

# Next Generation Network and Fiber-based Initiatives

*Creating a Platform for Digital Transformation  
in the City of Hampton*



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# Agenda

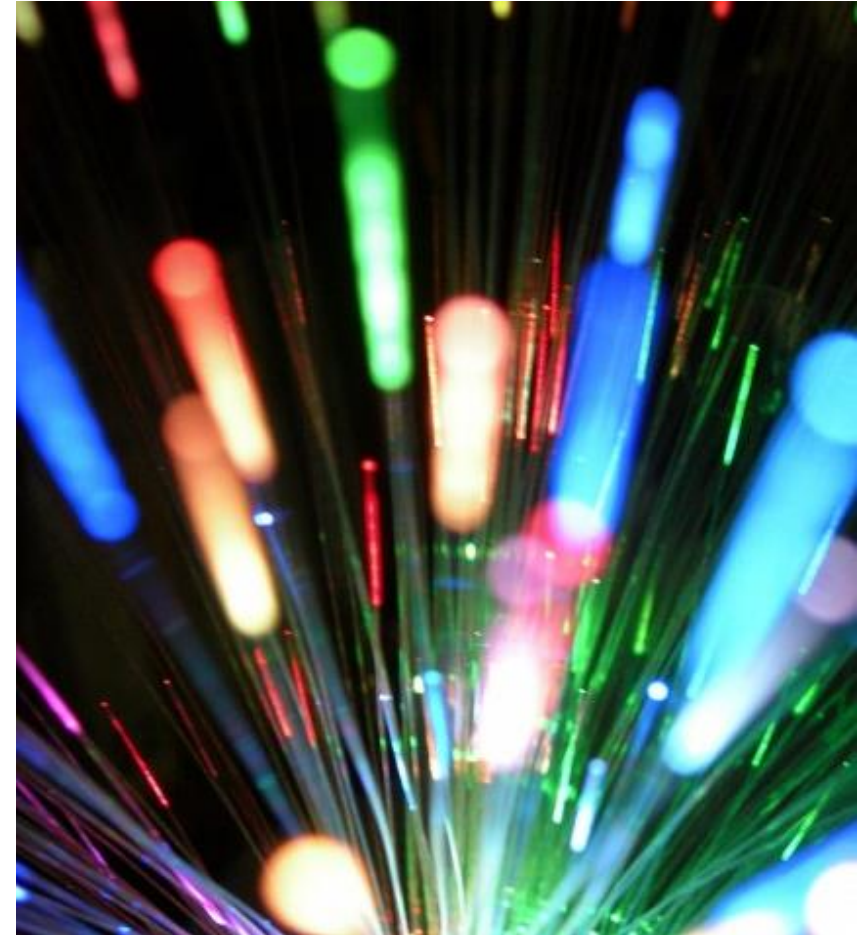
- Next Generation Network Overview
  - Ft Monroe Connection
  - Phases 1 – 3
- Next Generation Network Dependent Initiatives
  - Smart Pole Pilot and Walkout Recap
  - Disaster Recovery Plan

**City of Hampton**

# Next Generation Network Overview

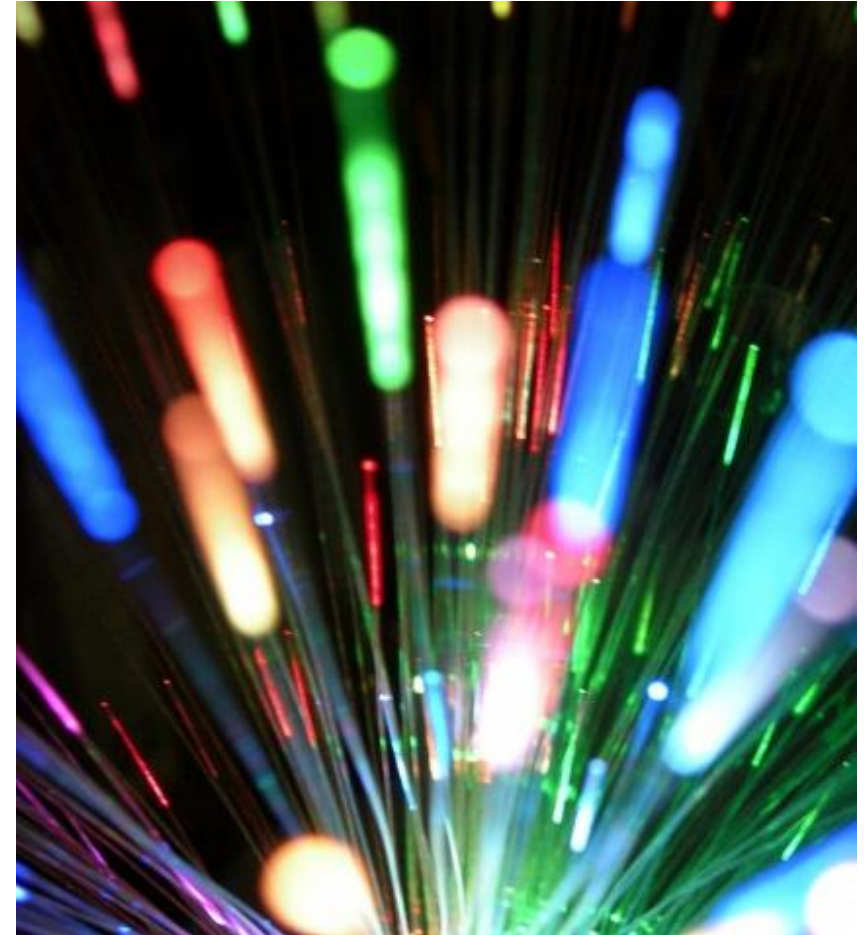
# Next Generation Network Overview

- Next Generation Network (NGN) provides city-owned fiber infrastructure as a platform for telecom cost-savings and digital transformation
- High Capacity Broadband Circuit – 2Gbps, Scalable up to 100Gbps+
- Will utilize existing conduit usage agreement with Metro Fiber Networks (MFN) where available



# Next Generation Network Overview

- Will be split into 3 phases – Initial phase will provide a network for facilities around city hall from Ft. Monroe colocation Point of Presence
  - Ft. Monroe connection will use fibers incoming from cable landing station in Virginia Beach
- Phases 2 and 3 will connect westward and eastward facilities, respectively
- Phase 1 slated for December 2019 with MFN circuit connection to City Hall,
  - Incorporates a 30% design of the full network





