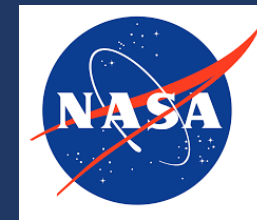


Hampton City Council Presentation

January 11, 2023

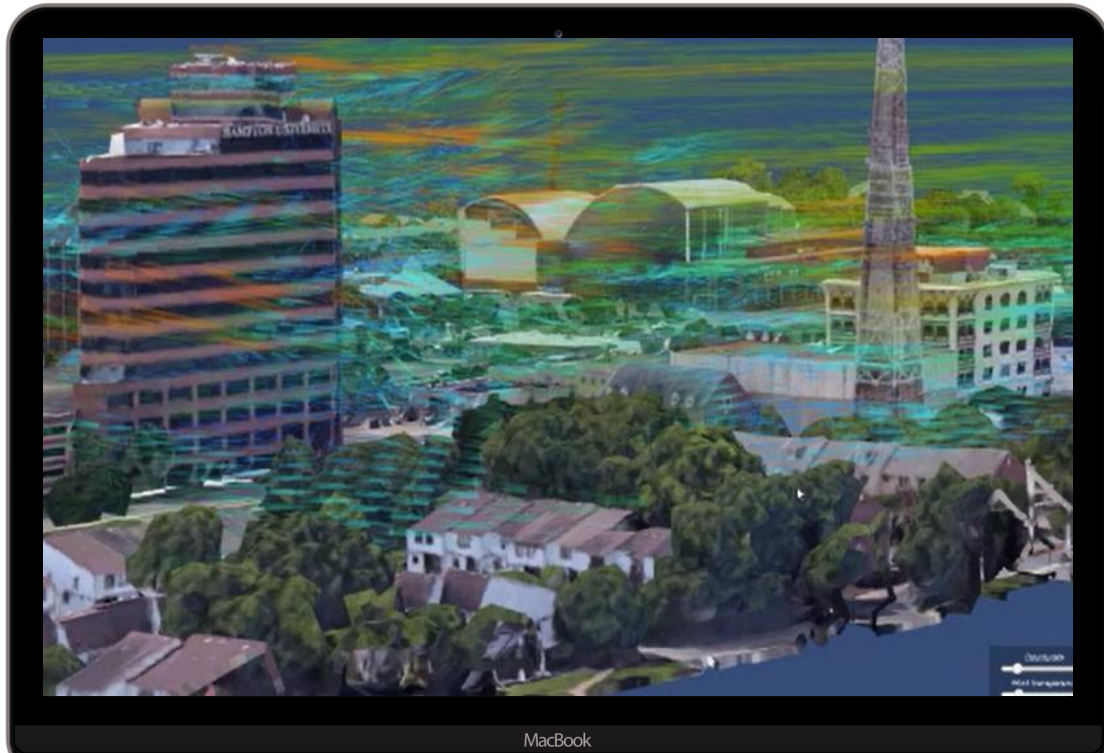


TruWeather Solutions (TWS), a Northern Virginia based company, has been awarded and is at the inception of a NASA funded Phase II (\$750,000) SBIR (Small Business Innovation Research) contract for an **Urban Weather Sensing Infrastructure Testbed** in Hampton, Virginia. TruWeather, along with key industry partners, Hampton University, and the City of Hampton, VA are creating a NASA-funded urban weather testbed to demonstrate delivery of more granular weather data and forecast services for low altitude urban and suburban flight to enable weather aware Uncrewed Aerial Systems (UAS) beyond-visual-line-of-sight (BVLOS) operations and the AAM (Advanced Air Mobility) industry.

Awarded: May 2022 **End of Contract: May 2024**



NASA Funded Weather Testbed (Hampton, VA)



