City of Dallas

# Smart Cities Initiatives

**Transportation and Infrastructure Committee Briefing**
**January 17, 2023**

Ali Hatefi, P.E., Director
Jacob McCarroll, Performance Administrator
Department of Public Works
City of Dallas

# Presentation Overview

- Background/History
- Current and Upcoming Smart Cities Initiatives by Timeline
- Next Steps

# Background/History

- Smart Street Lighting
- Wi-Fi Capabilities
- Smart Buildings
- Smart Parking
- Public Safety Solutions
- Environmental Monitoring
- EV Charging Stations/Small Cells
- Drone Imagery

# Background/History

- Since 2019, multiple departments have been and continue collaborating on Smart Cities Initiatives

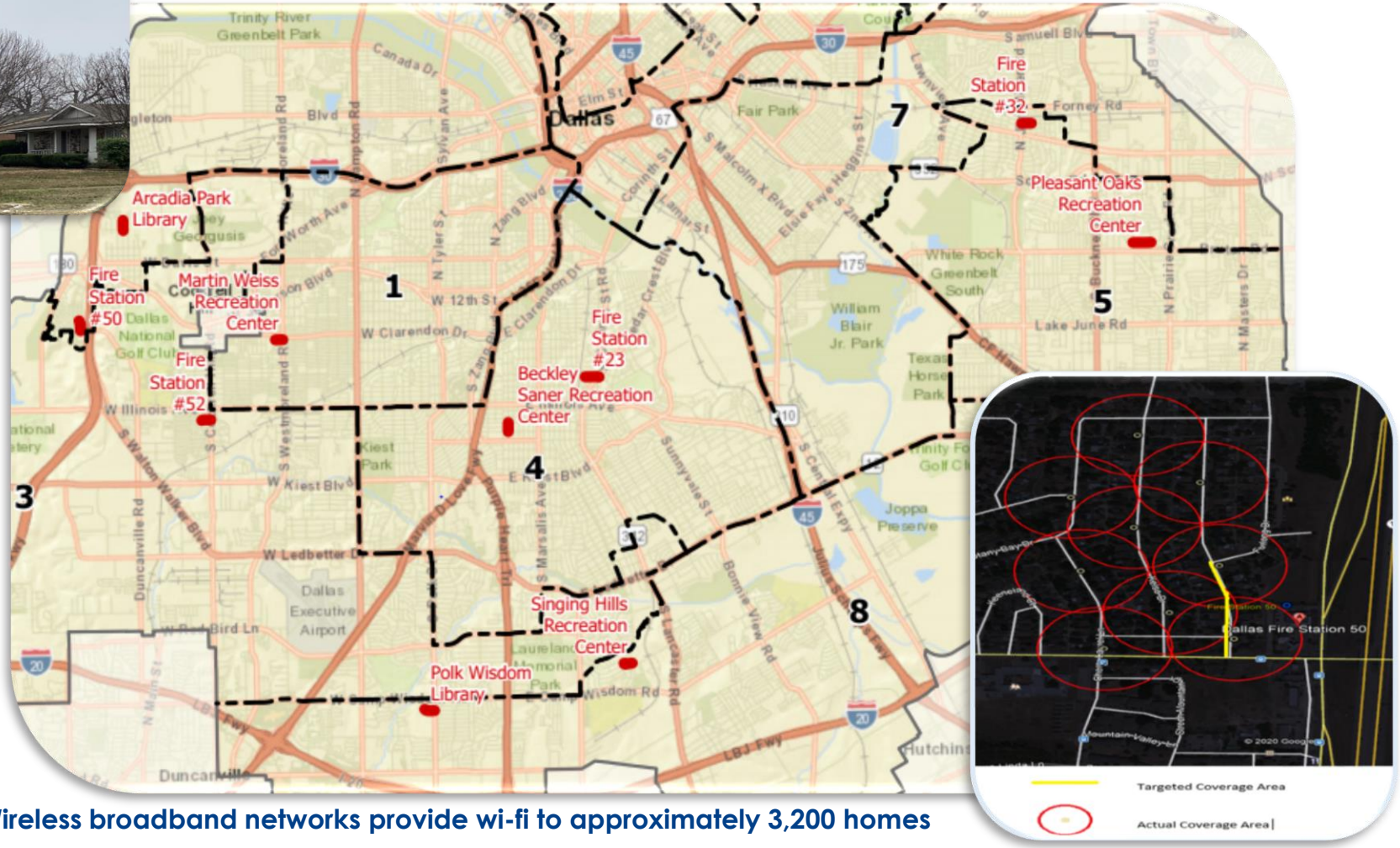
# Background/History

- The Department of Public Works (PBW) began installing conduit in street reconstruction projects for use in future fiber optic installation
- As a pilot project in early 2020, CableRunner installed fiber optic lines in storm sewers between City Hall and the Canton St. Service Center and to five traffic signals

View from one of the traffic signal cameras connected to CableRunner fiber

# Background/History

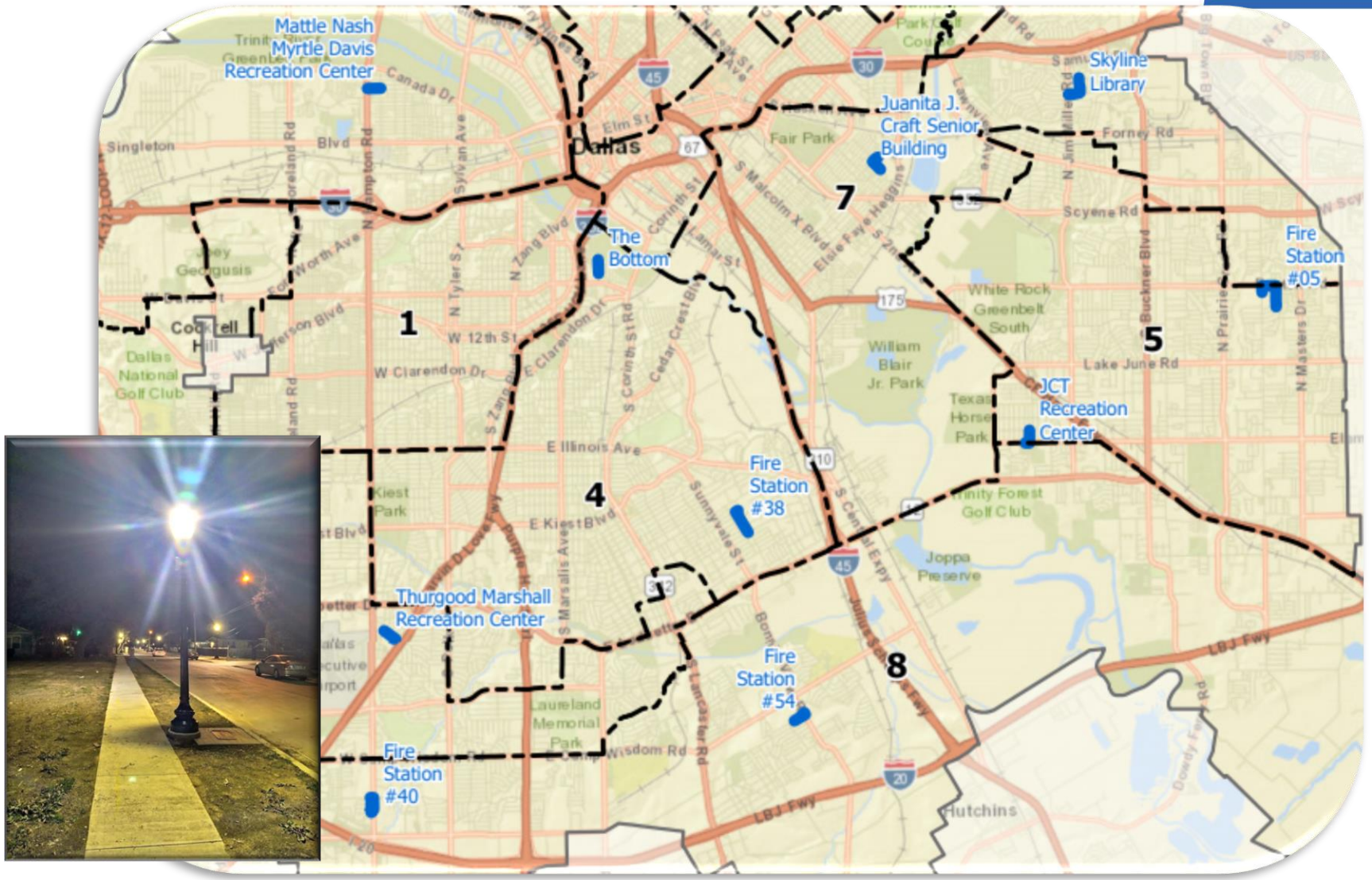
- **October-December 2020:**
  - $2M CARES Act Funding awarded to Neo Networks to construct 10 community Wi-Fi networks to serve approximately 3,200 homes