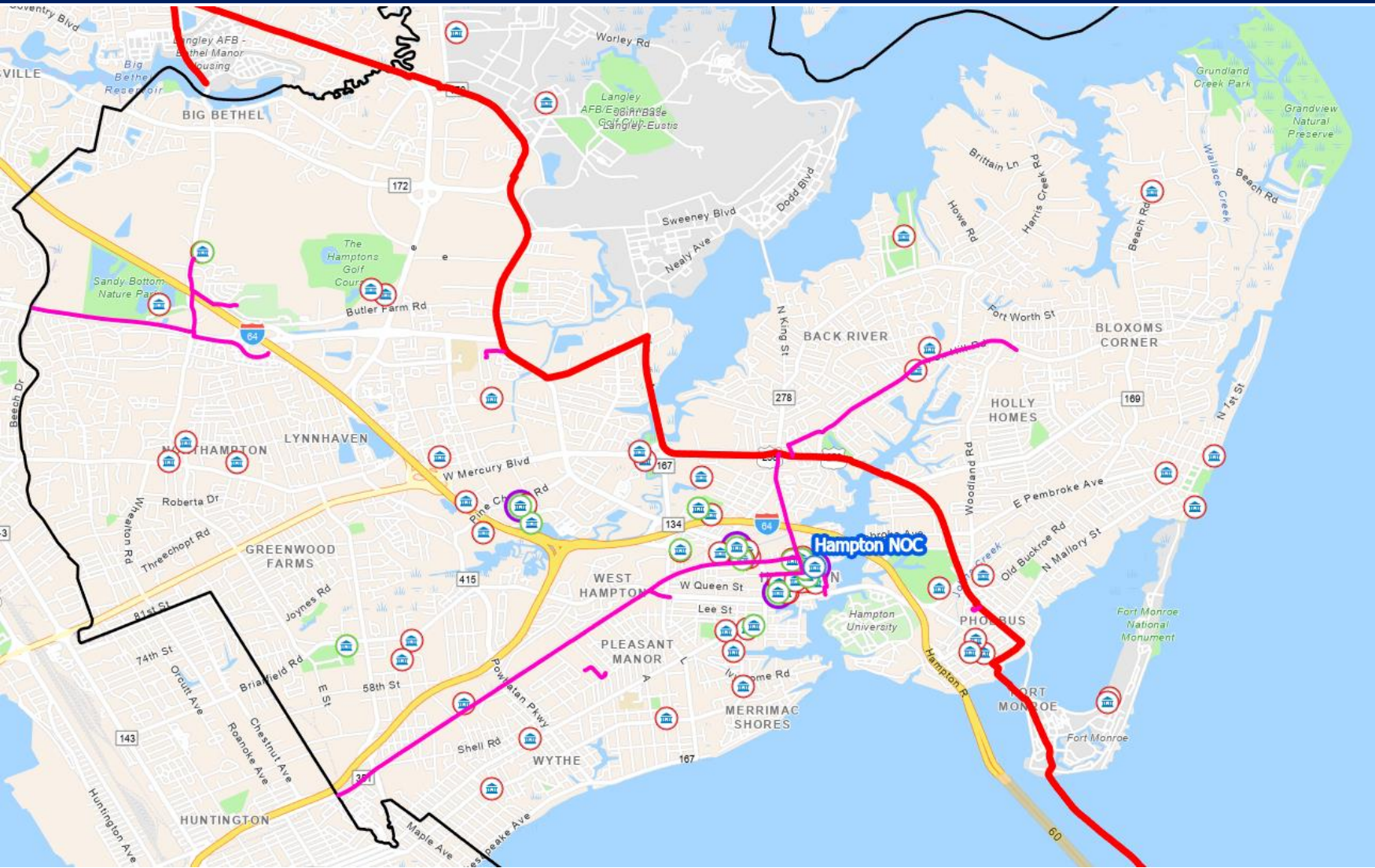
# Ft. Monroe Connection to Cable Landing Station

- Metro Fiber Networks transport fiber and Regional Connectivity Ring (RCR) conduit will demarc in Ft. Monroe
- Will provide cheaper circuit cost and foundation for easy expansion on NGN
- Allows for competitive pricing by existing providers who are in Cable Landing Station
- Provides access to data centers in Richmond/Ashburn to serve as platform for initiatives such as **global research** and **disaster recovery**
- RCR fiber will run through Hampton to Newport News and further Hampton Roads localities as overseen by RCR Authority
  - RCR Authority will only be responsible for RCR assets (dark fiber and conduit)





# Phase 1 Available Metro Conduit

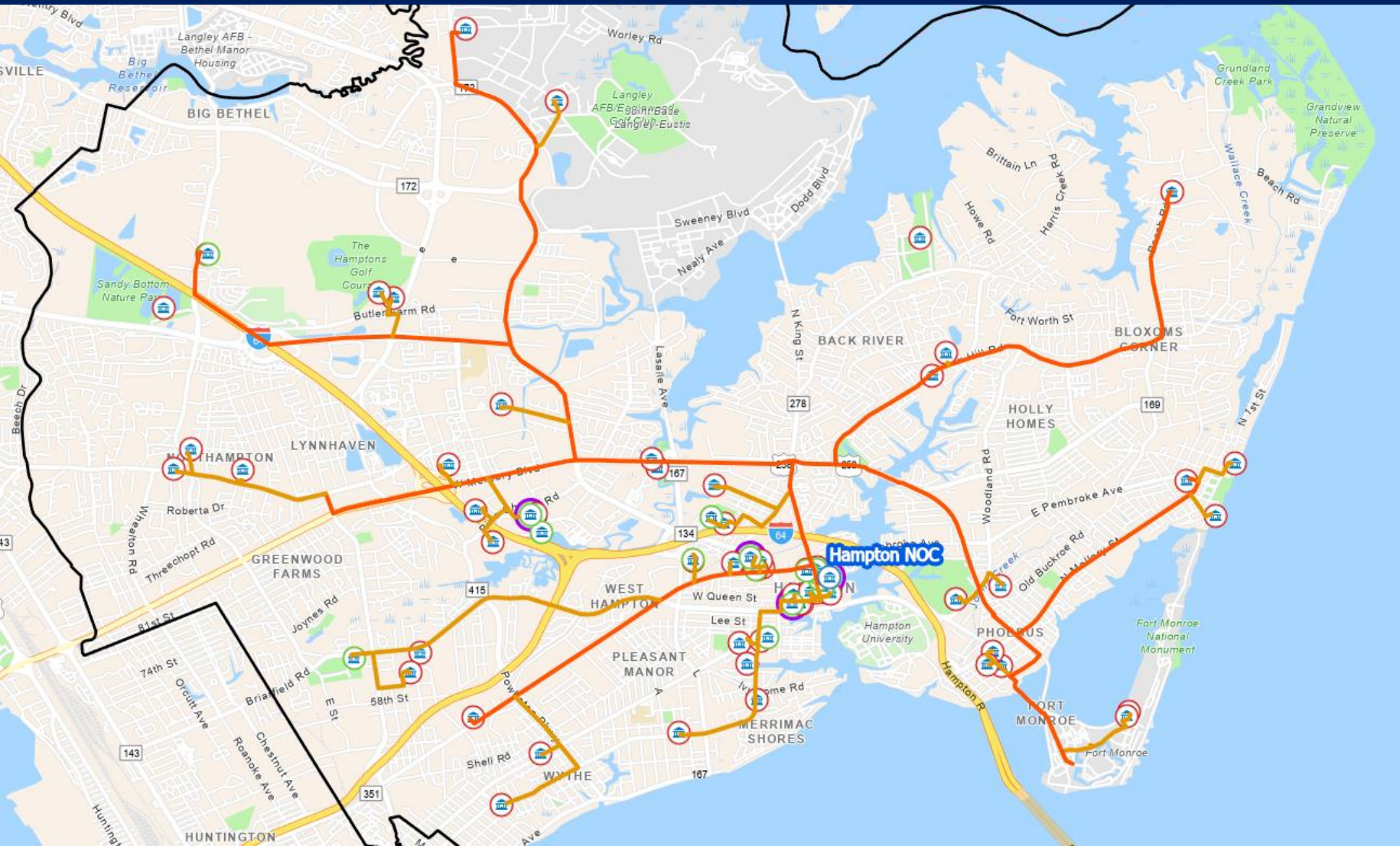


MFN unpopulated conduit can be utilized for no cost, but will pay for initial connection