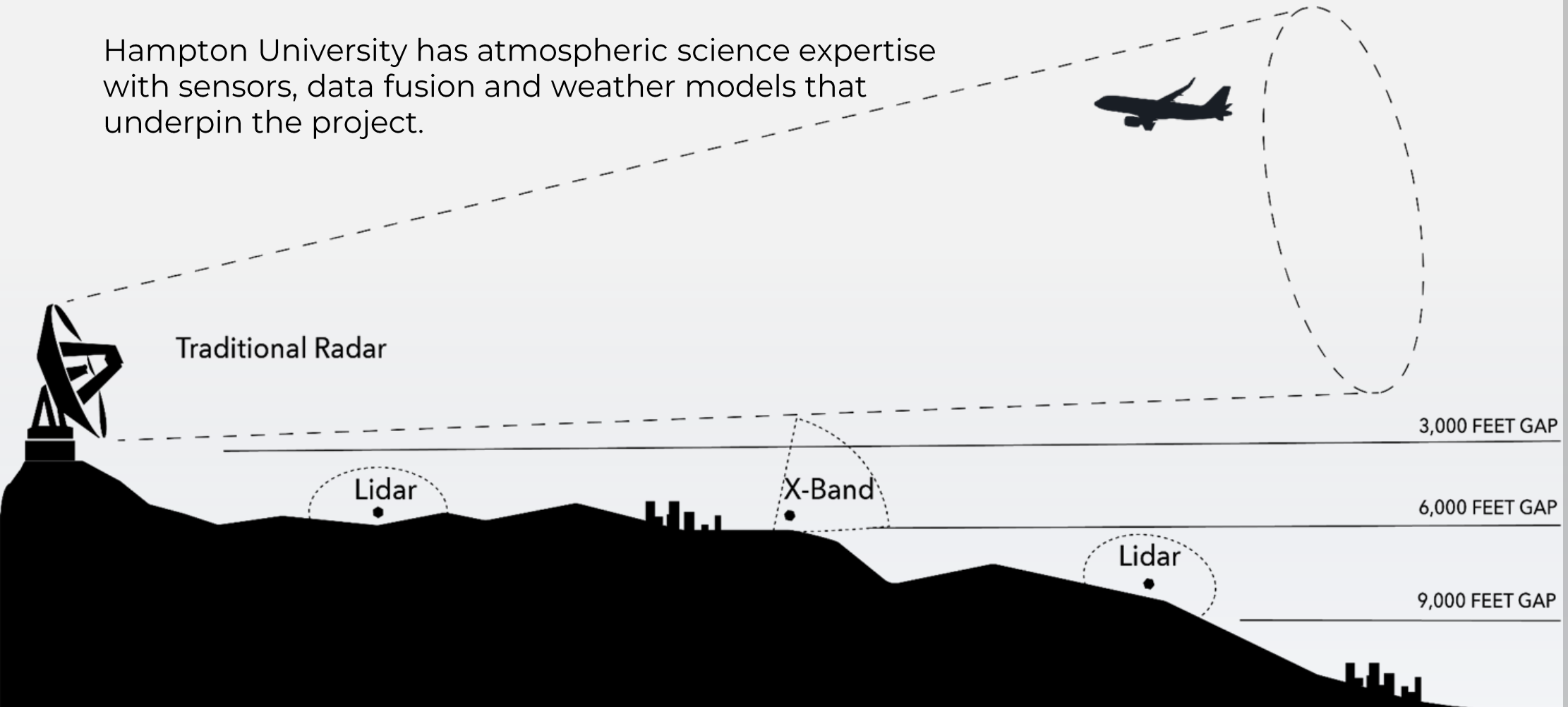
Demonstrate the value novel weather sensors bring in detecting microweather and to improve urban wind models

- There is no government or commercial entity today that provides precision wind in built-up areas
- 35+ sites with sensors including 2 scanning wind lidars, 24 low-cost weather stations, 6 high end wind systems, 2 fully functional weather stations, several drone mounted mini-weather stations.
- Demonstrating the commercialization of innovative micro-weather data collection, processing, and delivery

TRADITIONAL WEATHER INFRASTRUCTURE LEAVES A GAP

Drones & Electric Powered Vertical Takeoff and Landing Vehicles need high quality weather data for industry to thrive...

Hampton University has atmospheric science expertise with sensors, data fusion and weather models that underpin the project.



WEATHER GAP

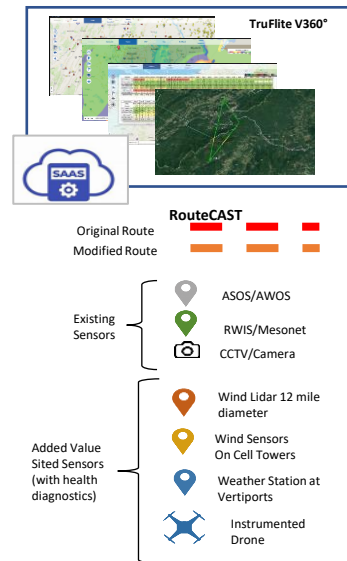
Hampton, VA Urban Weather Testbed NASA



Hampton, VA was selected over Dallas TX, Columbus OH, Syracuse NY to support NASA's High Density Vertiplex operations and make Hampton, VA the best weather measured city in the United States.



