



City Commission Work Session

Agenda

October 26, 2023 @ 1:00 PM

City Hall Commission Chambers
401 S. Park Avenue

welcome

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please note

Times are projected and subject to change.

1. Meeting Called to Order**2. Discussion Item (s)**

- a. Presentation by Megellan Advisors on broadband and smart city initiatives 2 hours

3. Adjournment



City Commission

agenda item

item type

Discussion Item (s)

meeting date

October 26, 2023

prepared by**approved by****subject**

Presentation by Megellan Advisors on broadband and smart city initiatives

motion | recommendation**background**

Magellan Advisors will present its report and recommendations. Attached are the following: Consultant presentation Consultant response to RFP Deliverables required in RFP As a reminder, the Ad-Hoc Committee was tasked with: Serving as a forum for the discussion of Smart City and Broadband standard of service, technologies, including, but not limited to, fiber optic technology, and related concepts among stakeholders. Evaluating methods of ensuring adequate broadband choice, availability, and capacity. Developing an outline for a Smart City strategic plan. Exploring Smart City implementation strategies for the City. Aligning Smart City initiatives with other City objectives and priorities. Evaluating the costs of implementing, administering, and maintaining any such broadband technologies. Exploring innovative and creative ways to utilize such broadband technologies.

strategic objectives**alternatives | other considerations****fiscal impact****attachments**

1. Presentation

Connectivity & Smart City Strategic Plan

City Commission

October 26, 2023



- Project Overview
- Review Project Recommendations
- Key Items:
 1. Can additional capacity be purchased from Frog?
 2. Should the electric undergrounding be suspended? If so, when?
 3. Identify any areas of overlap between Magellan's proposed expanded backbone fiber network and the electric undergrounding effort
 4. Move forward with assessing the existing backbone
 5. Move forward with the backbone design
 6. Wireless next steps
 7. Smart city use cases prioritization
 8. Smart city recommendations

Project Overview

In November 2022, **Magellan** was selected to support the City of Winter Park's IT Department and the Broadband and Smart City Ad Hoc Committee by providing services and deliverables satisfying the requirements of City Ordinance 3210-21. Their scope included:

Market
Analysis

Connectivity
Master Plan

Community
Outreach Plan

Smart City
Strategic Plan

Connectivity Plan Projects

Project 1: Backbone Extension

KEY FINDINGS

- City's **current backbone** will **connect its sites and facilities**
 - ✓ more secure network
 - ✓ faster and less expensive than the alternatives
- Existing wireless and leased systems could be replaced by connecting them to the expanded fiber backbone**
 - These include utility VHF/UHF radio services for city lift stations, other leased lines, wireless PTP/PTMP systems, etc.
- Expanded Fiber Network (30+miles) Build Out**

To be
connected
sites and
facilities

- | | |
|----------------------------|--------|
| • Expanded Backbone: | \$2.3M |
| • Traffic Cabinets (64): | \$445K |
| • Parks & Recreation (14): | \$470K |
| • Lift Stations (74): | \$2.9M |

Total Cost: \$6.1M

PROJECT RECOMMENDATIONS

- Evaluate funding opportunities*
- Design and engineer an expanded fiber backbone* to support key City priorities
- Determine if additional fiber is needed* within the existing backbone conduit to supplement the City's existing 48-strands

USE CASES AND INITIATIVES ENABLED

- ✓ Connect City Sites, Facilities & Important Public Spaces
- ✓ Smart Traffic/Smart Parking
- ✓ Smart Grid/Smart Utilities
- ✓ Utility Lift Station Remote Monitoring and Operations
- ✓ Wireless/Tower Interconnections
- ✓ Smart Parks
- ✓ Smart City Poles

Project 2: Wireless Overlays

KEY FINDINGS

- The City **operates several legacy wireless networks:**
 - Sensus® 900mhz AMI
 - Utility VHF/UHF
 - Point-to-point/Point-to-multi-point
 - Wi-Fi networks
 - Cellular/Mobile Services
- Several of these can be aggregated into a single high-speed wireless private CBRS system, providing much greater capacity and functionality
- City's **Sensus®** AMI platform which supports water/electric meters, is **being expanded to support lake monitoring sensors, and possibly other sensors**
 - The City may have a **meter replacement program** decision to make and should further analyze an open-standards-based LPWAN platform like LoRaWAN®
 - **Wireless Overlay (CBRS & LoRaWAN®) deployment**
Total Cost: \$315,000

PROJECT RECOMMENDATIONS

- **Design and engineer a private LTE, CBRS high-speed wireless broadband system to support remote devices and city users, and act as a backup network for business continuity/disaster recovery purposes**
- **Leverage the existing Sensus® AMI platform** to support connectivity where possible
- **Design and engineer a new open architecture LPWAN platform based on LoRaWAN® standard to replace the legacy system**