(10) Wireless broadband networks provide wi-fi to approximately 3,200 homes

# Background/History

- **December 2020 – April 2021:**
  - City teams and contractors used $2.8M in CARES Act funds to complete 10 streetlight Wi-Fi pilot projects ten residential blocks (Wi-Fi serves 150-300 homes)




Project Map/Streetlights and Wi-Fi equipment on Ezekial Ave. from Elam Rd. to Hodde St.

# Background/History

- **January 2021:**
- Integrated Streetlight Wi-Fi Pilot Projects
  - $500K of CARES Act funding used to install telecommunications fiber to provide Wi-Fi at four integrated streetlight poles (smart poles):
    - Fiber connected from Fire Station No. 15 to three smart poles at Lake Cliff Park (Image 1)
    - Fiber from Oak Cliff Municipal Center connected to one smart pole at the intersection of Jefferson Blvd. and S. Crawford St. intersection (Images 2 and 3)

Image 1

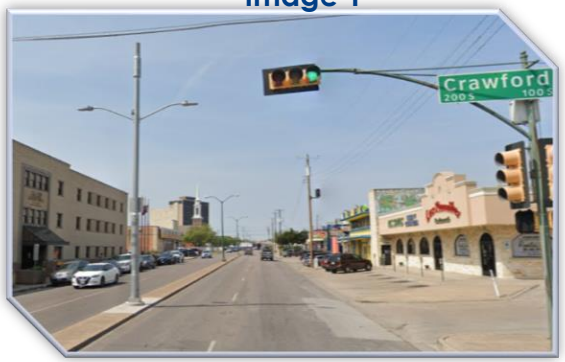



Image 2

Image 3

# Current Smart Cities Initiatives

## Drone Pilot Project

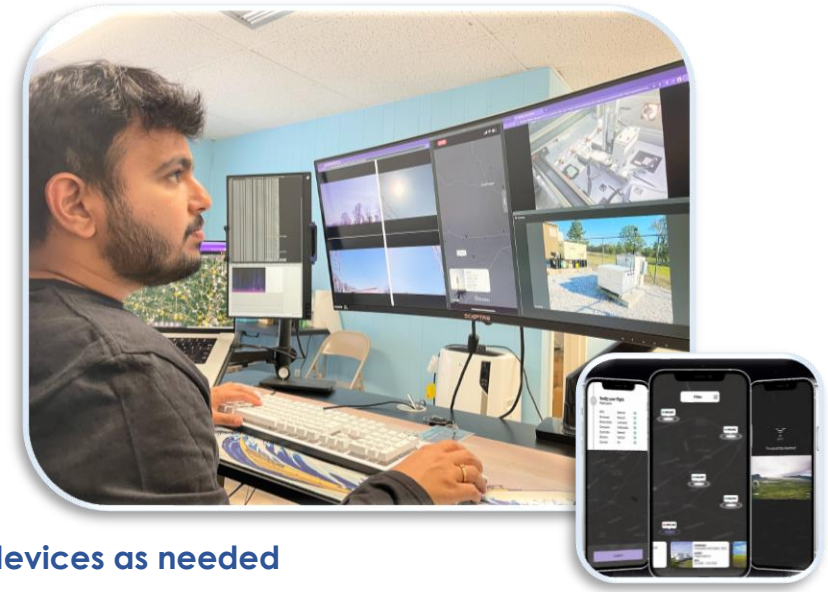
### June 2022:

