

Hampton Roads Regional Broadband Strategy

Briefing to Virginia Beach City Council

Aug 15, 2017



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City Manager

Connectivity

Following the Hampton Roads Transportation Advisory Committee decision to fund the regional transportation needs and with the arrival of Transoceanic Fiber connections to Europe and South America, it is now time to implement a regional broadband strategy to continue developing Hampton Roads as a nationally connected 21st century community and international gateway.

Regional CIO Broadband Task Force

- **Hampton Roads City Managers requested their Chief Information Officers (CIOs) meet to identify how regional connectivity can benefit public safety, higher education, and economic development**

- **The CIOs have met multiple times over the last year:**
 - 07/20/17 06/15/17 01/19/17
 - 12/19/16 11/10/16 09/13/16 07/26/16

- **The CIO Task Force began by setting following goals:**
 - Establish regional connectivity by leveraging fiber infrastructure
 - Strengthen collaboration and engagement with higher education
 - Leverage regional fiber connectivity to attract new businesses and create 21st century jobs

- **Immediate Outcome: Conduct an assessment and prepare an application for a GO Virginia grant to construct the Southside fiber loop**

Benefits of Regional Connectivity

Create middle mile Infrastructure

➤ Government

- **Provide jurisdictional connectivity for Southside operations for the jurisdictions of Chesapeake, Norfolk, Portsmouth, Suffolk and Virginia Beach**
- **Create regional interoperability:**
 - **Build robust Public Safety infrastructure**
 - **Consider a unified and redundant 911 center**
- **Potential for expanded shared services for all departments**

➤ Economic Development

- **Foster an ecosystem for low-cost internet service providers to meet demand for affordable internet to address the business Digital Divide**
- **Attract new enterprises with high-paying jobs to region (i.e. Biomed, cyber security, corporate headquarters, and financial services)**
- **Construct broadband infrastructure to support business incubators, technology innovators, product accelerators, and data centers**
- **Retain newly educated/skilled workforce by expanding advanced technology business creation**

➤ Education

- **Integrate higher education institutions for collaborative research**
- **Provide bandwidth to support growing educational needs (e.g., virtual classrooms)**
- **Provide affordable access to underserved and unserved citizens to address the residential Digital Divide**

Internet Speed and Cost Comparison

Note: City of Virginia Beach monthly contract rate with Cox to provide 1 GB dedicated internet access to municipal Data Center is **\$4,500**
 Verizon June, 2017 bill to provide 400 MB dedicated internet access backup to municipal Data Center is **\$7,300**

| Location | Speed & Service Type | Monthly Cost | Major Providers |
|----------------------------------|--|---|---|
| Cupertino, CA (home of Apple) | a. 1 GB (residential) | a. \$80 ¹ | a. AT&T Fiber |
| Austin, TX | a. 1 GB (residential) b. 1 GB (residential) / 1 GB (small business) c. 1 GB (residential) | a. \$80 ¹ b. \$70 ² / \$250 ² c. \$69 ³ | a. AT&T Fiber b. Google Fiber c. Grande |
| Salisbury, NC | a. 1 GB (residential) b. 1 GB (residential) | a. \$105 ⁴ b. \$80 ¹ | a. Fibrant Municipal b. AT&T Fiber |
| Hampton Roads | a. 200 MB (small business) / 100 MB (residential) b. 500 MB (small business) / 300 MB (residential) | a. \$244 ⁶ / \$76 ⁶ b. \$294 ⁷ / \$94 ⁷ | a. Cox b. Verizon FiOS |

Sources: ¹ AT&T web site ([Austin](#), [Cupertino](#), [Salisbury](#))

² [Google Fiber web site](#)

³ [Grande web site](#)

⁴ [Fibrant web site](#)

⁵ [Time Warner web site](#)

⁶ [Cox web site](#)

⁷ [Fios web site](#)

⁸ [PC Magazine \(May 13, 2015\)](#)

Regional Opportunities to Leverage Connectivity

- **Create a fiber-ready region to attract new businesses and high-paying jobs**
- **Leverage available assets for regional connectivity, educational and economic opportunities, and workforce development**
- **Position the region to pursue public/private partnerships**
- **Leverage future grants that promote regionalism as well as educational programs**
- **Create fiber infrastructure and connectivity to meet smart region capabilities**
- **Create diverse routes to support public safety infrastructure**
- **[North Carolina Next Generation Network](#) (Slover Library 28 August)**