- Metro Unpopulated Conduit
- Metro Populated Conduit <sup>7</sup>



# Next Generation Network – All Facilities



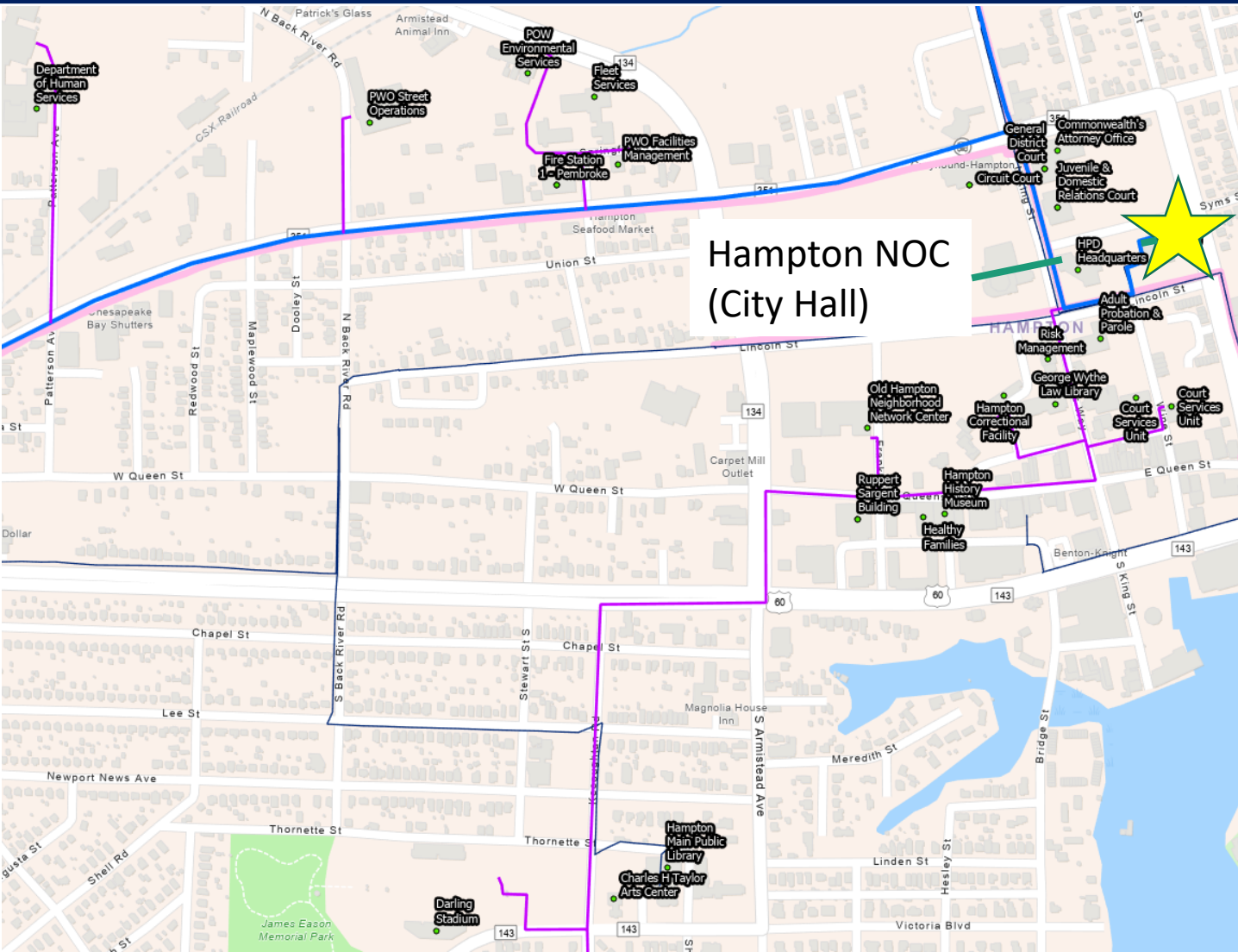
Overview of all facilities on connected by the proposed NGN

**72 Buildings –  
Housing 123 Facilities**

- Proposed NGN Laterals 96ct
- Proposed NGN Backbone 144ct



# Phase 1 – City Hall and Immediate Facilities



Objective:

Connect all immediate city facilities in proximity to City Hall (Network Operations Center). Will also expand infrastructure to areas with approved Smart Pole pilots.

**28 Buildings, 68 Facilities**

- Proposed NGN Laterals - 96ct
- Proposed NGN Backbone -144ct
- Metro Populated Conduit
- Metro Unpopulated Conduit
- Segra Fiber