USE CASES AND INITIATIVES ENABLED

- | | |
|---|--|
| ✓ Smart Traffic | ✓ Network Backup for Redundancy and Resiliency |
| ✓ Utility Lift Station Remote Monitoring and Operations | ✓ Utility AMI |
| ✓ Security Cameras and other High-Bandwidth Devices | ✓ Sensor Networks for Water and Environmental Management Structural Monitoring, Panic Alarms, and other uses |
| ✓ Mobile Workforce/ Fleet Management* | |

* with Mobility Solution at added cost

Project 3: Fiber-to-the Premise

KEY FINDINGS

- Winter Park is **served with high-speed broadband**, although **not by fiber nor by competitive wireline providers**
- **Lumen** and **Frog** have announced **new fiber-based broadband services** and are **beginning to deploy in Winter Park**
- A **city FTTP project** is:
 - a **high-cost project** (over \$65M), would include significant construction activities across the community
 - would have **high risk** due to high project costs, and the requirements for high take rates to support a break-even business model

PROJECT RECOMMENDATIONS

- The City ***should not*** consider a ***City-owned and City-operated Full Retail ISP*** and ***Joint-venture*** model due to the competitive landscape, high capital costs, and high risks
- The City should ***continue to communicate and work closely with private ISPs*** to ensure an expedient deployment of upgraded services to all areas of Winter Park

Can additional capacity be purchased from Frog?

Yes, confirmed by City staff.

Should the electric undergrounding be suspended?
If so, when?

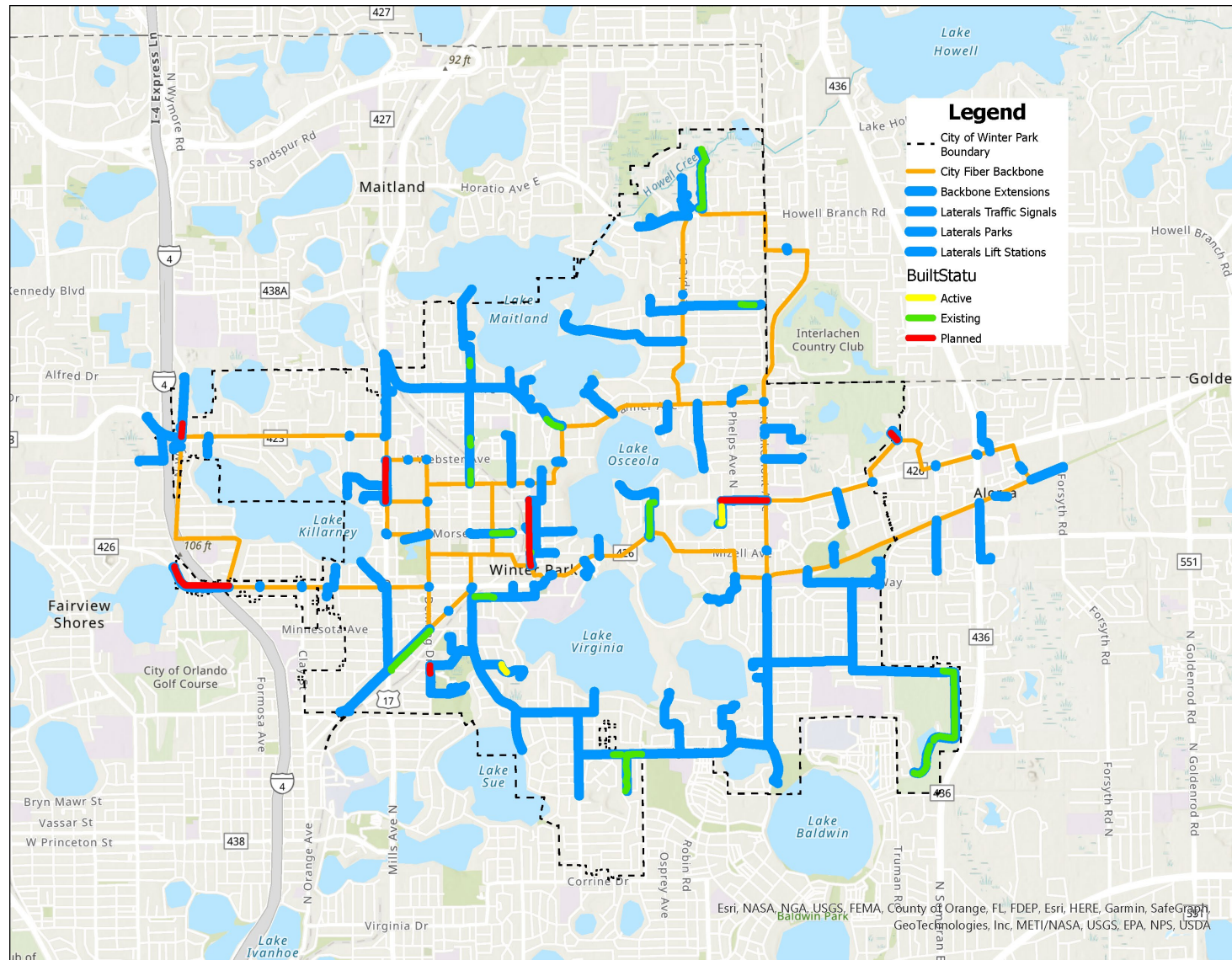
Yes. Immediately.