Vision for Hampton Roads Connectivity

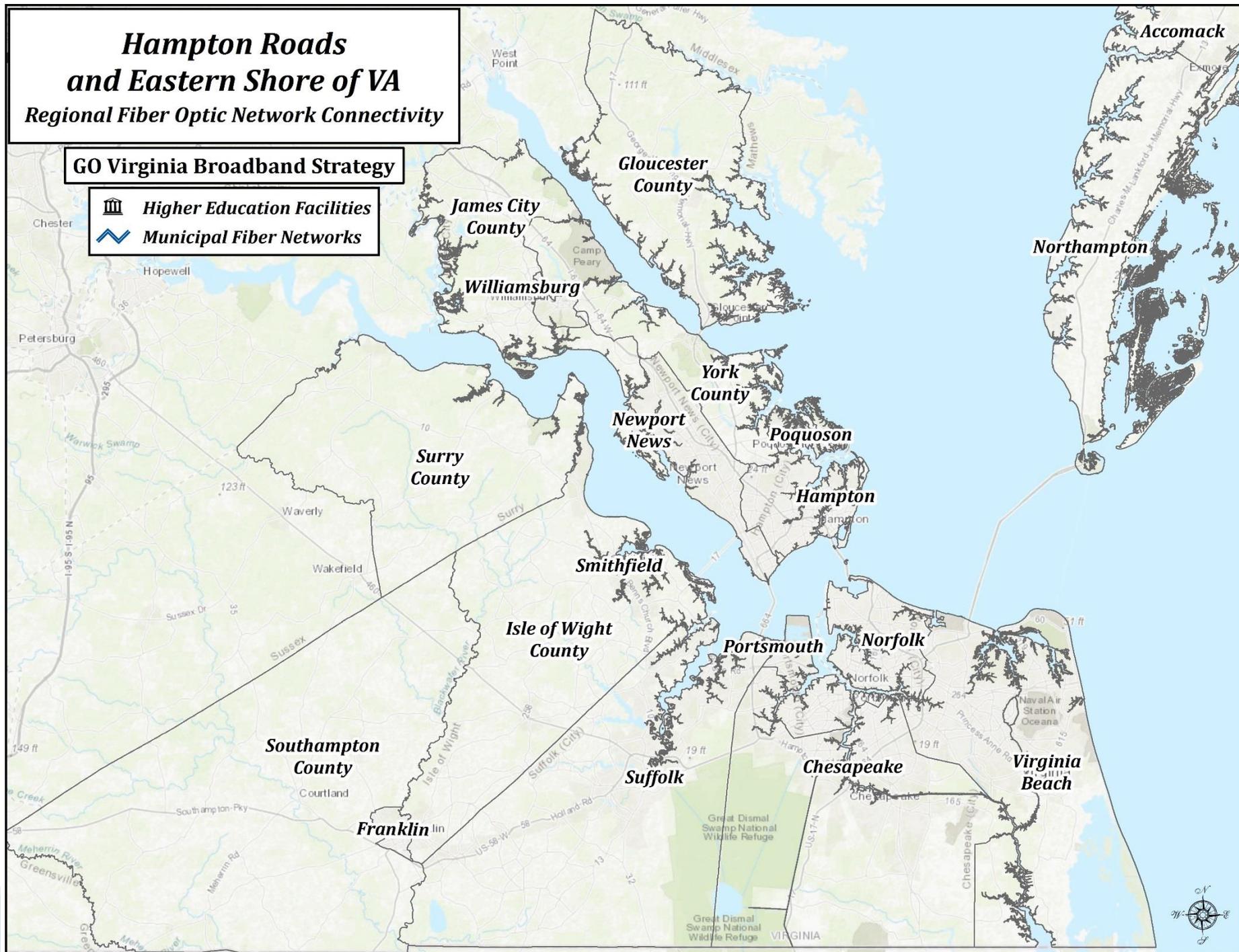
- **Pre-Engineering Study**
 - Funded and in progress
- **Phase 1: Construct Southside fiber infrastructure (GO Virginia grant)**
- **Phase 2: Construct Peninsula fiber infrastructure**
- **Phase 3: Connect Southside and Peninsula**
- **Phase 4: Connect outlier jurisdictions**