# Phase 1 Connected Facilities

## **311 Customer Call Center**

## **911 Emergency Communications**

Adult Probation & Parole  
Budget & Management Analysis

## **Carmel Center**

Charles H Taylor Arts Center  
Citizens' Unity Commission

## **City Attorney's Office**

## **City Council**

## **City Hall**

## **City Manager's Office**

## **Clerk of Circuit Court**

## **Commonwealth's Attorney Office**

## **Community Development Department**

2 Court Services Units  
Credit Union

2 Criminal Justice Agencies

## **Darling Stadium**

## **Department of Human Services**

## **Development Services Center**

Finance

## **Fire Department Administration**

## **Fire Station 1 - Pembroke**

Fleet Services

## **General District Court**

## **George Wythe Law Library**

## **Hampton Circuit Court**

## **Hampton Correctional Facility**

## **Hampton General District Court**

## **Hampton History Museum**

## **Hampton Main Public Library**

## **Healthy Families**

## **Housing & Neighborhood Services Division**

## **HPD Headquarters**

## **Human Resources**

## **Information Technology**

## **Internal Audit Department**

## **Juvenile & Domestic Relations Court**

Marketing and Outreach

New Construction Division

## **Old Hampton Circuit Court**

## **Old Hampton Neighborhood Network Center**

## **Parks & Recreation Administration**

## **Planning and Zoning Administration Division**

## **POW Drainage Maintenance**

## **POW Environmental Services**

## **POW Environmental Services**

## **POW Solid Waste Management**

## **POW Traffic Engineering and Operations**

Property Maintenance and Zoning Enforcement Division

## **Public Safety Building**

## **Public Works Administration**

## **PWO Facilities Management**

## **PWO Street Operations**

## **PWO Wastewater Management**

Real Estate Office

Risk Management

## **Ruppert Sargent Building**

## **Sheriff's Corrections Department**

## **Sheriff's Intake**

## **Sheriff's Security Office**

## **Sheriff's Warehouse**

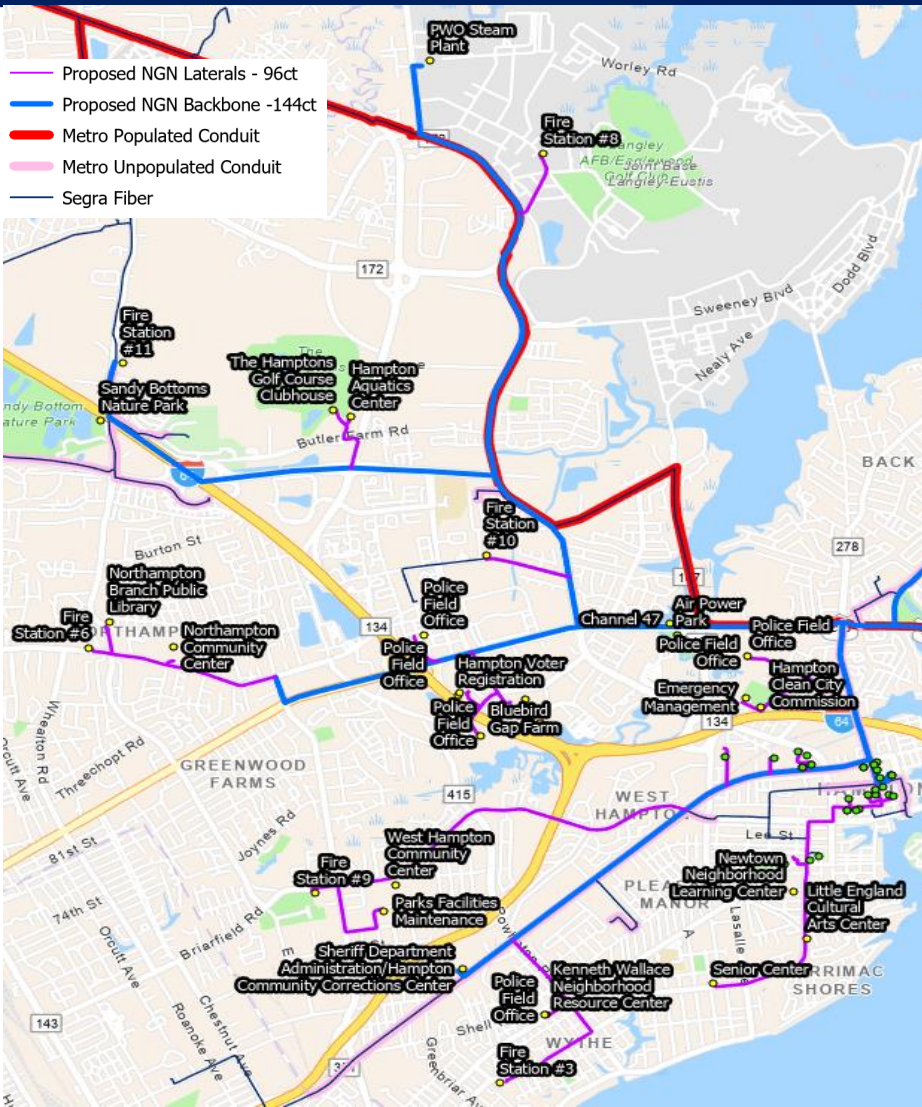
## **Social Services**

## **Solid Waste, Traffic Ops, & Drainage**

Tourist Information Center

Victim-Witness Services

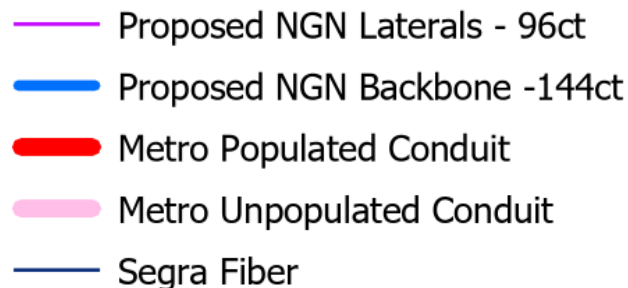
# Phase 2 – Westward Expansion



Objective:

Expand westward to critical facilities – Police Headquarters, Fire Stations, and Public Works Offices