Are there any areas of overlap between the proposed Expanded Fiber Backbone as compared with the electric undergrounding effort?

No. See Zone L on the next slides as an example.

Mapping Overlay

This map shows the **status of the City's undergrounding project** per area: Existing, Active, and Planned, over **proposed Expanded Fiber Backbone and Lateral Routes**

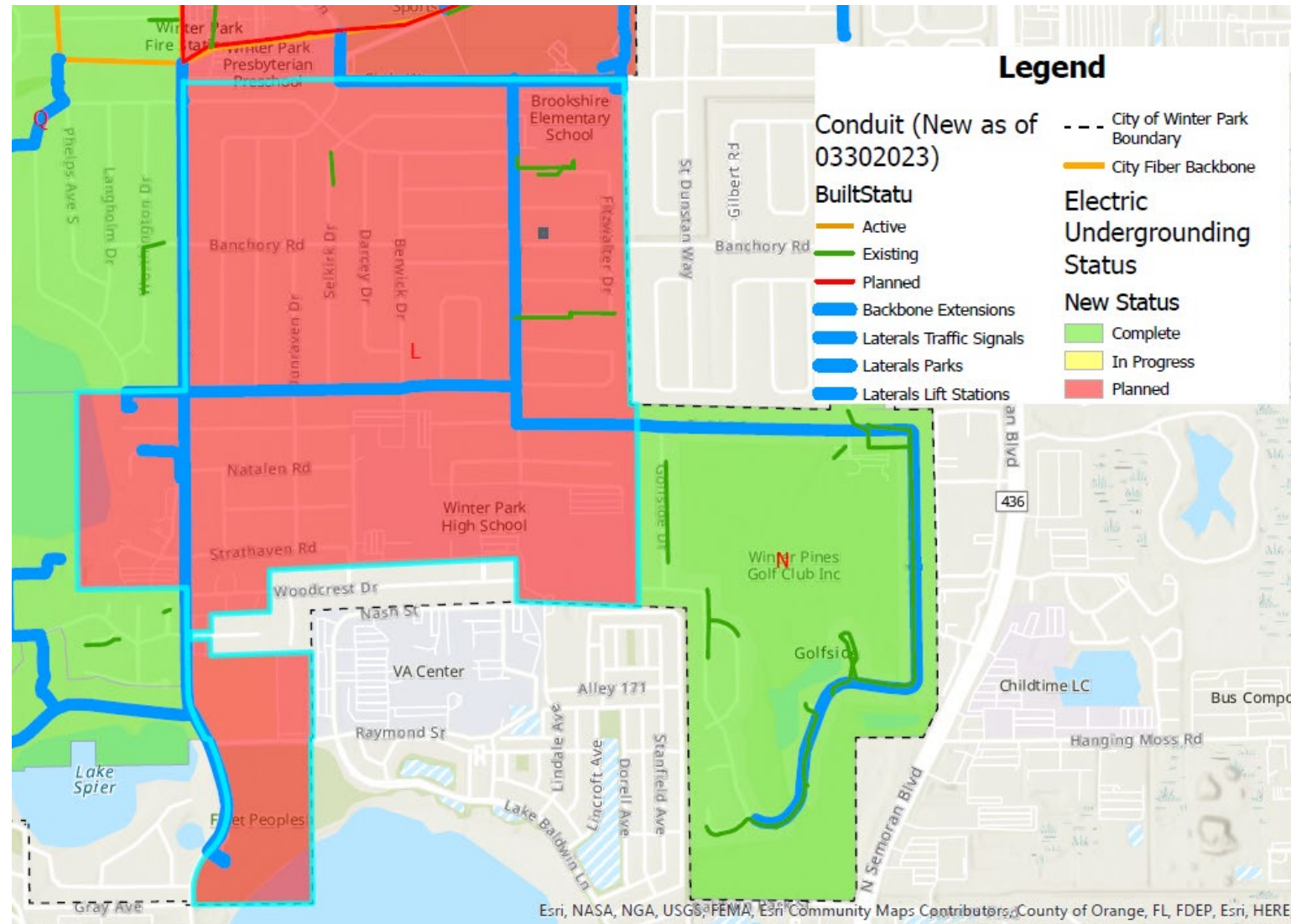


Note: this map is generated from **2-to-3-year-old data**

Fielding and digitizing project as-buils will provide the city with updated status and will provide a true inventory of assets