Hampton Roads and Eastern Shore of VA

Regional Fiber Optic Network Connectivity

GO Virginia Broadband Strategy

-  Higher Education Facilities
-  Municipal Fiber Networks

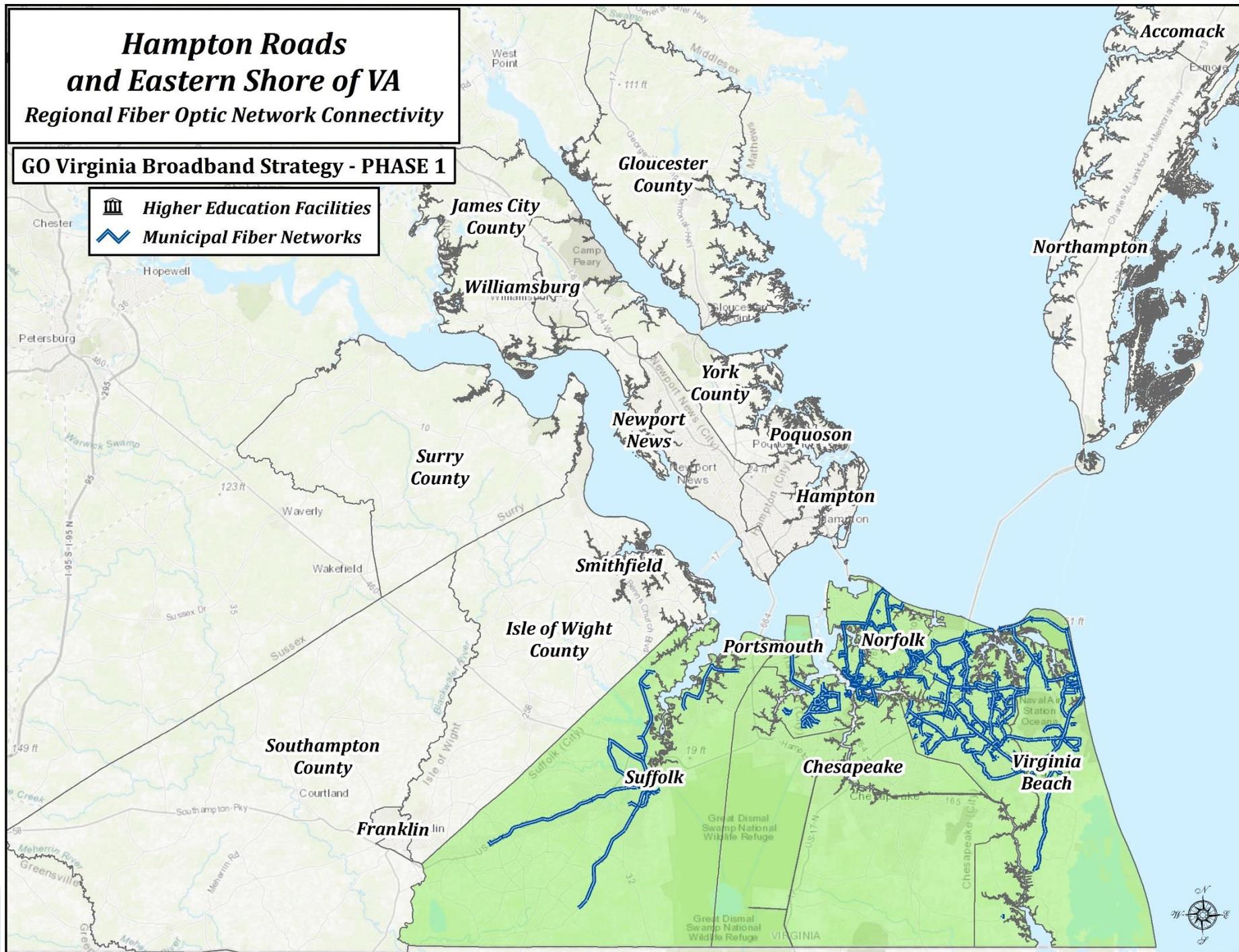


Hampton Roads and Eastern Shore of VA

Regional Fiber Optic Network Connectivity

GO Virginia Broadband Strategy - PHASE 1

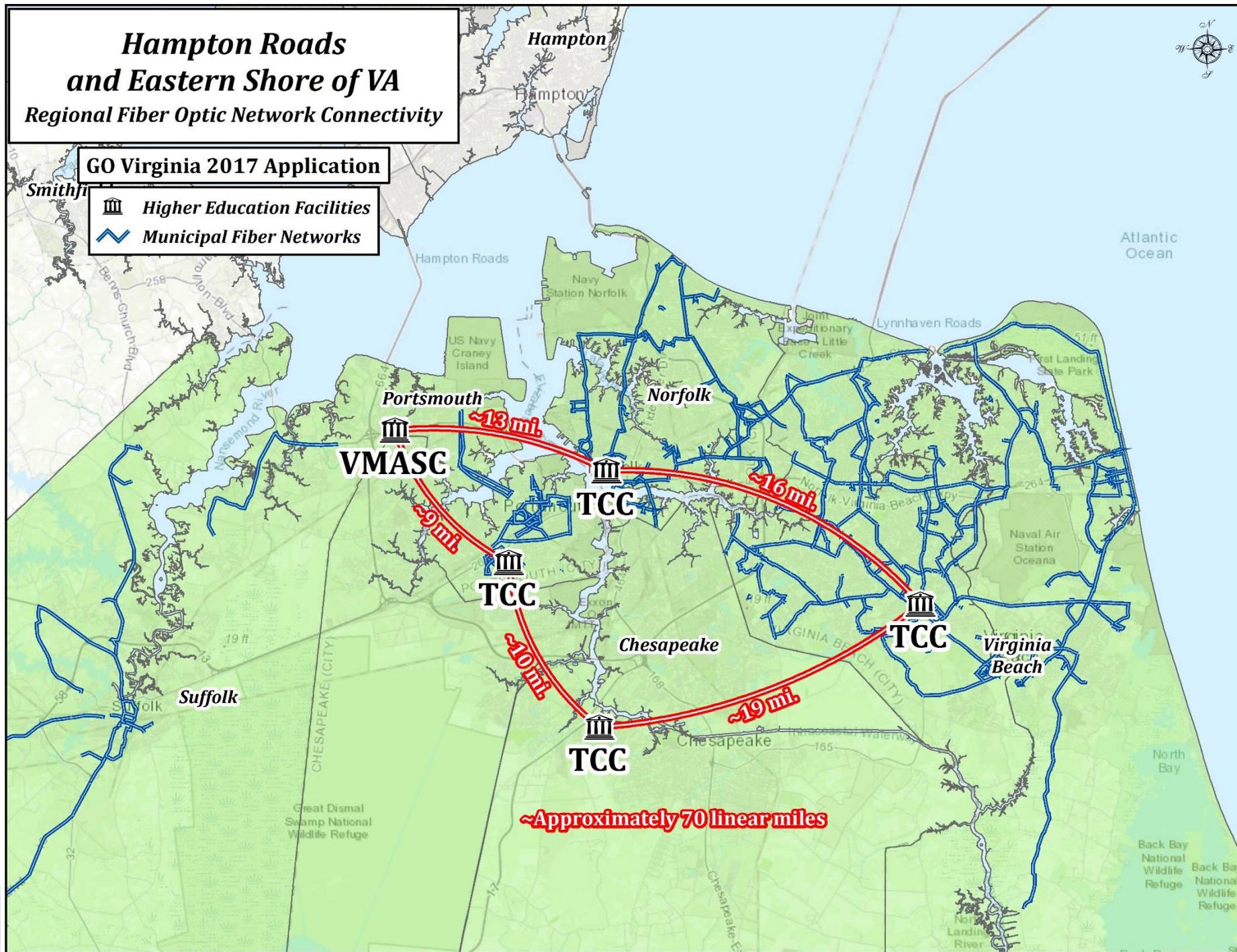
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-  Municipal Fiber Networks