Science Driving Smart Systems and Economic Growth



Overall Operational Concept



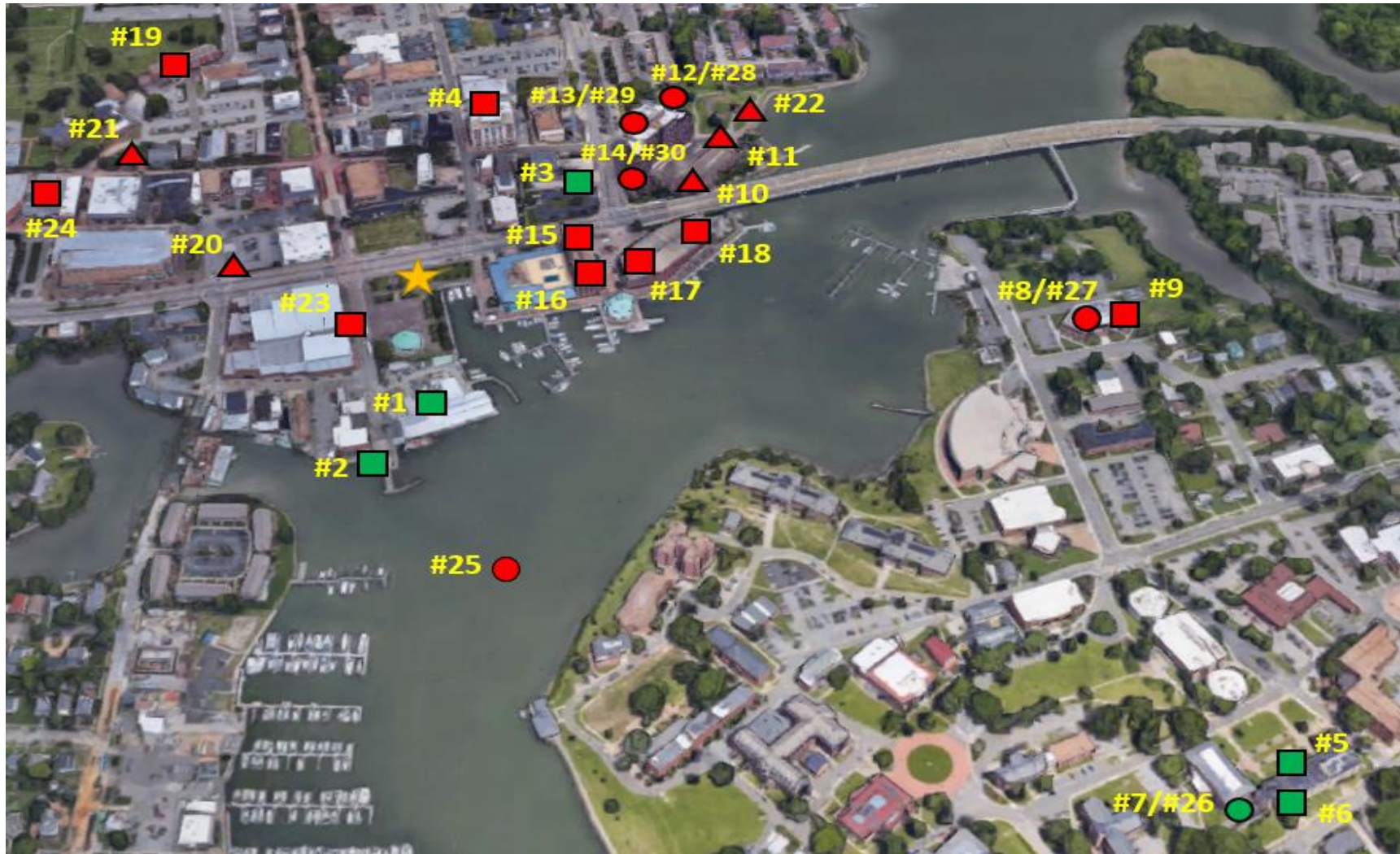
Sensor Partnerships

- Wind Scanning LIDAR** - winds aloft/wind effects, ubiquitous cloud height estimates in development
- Sited ultra-accurate wind sensors** for rain/snow days
- Mobile ultra-accurate wind sensors** on drones
- Sited micro-weather stations** 28 weather parameters, camera (ceillometer 10,000 ft)
- Sited cost-effective weather stations** surface temp, dew point, pressure, rain rate, wind lightning