- Public Works started developing a pilot program with Birdstop, Inc. to employ Unmanned Aerial Vehicle (UAV) via remote deployments from six (6)different locations to provide on-demand services as determined by the City
- The City of Dallas will be the first municipality in Texas utilizing this remote method of this technology

Birdstop, Inc. Node

# Current Smart Cities Initiatives

- **Drone Pilot Project (Continued)**
  - These small UAVs are housed in docking nodes that monitor the equipment and service the device before and after each mission
  - Pilots will monitor the mission and collected data through a dashboard during the flight



Nodes house drones and necessary equipment required to replenish devices as needed

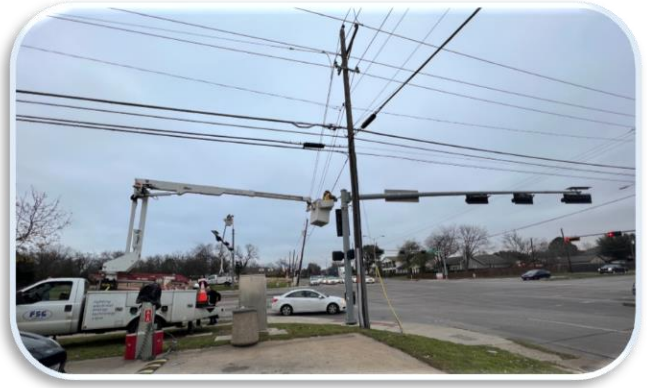
# Current Smart Cities Initiatives

- **Drone Pilot Project (Continued)**
  - Some of UAVs applications for public agencies:
    - Law Enforcement
    - Fire Rescue
    - Landscape Analysis
    - Construction Inspection
    - Bridge Inspection
    - Emergency Management
    - Surveying
    - Digital Twin

Pre-construction image

# Current Smart Cities Initiatives

- **Ubicquia**
- **June 2022:**
  - City Staff (PBW, TRN, and ITS) are completing pilot projects to incorporate Ubicquia Artificial Intelligence (AI) technologies to incorporate "Smart City" elements and connect the City's infrastructure
  - Currently, the devices are being utilized for the following projects:
    - Red Cloud Neighborhood Project
    - Richmond Avenue Project
    - Tietze Park Wi-Fi Project