Hampton Roads and Eastern Shore of VA Regional Fiber Optic Network Connectivity

GO Virginia 2017 Application

-  Higher Education Facilities
-  Municipal Fiber Networks

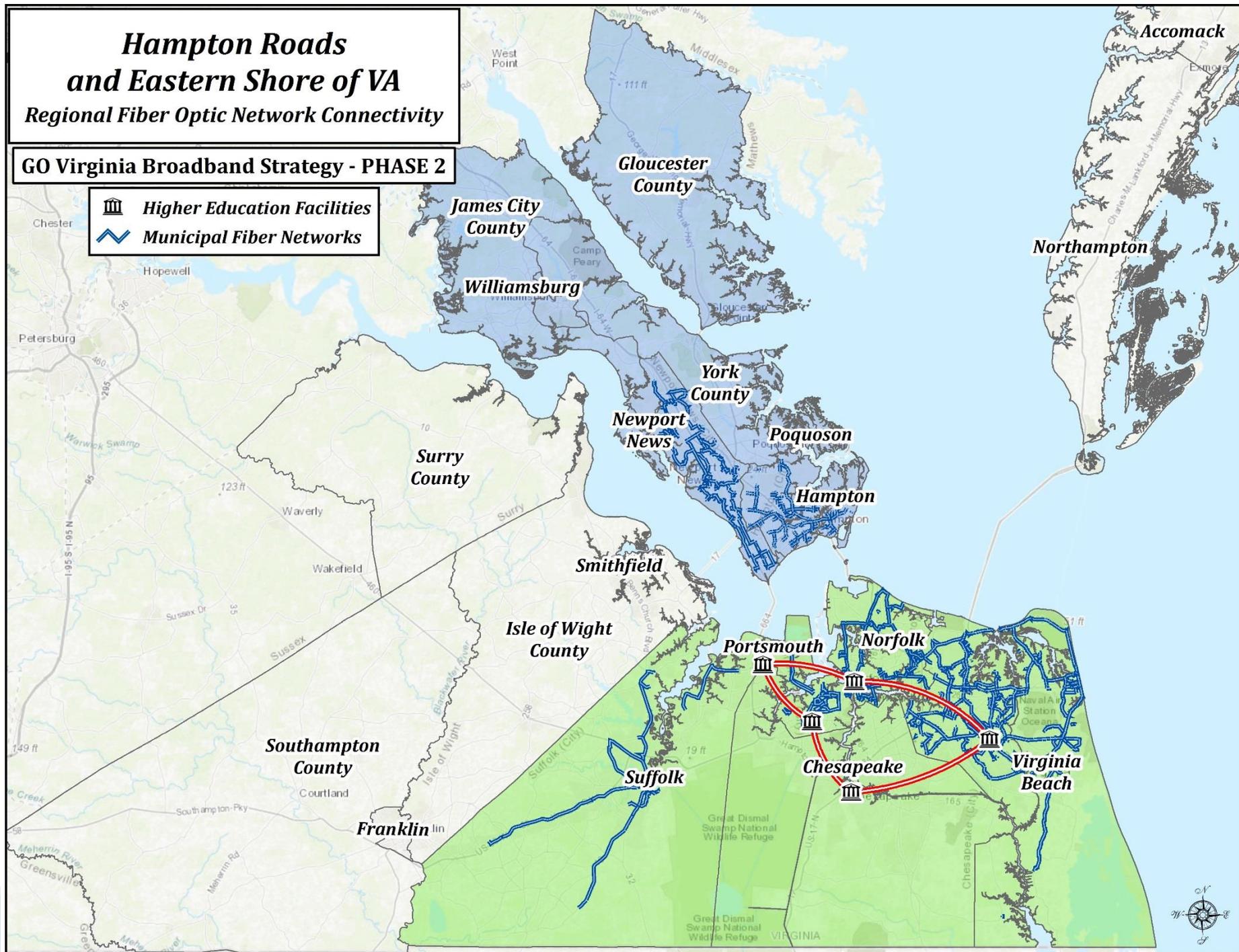


Hampton Roads and Eastern Shore of VA

Regional Fiber Optic Network Connectivity

GO Virginia Broadband Strategy - PHASE 2