***30 Buildings, 38 Facilities***

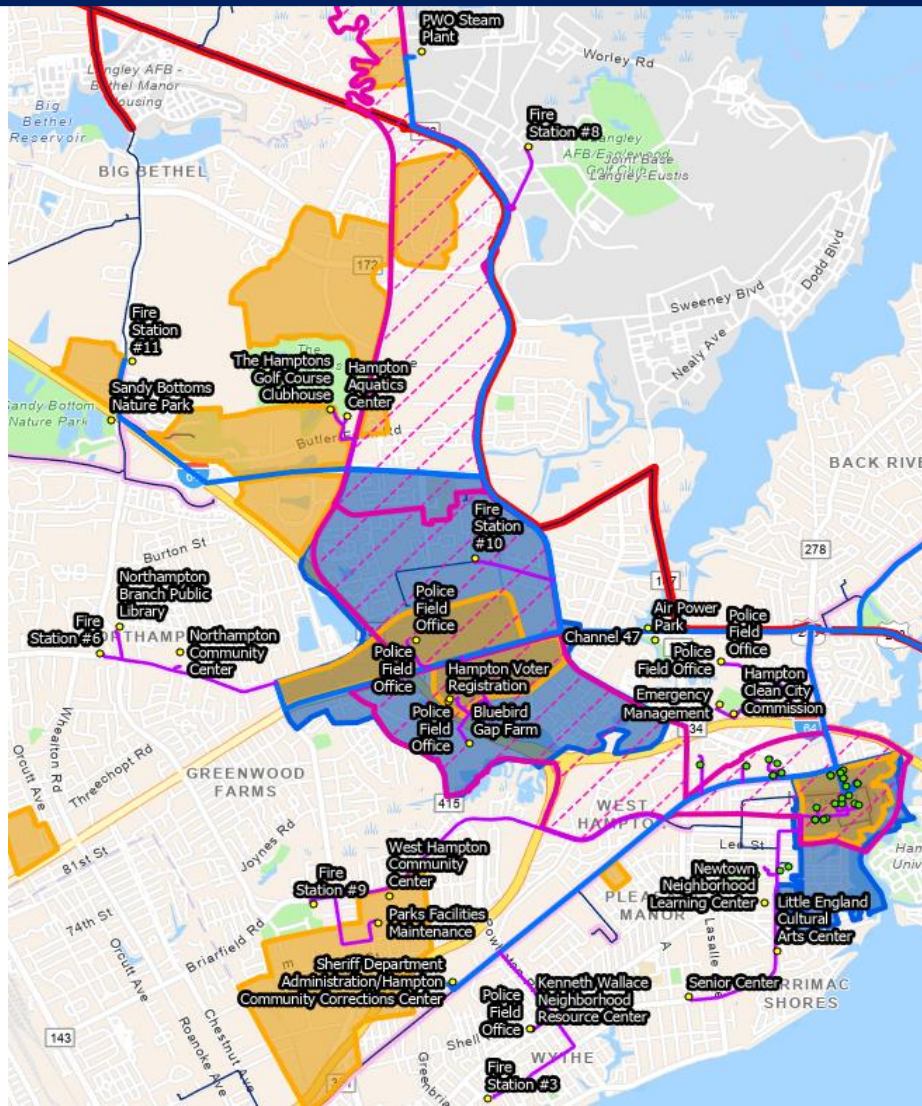




# Phase 2 – Economic Development

## Objective:

Expand westward to critical facilities – Connect to facilities and provide fiber access to businesses that fall in Opportunity Zones, Corporate Parks, and Business Improvement Districts



- Proposed NGN Laterals - 96ct
- Proposed NGN Backbone -144ct
- Metro Populated Conduit
- Metro Unpopulated Conduit
- Segra Fiber
- Hampton Opportunity Zones
- Industrial Corporate Parks
- Business Improvement District

# Phase 2 Connected Facilities

Adult & Alternative Learning Center

Air Power Park

Athletics

Bluebird Gap Farm

Channel 47

**Emergency Management**

**EMS, Fire Marshal & Fire Department Training**

**Fire Station #3**

**Fire Station #6**

**Fire Station #8**

**Fire Station #9**

**Fire Station #10**

**Fire Station #11**

Hampton Aquatics Center

Hampton Clean City Commission

**Hampton Coliseum**

Hampton Convention & Visitor Bureau

**Hampton Performing & Creative Arts**

**Hampton Roads Convention Center**

**Hampton Voter Registration**

Kenneth Wallace Neighborhood Resource Center

Little England Cultural Arts Center

Newtown Neighborhood Learning Center

**Northampton Branch Public Library**

**Northampton Community Center**

**Parks Facilities Maintenance**

4 Police Field Offices

**PWO Steam Plant**

Sandy Bottoms Nature Park

**Senior Center**

**Sheriff Department Administration/Hampton**

**Community Corrections Center**

The Hamptons Golf Course Clubhouse

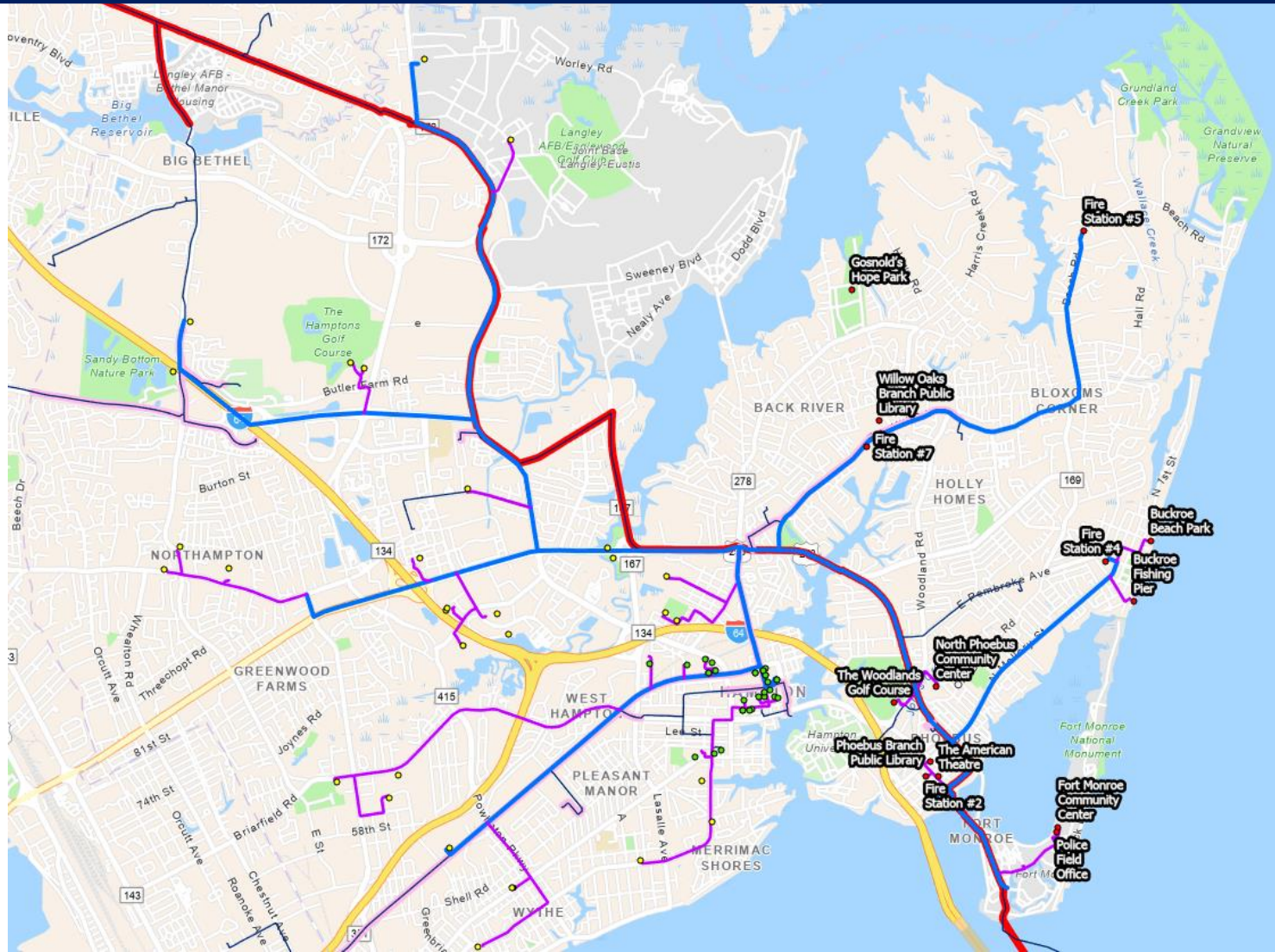
The Hamptons Golf Course Maintenance

**West Hampton Community Center**

**YH Thomas Community Center**



# Phase 3 – Ft Monroe, Phoebus, Buckroe



Objective:

Connect the remaining city facilities – Expand infrastructure to Ft. Monroe, Phoebus, and Buckroe Beach for economic development