Integrated Sensor Assets into the Cloud and/or the Edge

- Instrumented Vertiports

Sensor Locations



LEGEND

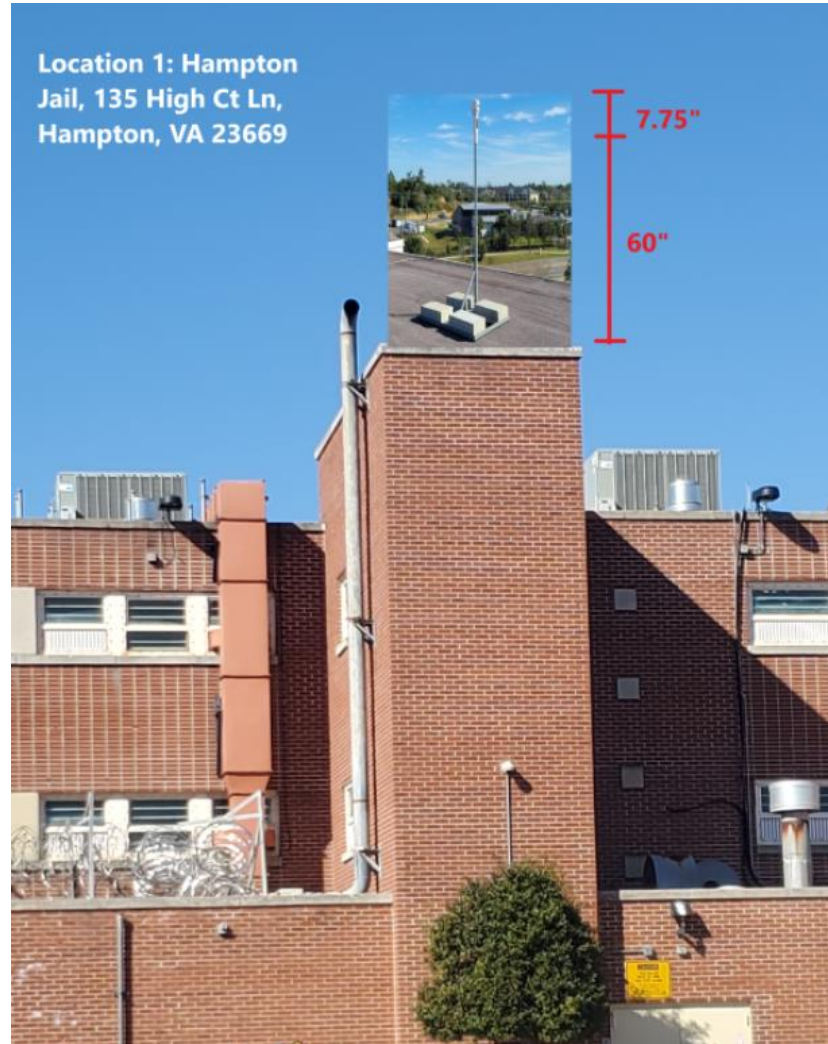
-  = Pole Mounted Tempest Sensor
-  = Flat Roof Tempest Sensor
-  = ProNet Sensor*
-  = Complete
-  = Center of CFD Grid

*Co-located with a Tempest sensor

- Sensors communicate in unlicensed 900MHz frequency and will not affect emergency department communications on 4.9GHz frequency

Location #1: 135 High Ct (Hampton Jail)