-  Higher Education Facilities
-  Municipal Fiber Networks

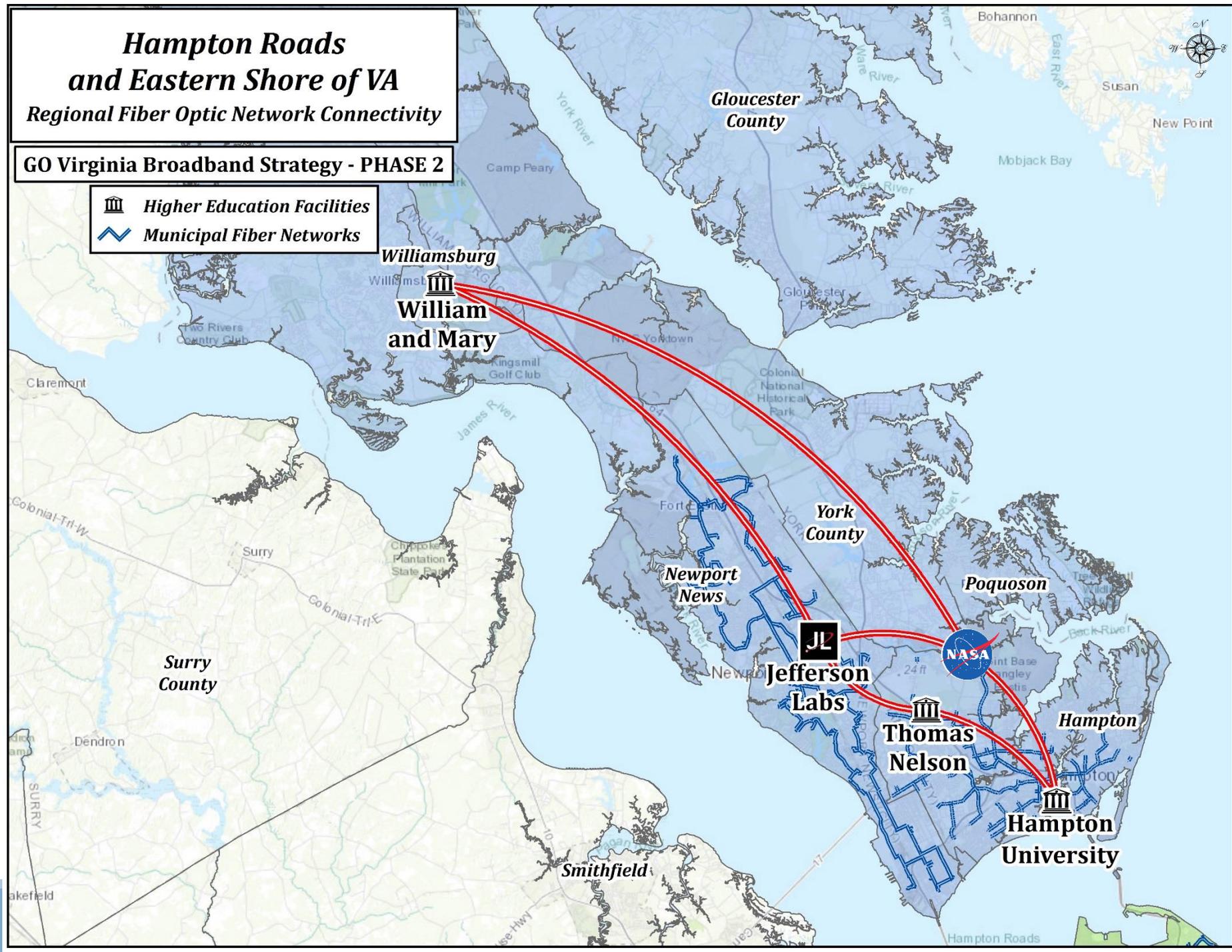


Hampton Roads and Eastern Shore of VA

Regional Fiber Optic Network Connectivity

GO Virginia Broadband Strategy - PHASE 2

-  Higher Education Facilities
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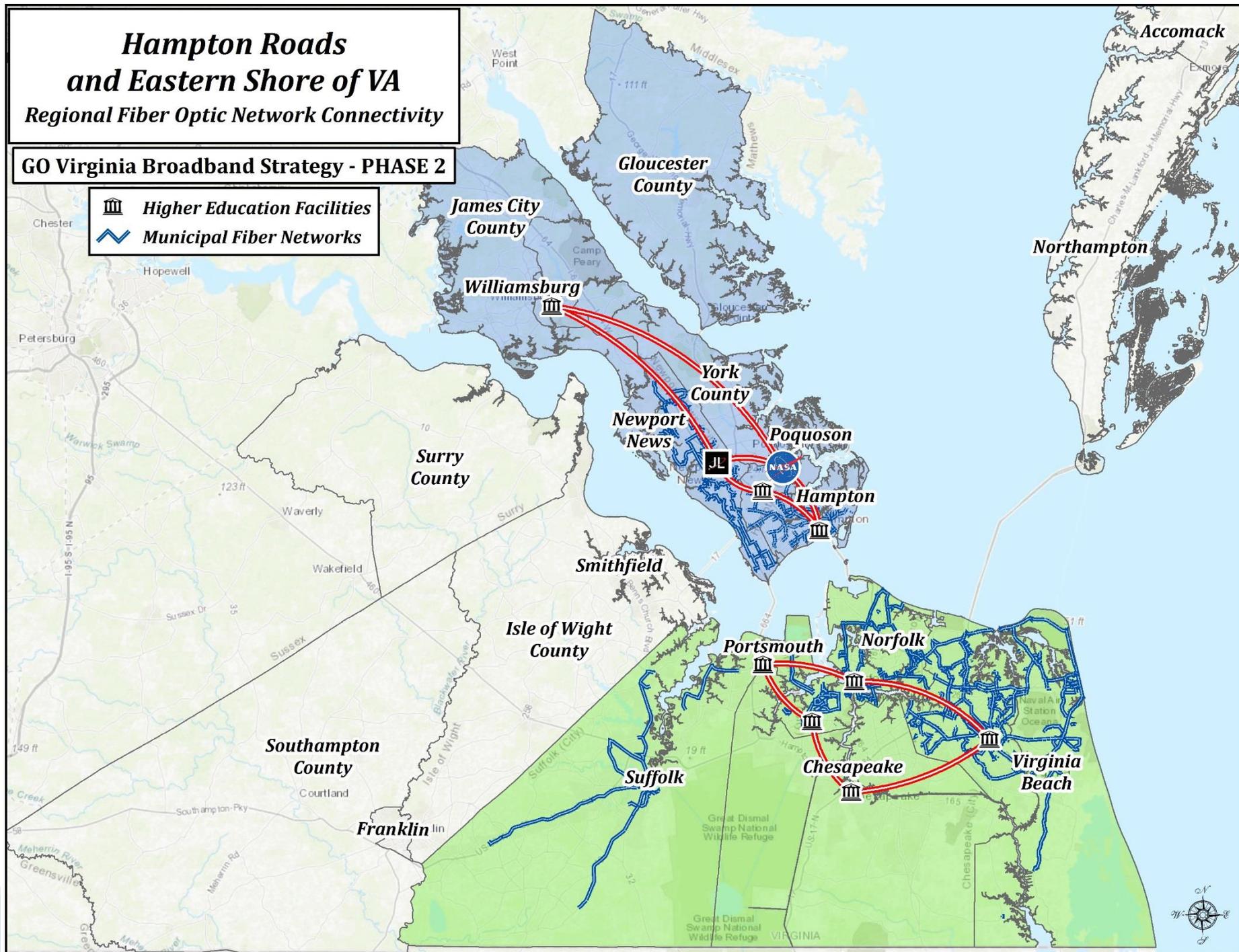