***14 Buildings, 14 Facilities***

- Proposed NGN Laterals - 96ct
- Proposed NGN Backbone - 144ct
- Metro Populated Conduit
- Metro Unpopulated Conduit
- Segra Fiber



# Phase 3 Connected Facilities

Buckroe Beach Park

Buckroe Fishing Pier

*Fire Station #2*

*Fire Station #4*

*Fire Station #5*

*Fire Station #7*

*Fort Monroe Community Center*

Gosnold's Hope Park

*North Phoebus Community Center*

*Phoebus Branch Public Library*

*Police Field Office*

The American Theatre

The Woodlands Golf Course

*Willow Oaks Branch Public Library*

**Next Generation Network  
Dependent Initiatives**

# Smart Pole Pilot

# Smart Pole Benefits

## Smart Pole Benefits and Pilot Areas

- Poles are solar-powered, modular, come in various sizes and designs that are functional and aesthetically pleasing.
- Solar batteries can last up to 8 days during outages
- Capabilities such as:
  - Smart cameras and facial recognition
  - Small cells for wireless access
  - Charging (vehicles and mobile devices)
  - Gunshot detection
  - Environmental sensors
  - Automobile tag recognition
- Downtown Hampton and Phoebus are key areas to implement Smart Pole pilots





# Smart Pole Benefits -ROI

## Return on Investment

- Solar power can give 85% energy savings over traditional lighting
- Lasts 20+ years at 5000 hours/year (5-6x longer)
- No bulb replacement for 20 years
- Dark sky compliant: no light leakage
- *Generates revenue: most financing is “cash flow positive”*
- *Average of less than 2 year ROI – 100% pay back*
- *Lower operational costs*

Poles will generate a ROI from green technology and localized monitoring/ maintenance. City of Miami pilot experienced 50% lower install cost vs regular streetlight.



# Smart Pole Pilot and Walkout Recap

Walkout occurred on October 28 to determine needs and features for each location:

## Smart Pole Target Areas

- 4 poles on E Queens Way
- 12 surrounding Hampton History Museum on Old Hampton Lane
- 3 poles (retro-fitted - for solar power) on Mellen St. Bridge
- 5 poles in the Phoebus Parking Lot
- 14-20 Poles in YH Thomas Community Center Park Trail

Goal of developing a turnkey delivery solution and choosing first pilot area:

YH Thomas Community Center Park

# Smart Pole Pilot and Walkout Recap



## YH Thomas Community Center Park Trail

- 14-20 off-grid, solar powered poles
- Features:
  - Panic button with bi-directional calling
  - “Follow-me” adjustable lighting for low light pollution
  - Wi-Fi access for park connectivity
- Will provide turnkey, replicable solution
- Can be delivered immediately by the end of 2019





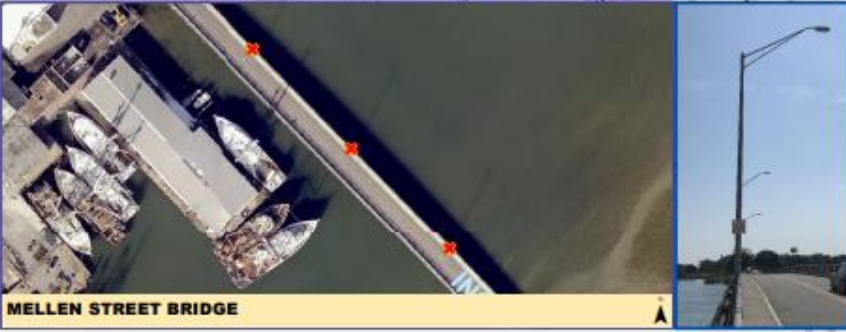
**QUEEN & WINE ST**



**PHOEBUS**



**PARKING GARAGE**



**MELLEN STREET BRIDGE**

**Legend**  
 X PROPOSED LIGHTING  
 cfm pie

HAMPTON VA



**MAIN GATE**



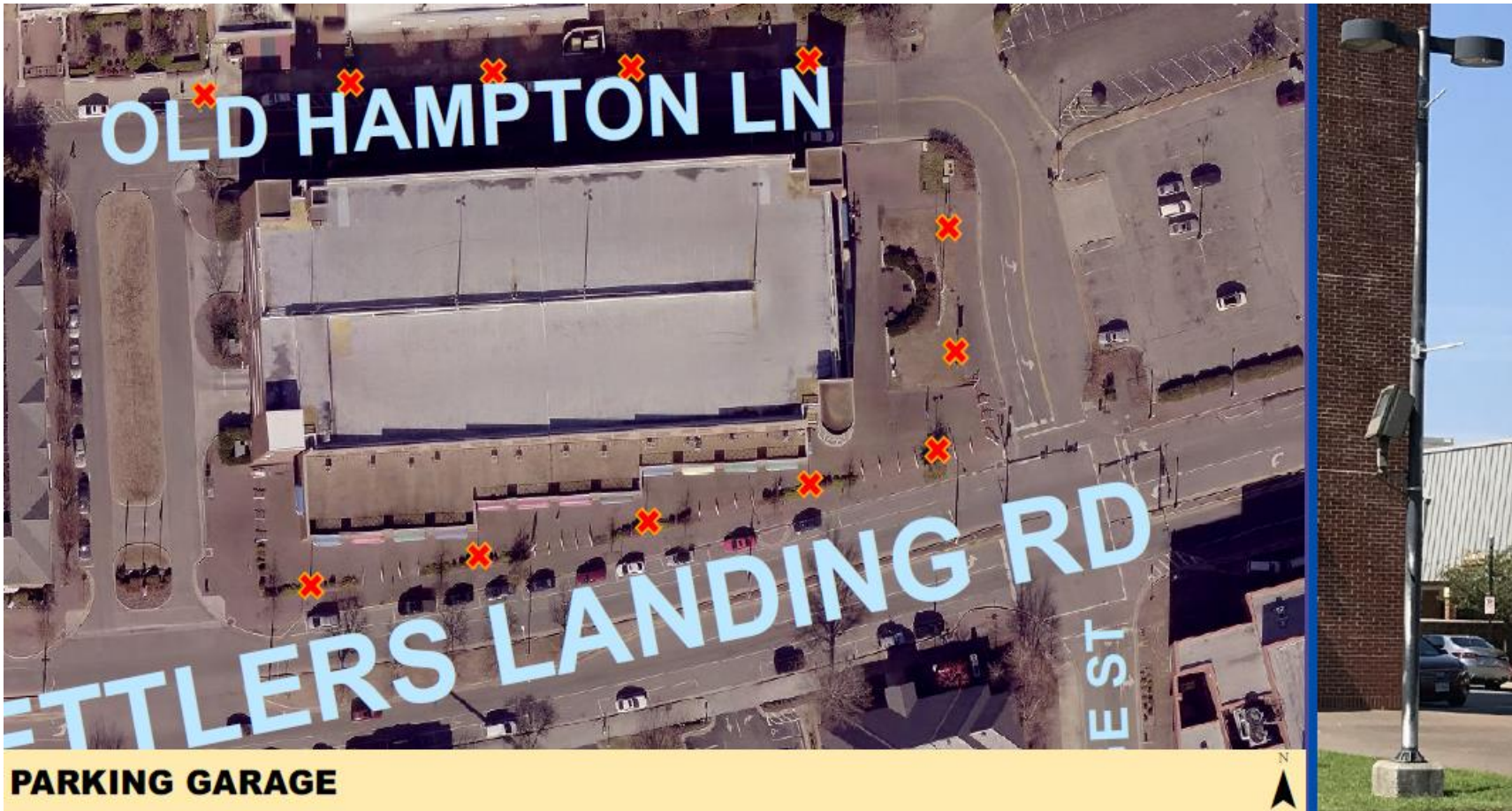
# Smart Pole Pilot - Queen and Wine St.