Original Location



Alternative Location: Registrar Office



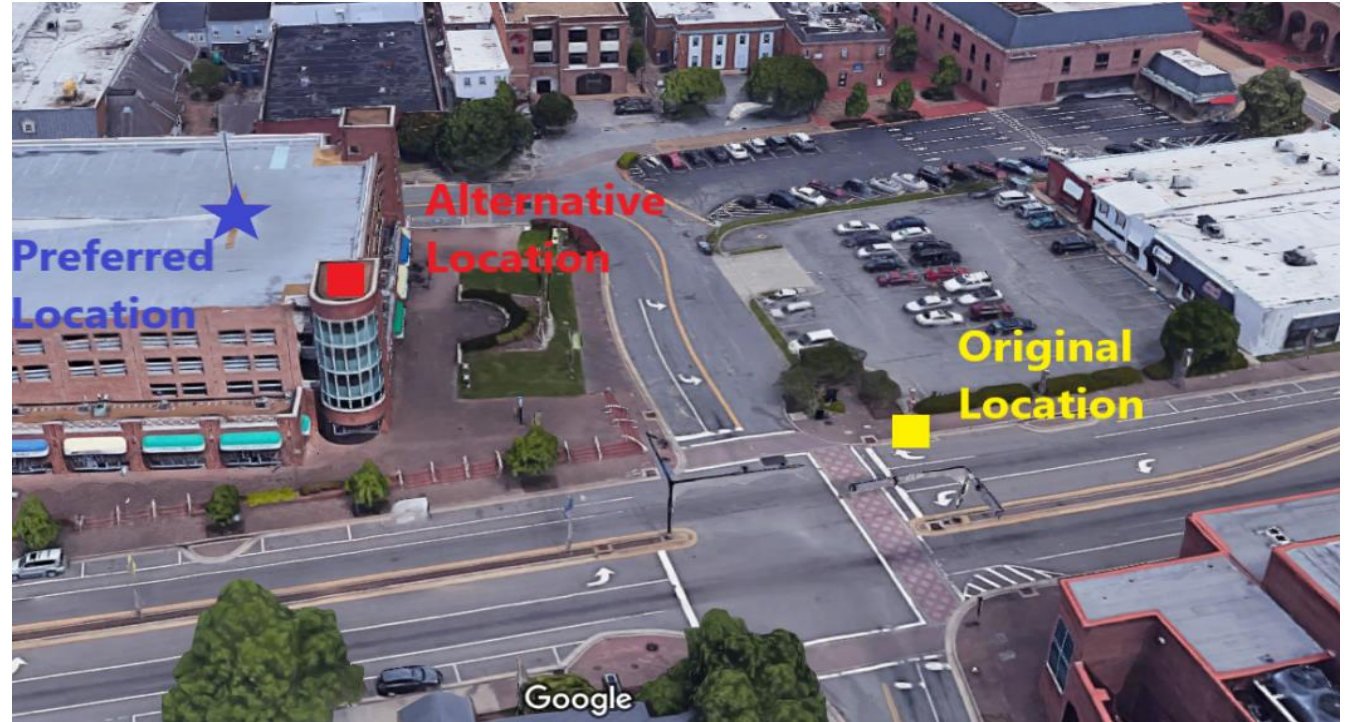
Preferred Location: Move the sensor over to the City Registrar Office and place in the middle section of the roof so the sensor will not be visible from street level. Same installation method/materials as the original location.

Location #2: NE Corner Settlers Landing/Old Hampton

Original Location



Alternative Location: Parking Garage



Preferred Location: Move sensor to light pole in adjacent parking garage and would be installed in similar manner as original location.

Location #3: 6 Queens Ct Way

Original Location



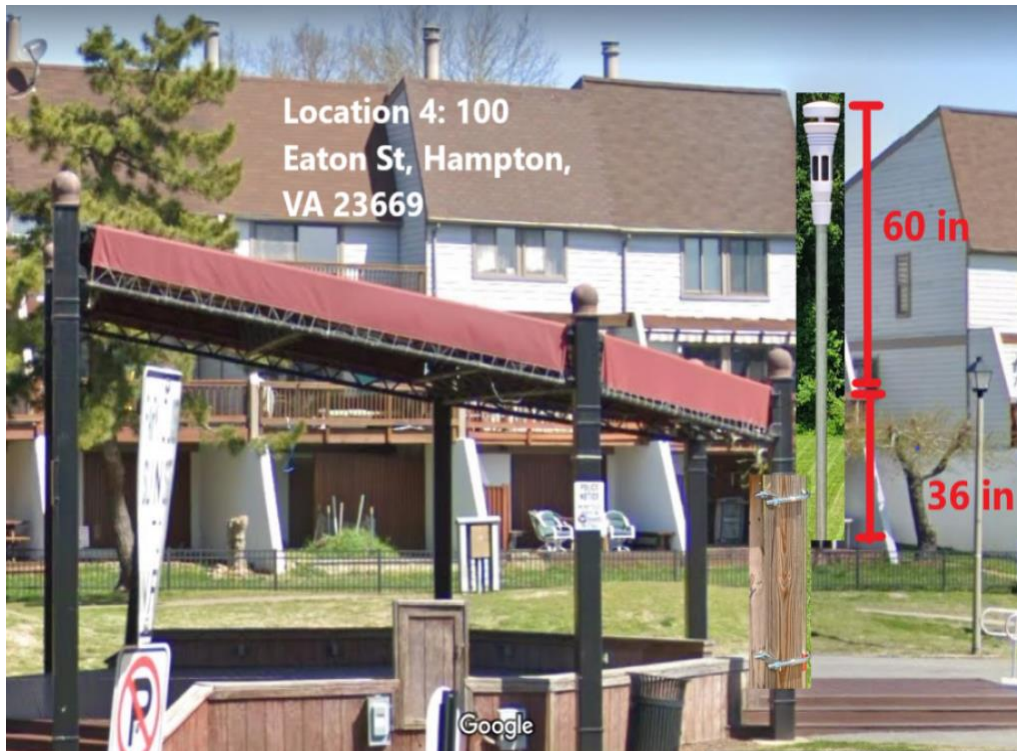
Alternative Location: Adjacent Light Pole