Hampton Roads and Eastern Shore of VA

Regional Fiber Optic Network Connectivity

GO Virginia Broadband Strategy - PHASE 2

-  Higher Education Facilities
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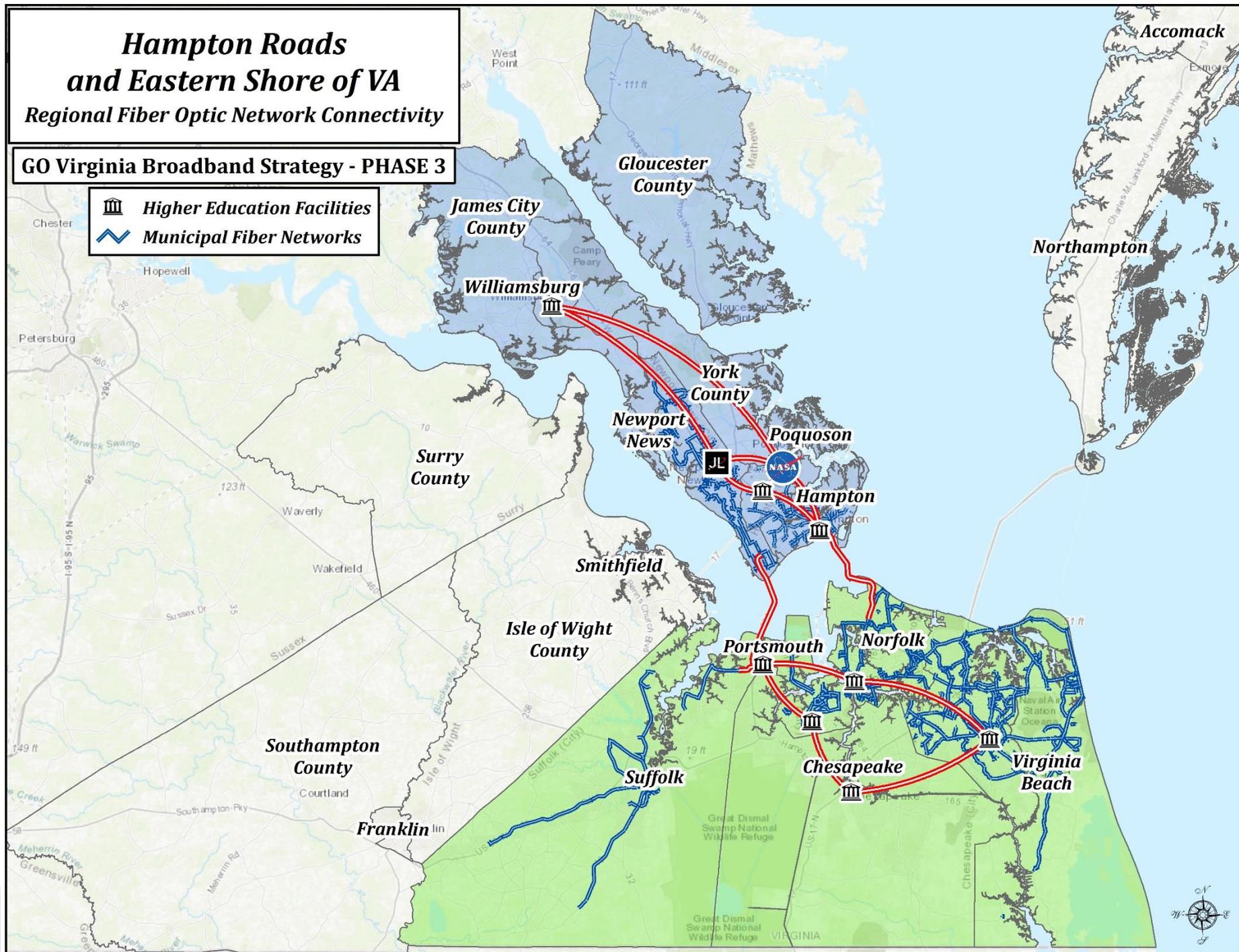


