide faster internet speeds, are more resilient in the face of weather and power outages, and have less of a fire risk. Expanding the installation of fiber optic cable will increase connectivity among residents and businesses, and drive more competitive prices between internet providers. As the City moves forward in expanding access to high-speed internet, the City continuously seeks strategies to streamline regulatory requirements and offer in kind incentives to catalyze the expansion of fiber optics throughout the entire city, in an effort to provide digital access to all residents.

PUBLIC COMMENT

"High-speed internet should be available for free or at low cost throughout the city borders. We need to bring families into the hi-tech world, and help their children use their potential to improve their lives through technology work opportunities. They won't know what they can do until they have exposure to this world."
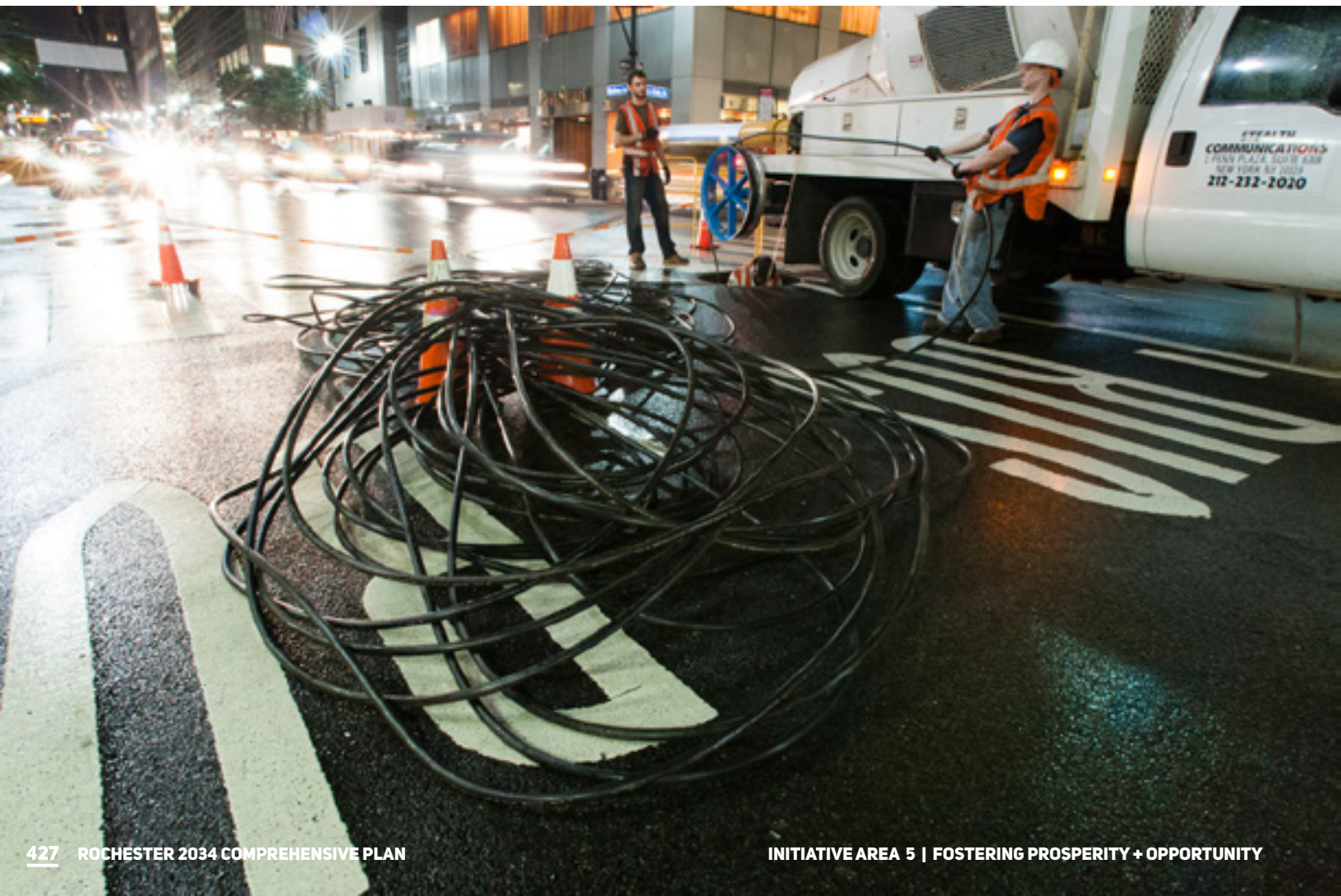
5G SMART CELL TECHNOLOGY

5G is the next step in cellular technology providing increased speed, coverage, and reliability. It is a new technology, and is only available in a few locations across the country. The City is looking at ways of introducing 5G technology into the Rochester area in order to increase connectivity and accessibility to cell technologies. Local deployment of this technology would increase the viability of the city as a destination for economic investment.

PUBLIC COMMENT

"Find companies that have operations in cutting edge technology, and those that support a diverse workforce."

PUBLIC COMMENT

"Having high speed internet is critical!

PUBLIC COMMENT

"BETTER INTERNET SPEEDS. Businesses need faster speeds, even fiber."

SELF-DRIVING VEHICLES

Major efforts are being made among private companies to make self-driving vehicles and bring them into the mainstream. This technology could be applied to many forms of travel, including for personal mobility, as well as freight delivery, or even public transit. The impacts of autonomous vehicles could be significant, so it is important to begin planning now.

PUBLIC COMMENT

"Support new tech companies that will develop traffic signals whose timing will be controlled by actual traffic. Much improved efficiency."