Alternative Solution: Move the sensor to a non-antique light pole in the same courtyard. Installation method would be similar to the original and utilize pole-to-pole mounts. Sensor would stick out 3 feet above the light fixture.

Location #4: 100 Eaton St (Mill Point Park)

Original Location



Alternative Location: Wooden Fence



Alternative Solution: Move sensor to wooden fence next to Mill Point Park, which would be less noticeable. The sensor would be mounted on 10ft pole to put it above pedestrian reach and would be attached to wooden post using U-bolts so we wouldn't have to drill into the wooden post.

Location #5: 600 Settlers Landing Rd (Air and Space)

Original Location



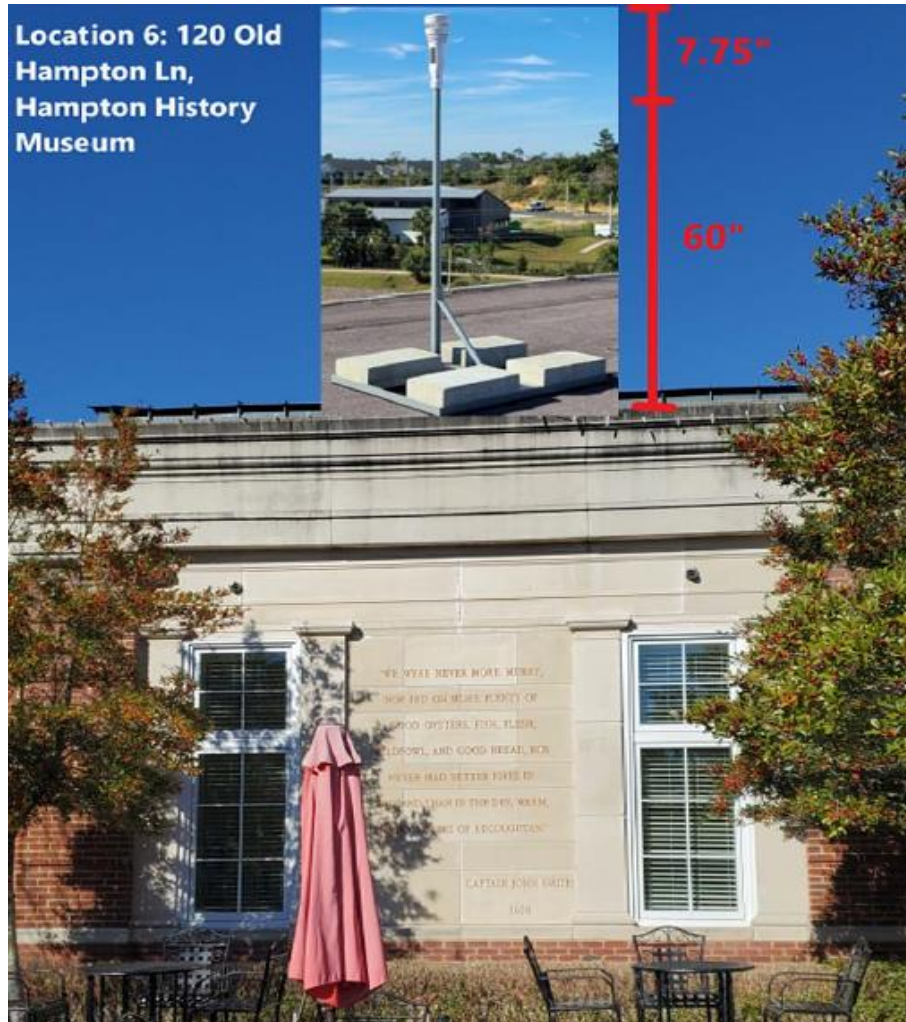
Alternative Location: Opposite side of the building