Hampton Roads and Eastern Shore of VA

Regional Fiber Optic Network Connectivity

GO Virginia Broadband Strategy - PHASE 3

-  Higher Education Facilities
-  Municipal Fiber Networks

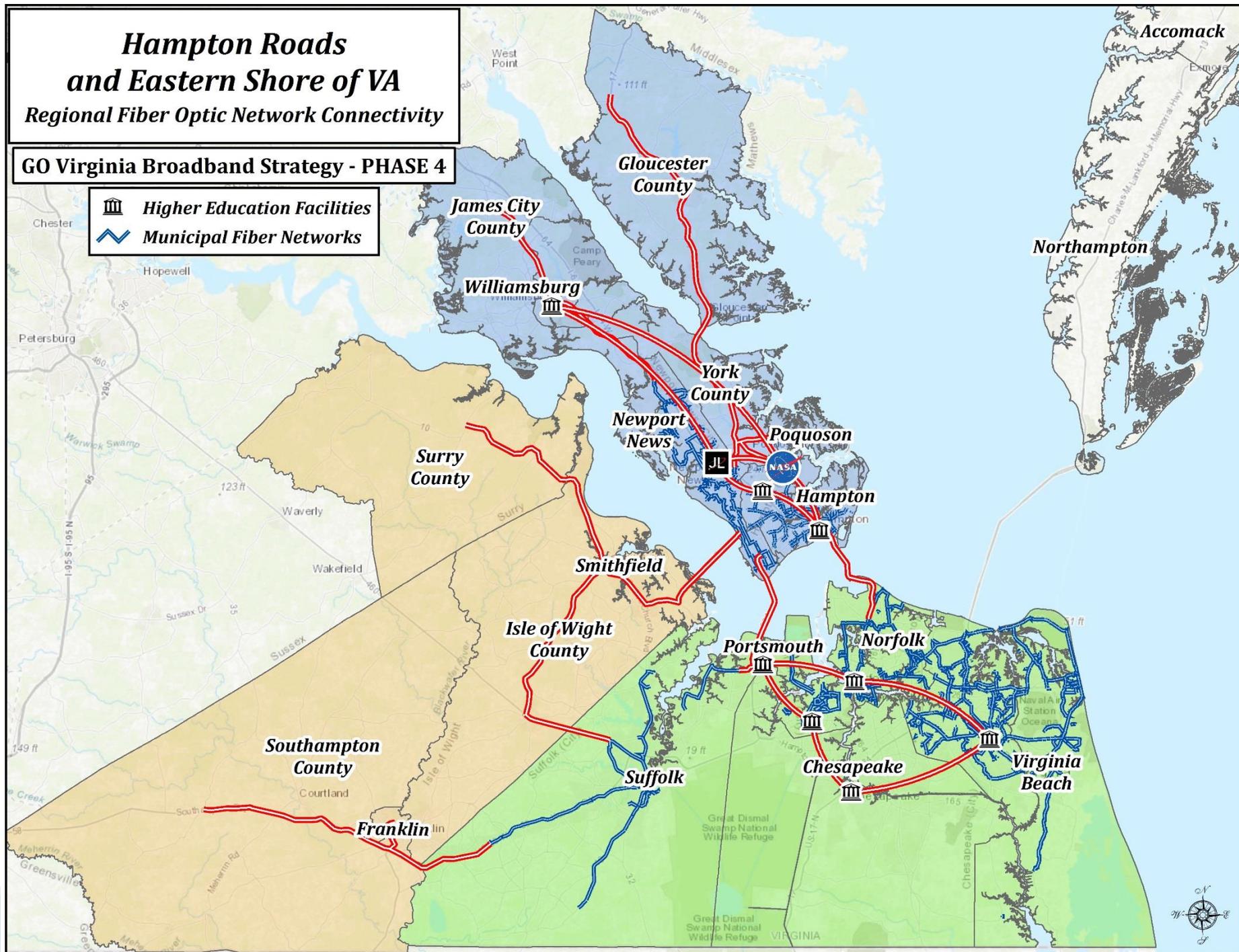


Hampton Roads and Eastern Shore of VA

Regional Fiber Optic Network Connectivity

GO Virginia Broadband Strategy - PHASE 4

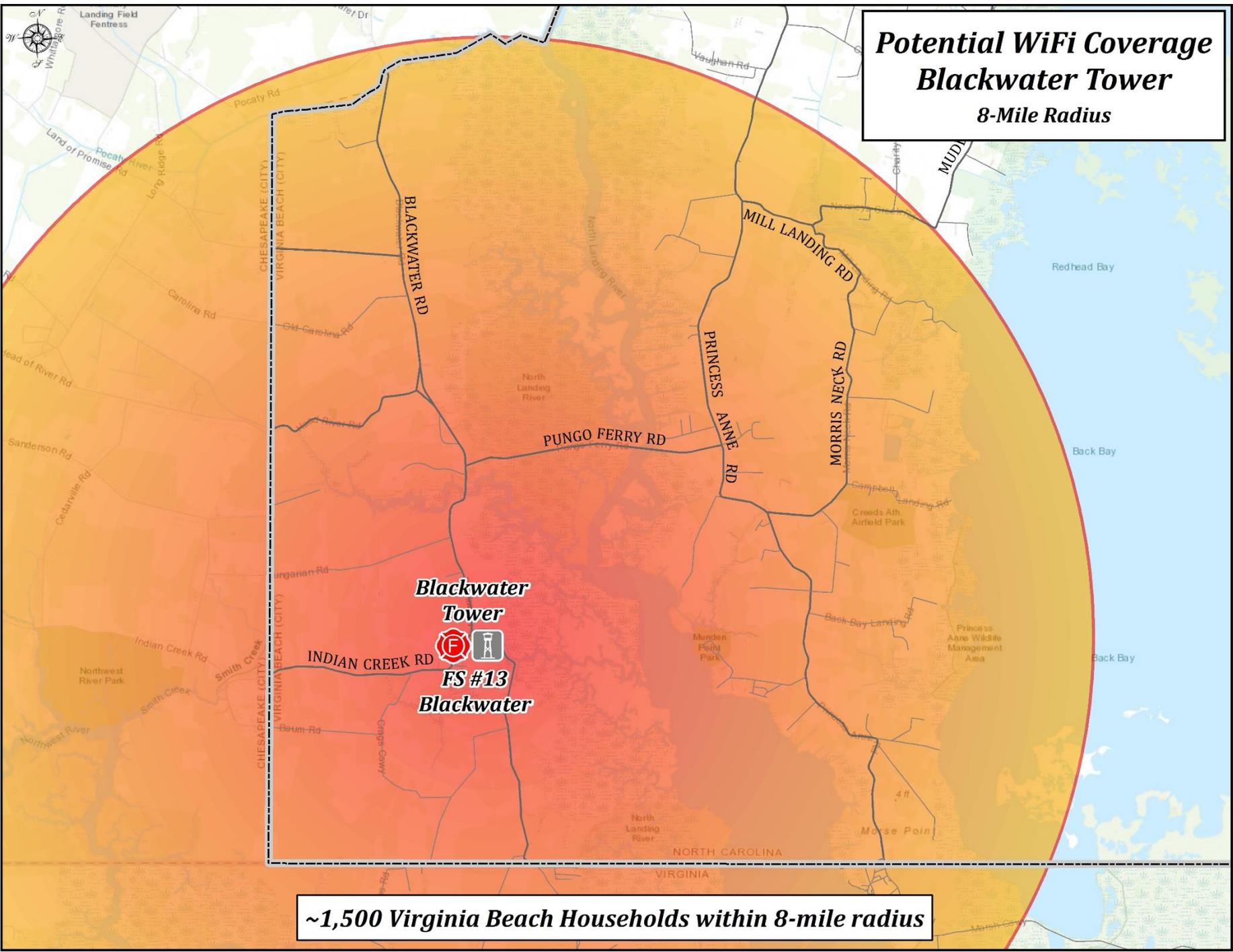
-  Higher Education Facilities
-  Municipal Fiber Networks