4 existing 24-ft poles

- Retrofit preferred
- Wi-Fi access and security cameras with facial recognition for downtown block party

# Smart Pole Pilot – History Museum Parking Garage

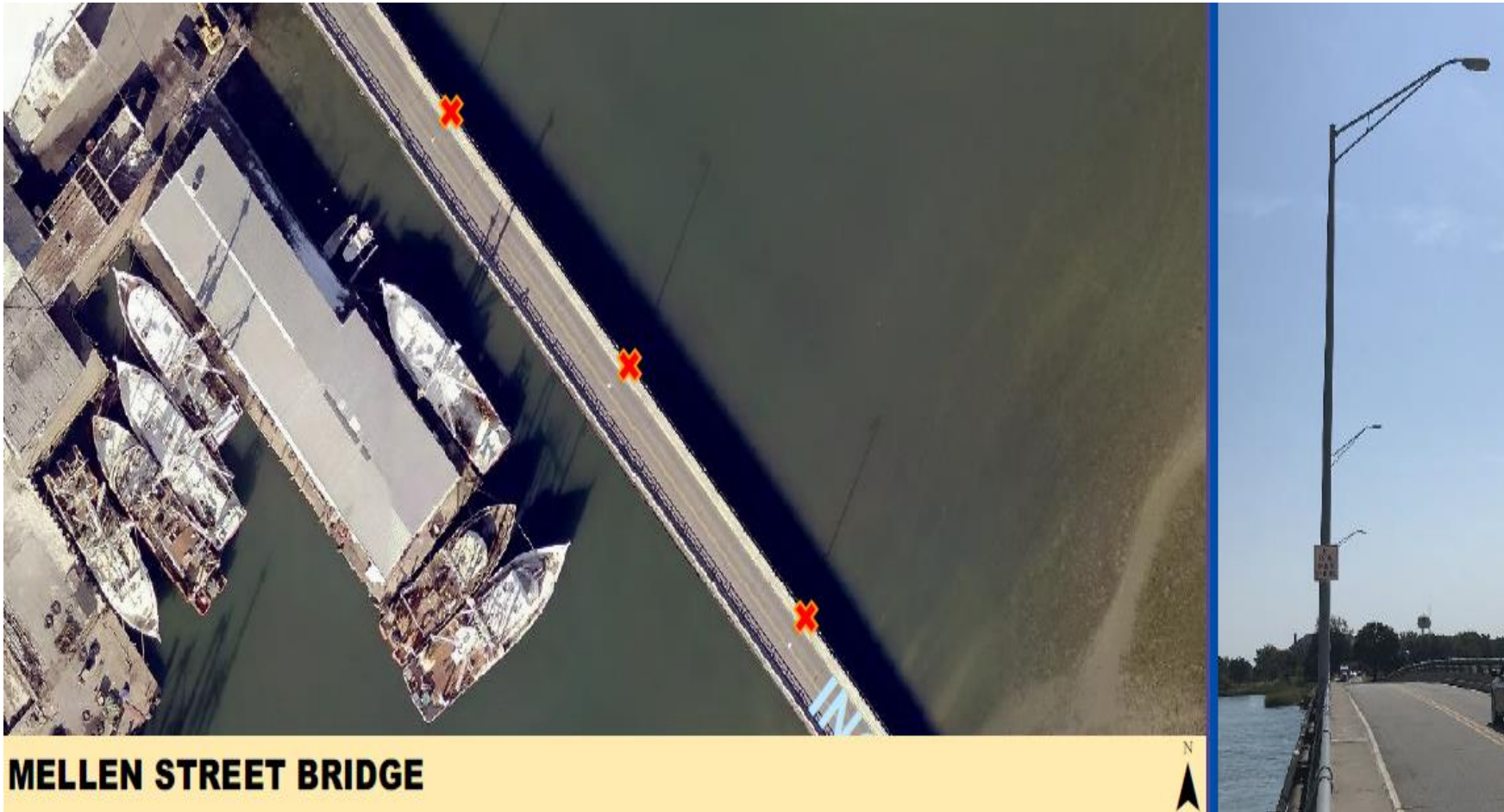


Mix of 13-ft and 18-ft poles

- Old Hampton Lane decorative poles replaced with higher LED poles
- Flowerbed poles retrofit preferred, with Wi-Fi and cameras
- 2 new poles in front of flagpole, with higher efficiency LED and floodlight retained