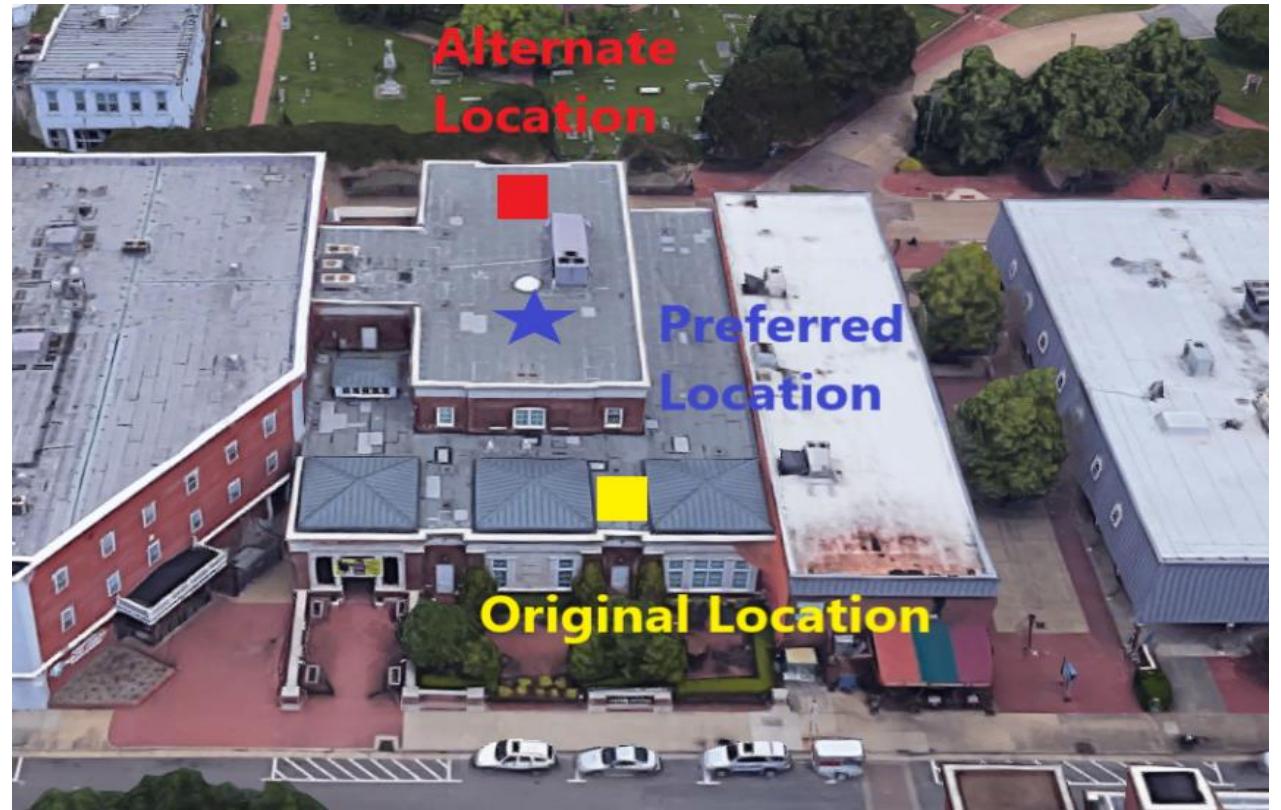
Preferred Location: Move the sensor to the preferred location on the building. Can be placed far enough away from the edge in order to not be seen from street level. Installation methods/materials would be the same as the original location.

Location #6: 120 Old Hampton Ln (History Museum)

Original Location



Alternative Location: Upper Roof



Preferred Location: Move the sensor to the upper roof portion so it will not be easily seen by pedestrians. Installation method/materials will be the same as the original location.