Red Cloud Neighborhood Intersections

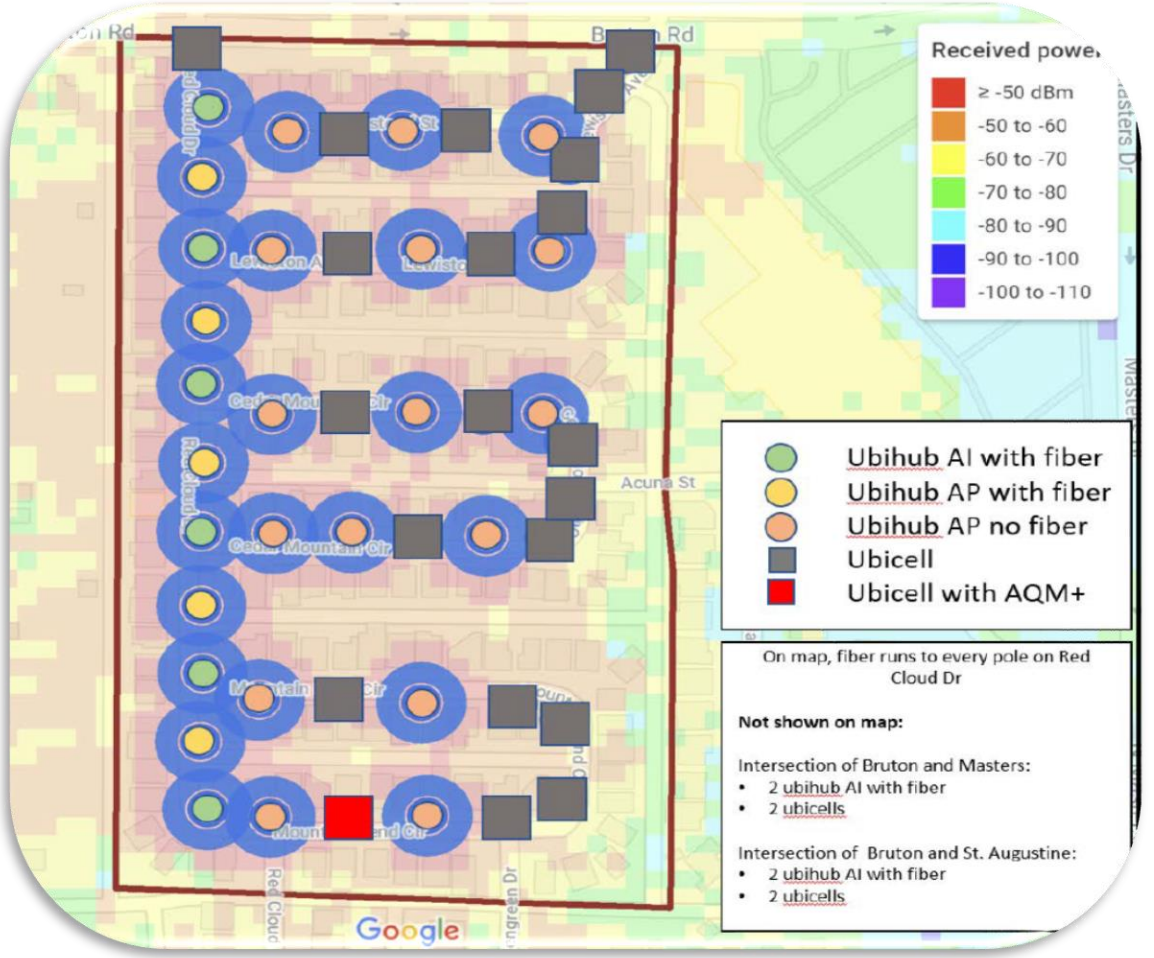
# Current Smart Cities Initiatives

## Ubicquia (Continued)

- The UbiHub AP/AI Smart City Platform enhances City services by utilizing the following features:
  - **Edge analytics – Monitor and manage from one dashboard**
    - Traffic and Mobility Metrics – identify and correct issues in real time
    - Streets – curb management, waste, and parking
    - Public Safety
    - Video Streaming
    - Public Wi-Fi access points through streetlights
  - **4K Cameras with Artificial Intelligence (AI) processing**
    - Lighting controls
    - Air Quality Monitoring (AQM)