Zone L Mapping Overlay

Zone L has green lines depicting **existing conduit**, but minimally overlap with the blue lines depicting the **proposed Expanded Fiber Backbone and Laterals**



Move forward with assessing the existing backbone?

Discussion, then seek guidance from City Commission.

Move forward with the backbone design

Discussion, then seek guidance from City Commission.

Next Steps on Wireless

Discussion, then seek guidance from the City Commission.

Smart City Pillars and Infrastructures

 Transportation	 Public Safety	 Utilities	 Quality of Life
• Smart Traffic System • Sensor on Traffic Lights • Smart Parking • Smart Curb Management System • Smart Multi-modal Coordination • Micro-mobility Integration • Autonomous Shuttles • EV Charging Infrastructure • Smart Parking Garage • Smart Streetlighting • Air Taxi Integration	• Dash and Body Cameras * • Drone Integration * • First Responders' Preemption • Smart First Responders' Vehicles • Automated License Plate Readers * • People Counters*	• Remote Meter Reading (Metering) * • Remote Meter Reading (User Portal) • Remote Asset Monitoring System* • Remote Asset Operations • Water and Wastewater Monitoring • Smart Grid	• Smart Parks • Lake Level Monitoring * • Environmental Monitoring – Water and Air • Environmental Monitoring - Soil • Smart City Poles • Smart Municipal Buildings • Smart Trashcans • QR Code (Visitor Engagement) *

Common Data Infrastructure

AI/ML, Analytics, Security, Encryption, Openness, Transparency, Governance

Smart City Infrastructure

Digital Twin(+GIS), 2-way Citizen Communications, Environmental Sensors, Cameras, Digital Signage, Drones

Digital Infrastructure

Fiber/Conduit, Towers/Small Cells, Data Centers/Interconnects, Wireless Spectrum, 5G, CBRS, LoRaWAN®, Wi-Fi, NB-IOT

Smart City Use Cases Prioritization

Final Rankings	Use Cases	Timeline	Cost Estimates (1-5 years CAPEX+OPEX)
1	Smart Traffic System	Mid-term(1-3yrs)	\$1,875,000
2	Smart First Responder Vehicles	Mid-term(1-3yrs)	\$335,000
3	Environmental Monitoring - Air & Water	Immediate	\$440,000
4	Smart Parking	Mid-term(1-3yrs)	\$330,000
5	Smart Grid	Long-term(3-5yrs)	\$80,000
6	Smart Municipal Buildings	Mid-term(1-3yrs)	\$60,000
7	Smart City Poles	Immediate	\$880,000
8	Water (Drinking) Monitoring	Immediate	\$550,000
9	Smart Parks	Immediate	\$320,000
10	Electric Vehicle Charging Infrastructure	Mid-term(1-3yrs)	\$255,000

Smart City Committee Recommendations

See next slide.

Smart City - Recommendations

- The City should establish a **city-wide technical layered architecture and open data governance policies** based on international standards and best practices.
- The Public Works department should establish an *Intelligent Transportation Strategy and Deployment Plan*.
- Each City utility (Water and Wastewater, Electric, Stormwater) should adopt a **5-to-10-year Smart Utility Strategy and Deployment Plan**.
- The Natural Resources department should establish an *Environmental Monitoring Strategy*.
- The Public Safety departments (Fire and Police) should continue to deploy and expand **devices, technologies, and systems** as force multipliers and to improve and gain situational awareness across the community.
- The City departments should immediately begin to deploy '**Pilot Projects**' on those Smart City initiatives and use cases prioritized through this Plan.
- The City should make all datasets generated through its Smart City program available through an **open data site and online platform**.
- The City should closely monitor and participate in **State, County, and Regional Organizations, consortiums, and initiatives**.

Summarized Next Steps

- Suspend the installation of telecommunications conduit in conjunction with the electrical undergrounding project
- Utilize savings to investigate and review data
- Work with other providers to determine the usefulness of existing conduit assets, and how to leverage/plan together while deployment occurs
- Review and start implementing Magellan's Connectivity and Smart City recommendations

THANK YOU