# Smart Pole Pilot – Mellen Bridge

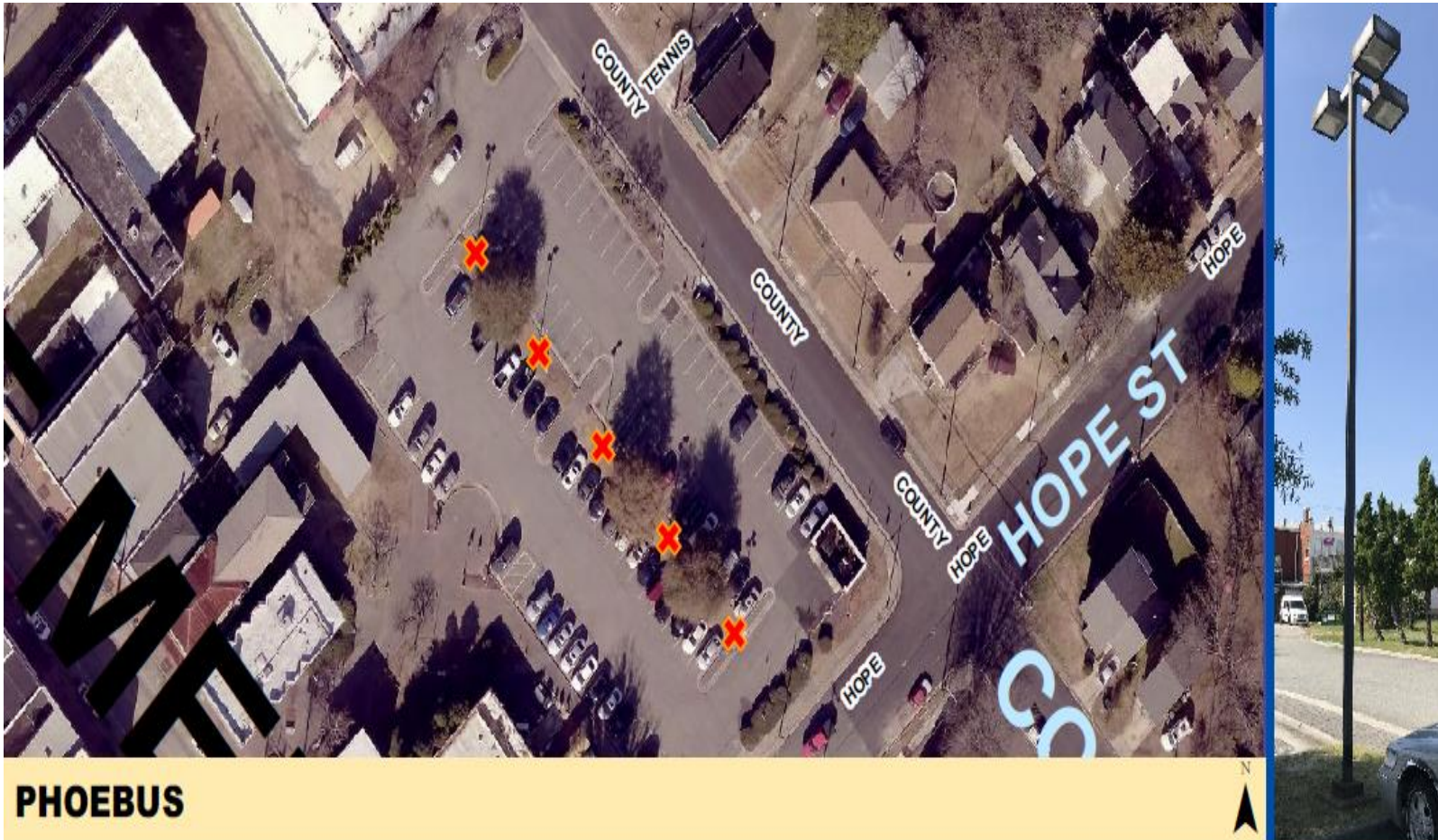


**MELLEN STREET BRIDGE**

3 existing 32-ft LED poles

- All new poles
- High efficiency LED poles with off-grid capability
- Wi-Fi and camera capable

# Smart Pole Pilot – Phoebus Parking Lot



5 15ft Poles

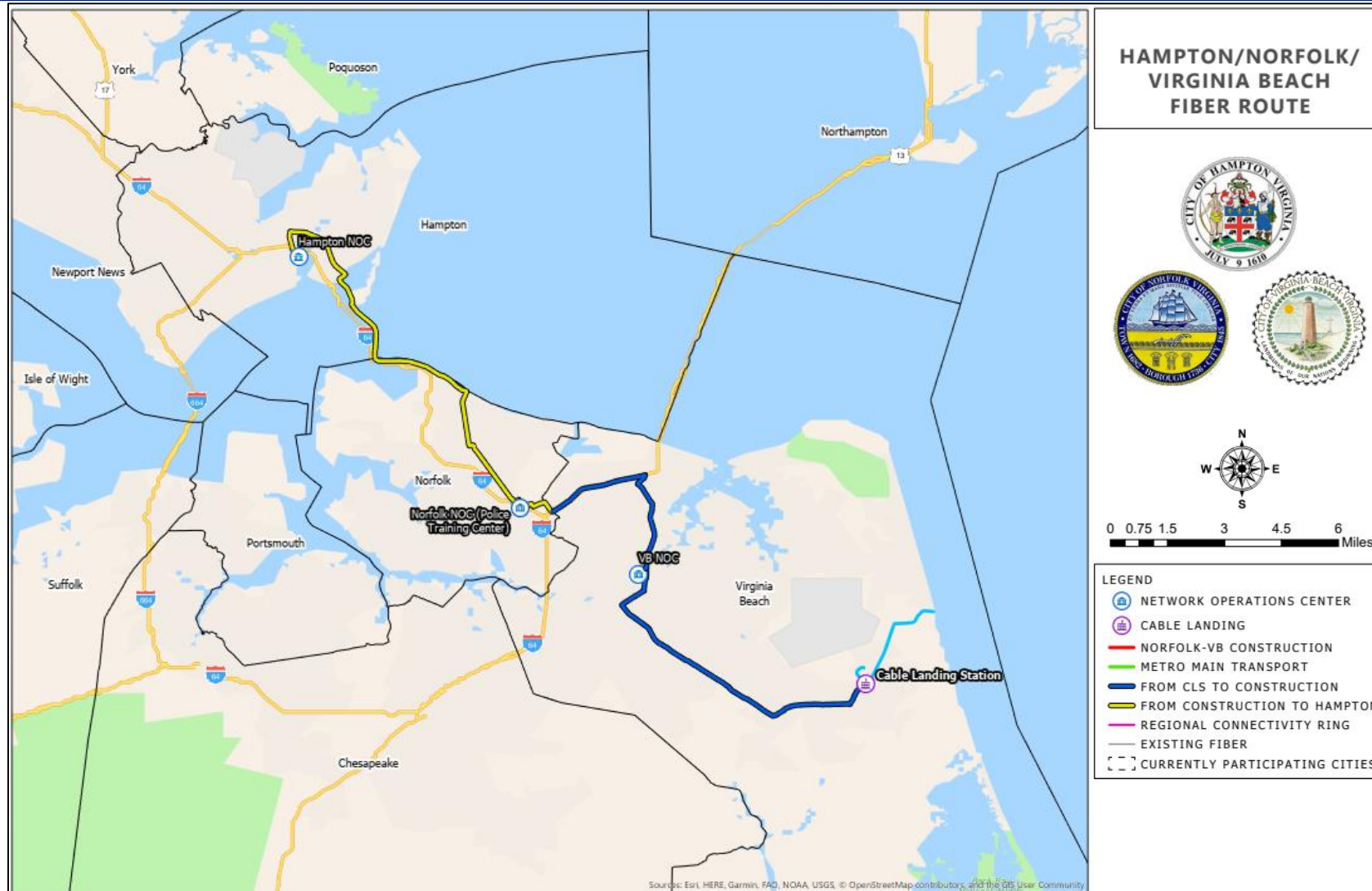
- All new poles with Wi-Fi access and cameras

**Next Generation Network  
Dependent Initiatives**

# Disaster Recovery Plan



# Disaster Recovery Plan



- Cable Landing Station will provide direct connection to off-site data center, which will house secure backups of critical data
- Delocalizing and transferring services to the cloud will make operations less hardware reliant, speeding up the recovery process
- Hampton, along with Norfolk and Virginia Beach, will be pioneering this initiative in Hampton Roads

Thank you for your attention.



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