# Current Smart Cities Initiatives

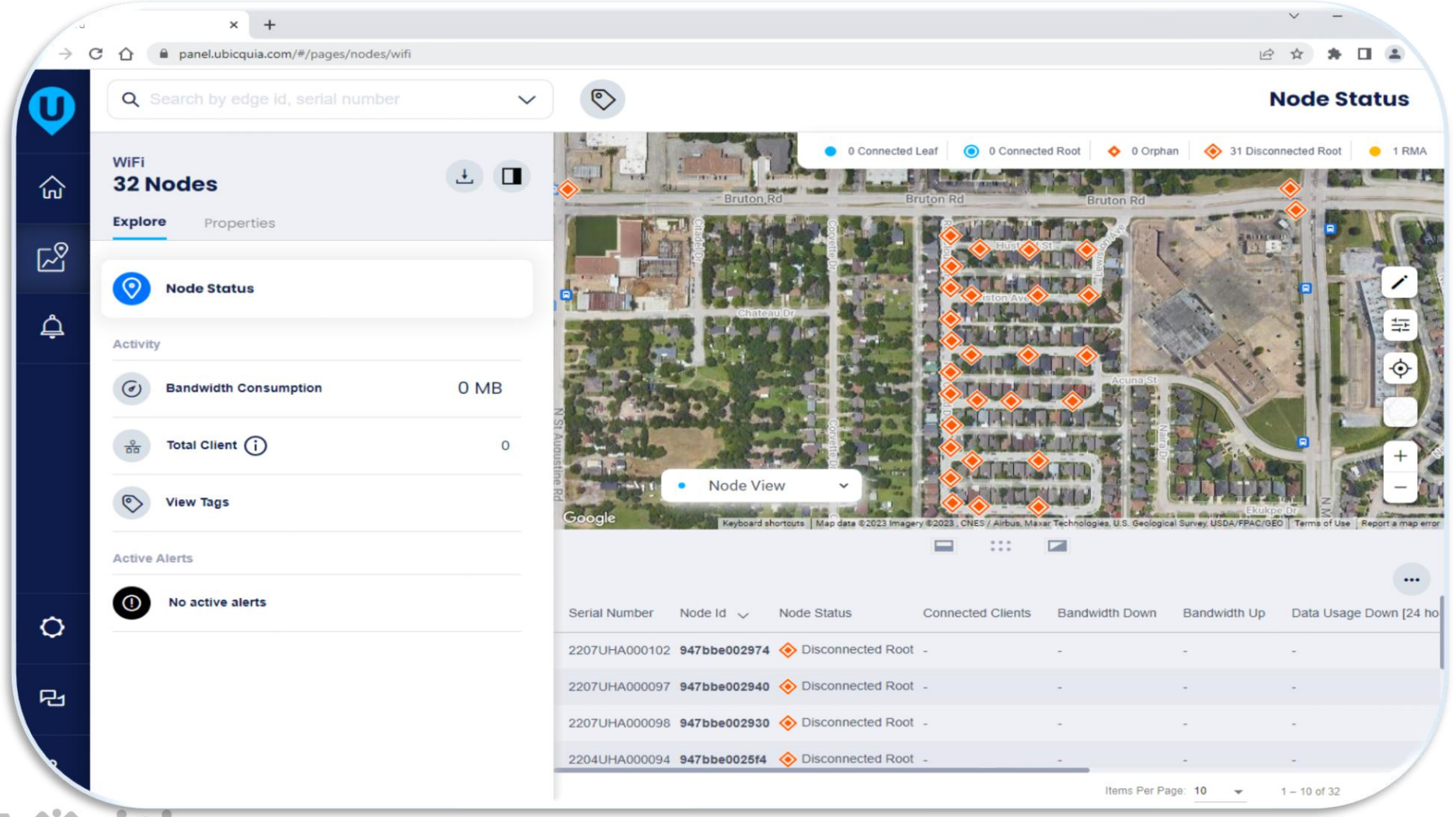
- **Red Cloud Neighborhood Project Scope**
  - As part of the street improvement project, the City installed conduit and fiber to provide Wi-Fi by connecting Fire Station No. 5 to proposed streetlights along Red Cloud Dr.
  - The proposed streetlights will host UbiHub equipment with the following capabilities:
    - AI cameras (intersections only),
    - Wi-Fi access points,
    - Environmental monitors




UbiHub AI and AP Access Points - Red Cloud Neighborhood Enhancements

# Current Smart Cities Initiatives

## Ubiquia Red Cloud Analytics Dashboard



# Current Smart Cities Initiatives

- **Red Cloud Neighborhood Project Update**
- Wi-Fi equipment is being installed
- Once fiber is installed, Wi-Fi, cameras, AI and environmental monitors will be activated

Image of Cedar Mountain Circle prior to construction

Image of Cedar Mountain Circle after construction

Image of Red Cloud Drive prior to construction

Image of Red Cloud Drive after to construction

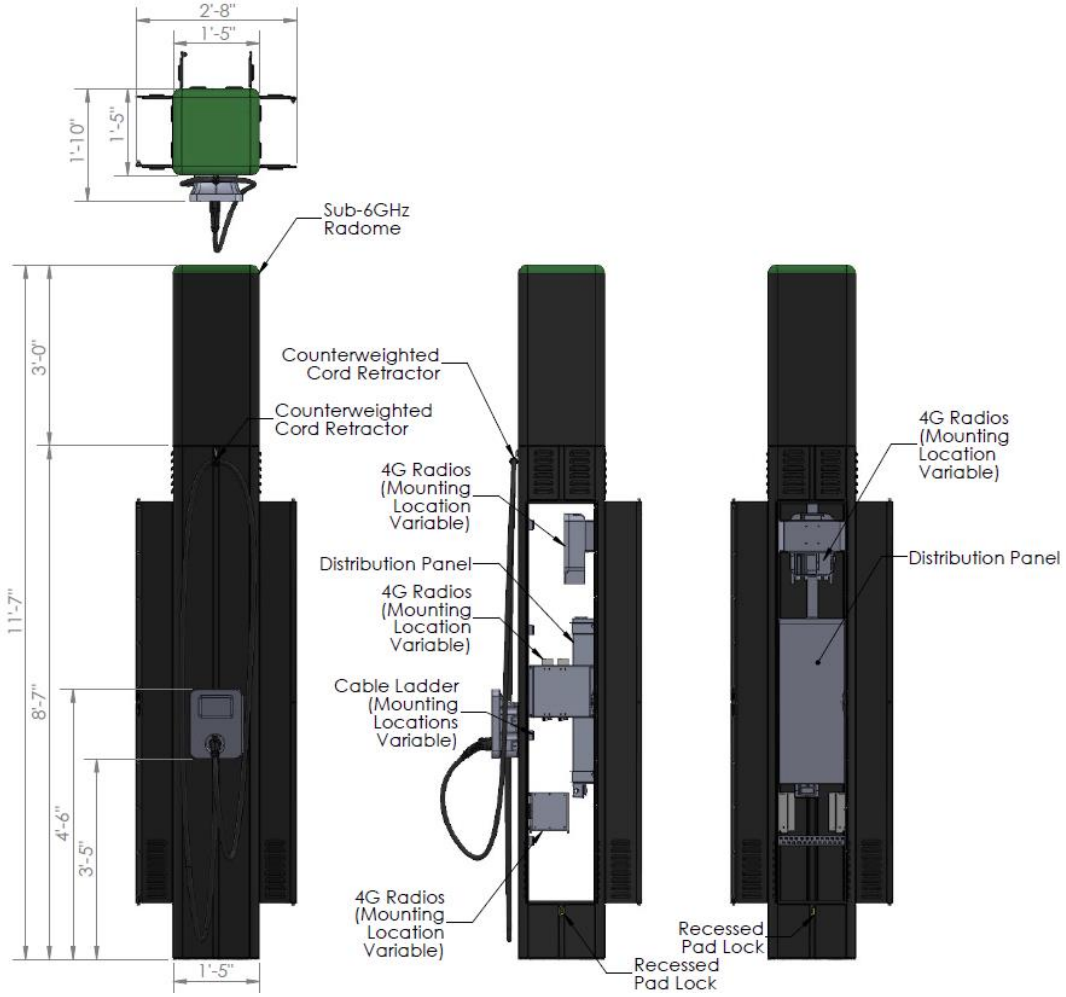
# Current Smart Cities Initiatives

- **Richmond Ave. and Tietze Park Projects**
  - Recent reconstruction of Richmond Ave. included the placement of conduit to allow for the fiber installation and Ubicquia AI/Wi-Fi equipment on traffic signals to monitor traffic, and provide Wi-Fi at the following six intersections:
    - Greenville Ave. at Richmond Ave.
    - Matilda St. at Richmond Ave.
    - Skillman St. at Richmond Ave. (picture shown)
    - Abrams Rd. at Richmond Ave.
    - Skillman St. at Belmont Ave.
    - Skillman St. at Vanderbilt Ave.

# Upcoming Smart Cities Initiatives

- **Electric Vehicle Charging Stations/5G Small Cells**
  - It is estimated that the demand for Electric Vehicle (EV) Charging Stations in the next five years is projected to grow from a couple of thousand to under 20K
  - Public Works staff is working with Crown Castle and Blink to implement a pilot program to test EV charging station/5G equipment for small cell coverage and public Wi-Fi
  - This pilot program will utilize the recently constructed Vickery Park Branch Library (included conduit and parking designations for future EV charging station features),

# Upcoming Smart Cities Initiatives



- Proprietary EV charging station by Blink and Crown Castle

# Upcoming Smart Cities Initiatives

- **EV Charging/5G Pilot Project Overview**
  - Build approximately 660’ Rapid Connect path to connect the Vickery Park Branch Library to existing Crown Castle network infrastructure
  - Install and connect the EV charging station to Crown Castle network

Vickery Branch Park Library

# Next Steps

- Complete implementation, monitor performance of, and report on current Smart Cities initiatives
- Explore funding needs and sources to increase implementation of Smart Cities technologies in future projects
- Continue exploring opportunities for Smart Cities pilot technologies and partners for implementation

# Next Steps

Discussion/Questions

City of Dallas

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