Wi-Fi Integration

- **WildFire 5G** in partnership with Microsoft provide low cost, high performance, hybrid networks and protected internet to the city of Virginia Beach and other Hampton Roads jurisdictions
- **This solution will serve:**
 - Public safety network
 - Underserved and unserved areas
 - To close the gap by addressing the Digital Divide
 - To support educational needs -Eliminating the Homework Gap – One account for every student
 - To deliver a Network that drives Community and Tourism
 - To address accessibility and affordability for broadband
- **Features**
 - Speeds up to 100Mbps for all users
 - Speeds of up to 300Mbps for business
 - Protected internet solution
 - Three layers of radio coverage (¼ mile, 5 miles, 8 miles)
- **Service Price**
 - \$9.25 per month up to 25Mbps
 - Additional pricing tiers up to 100Mbps
 - Approximately \$500 per month for businesses up to 300Mbps

**Potential WiFi Coverage
Blackwater Tower
8-Mile Radius**



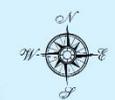
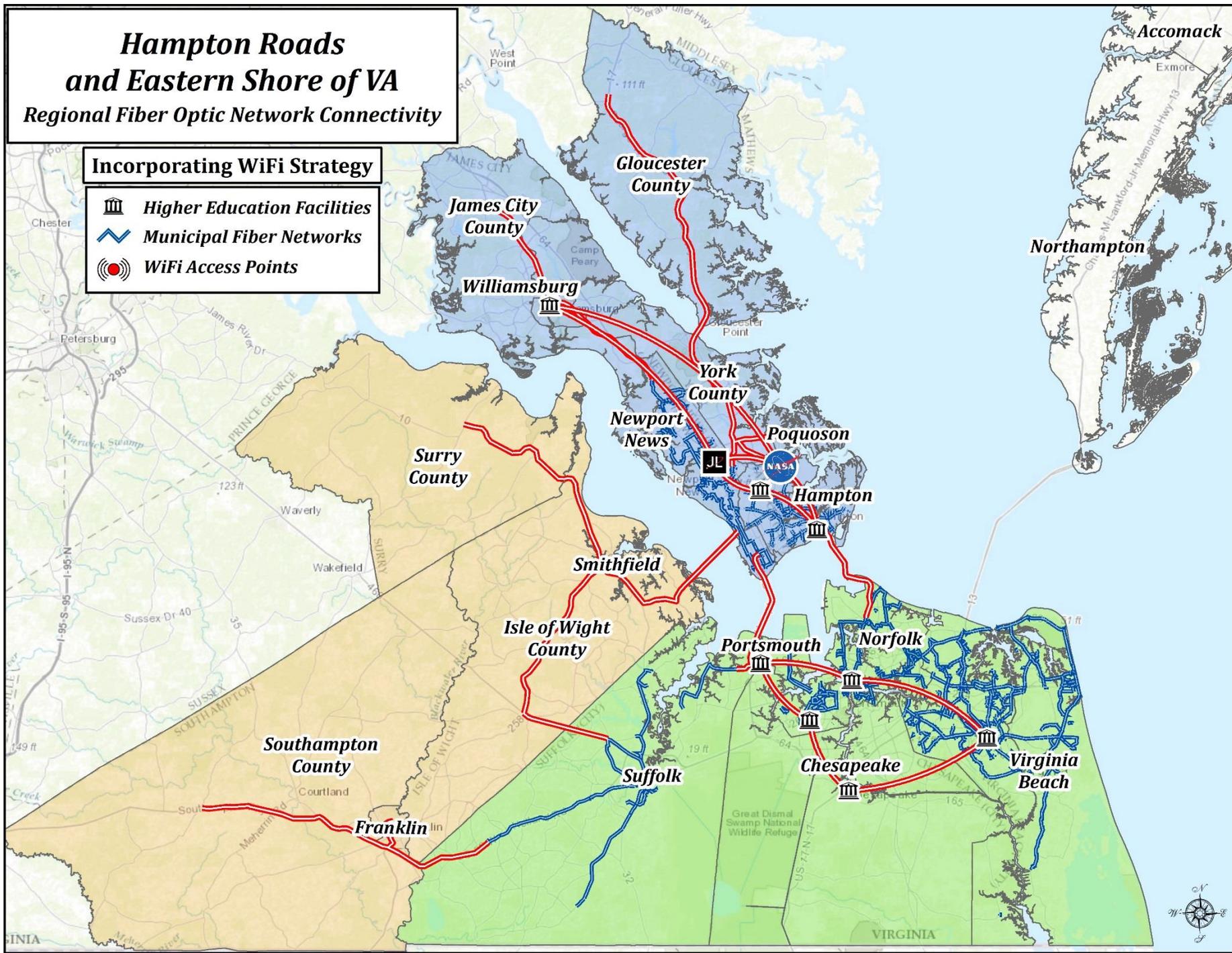
~1,500 Virginia Beach Households within 8-mile radius

Hampton Roads and Eastern Shore of VA

Regional Fiber Optic Network Connectivity

Incorporating WiFi Strategy

-  Higher Education Facilities
-  Municipal Fiber Networks
-  WiFi Access Points

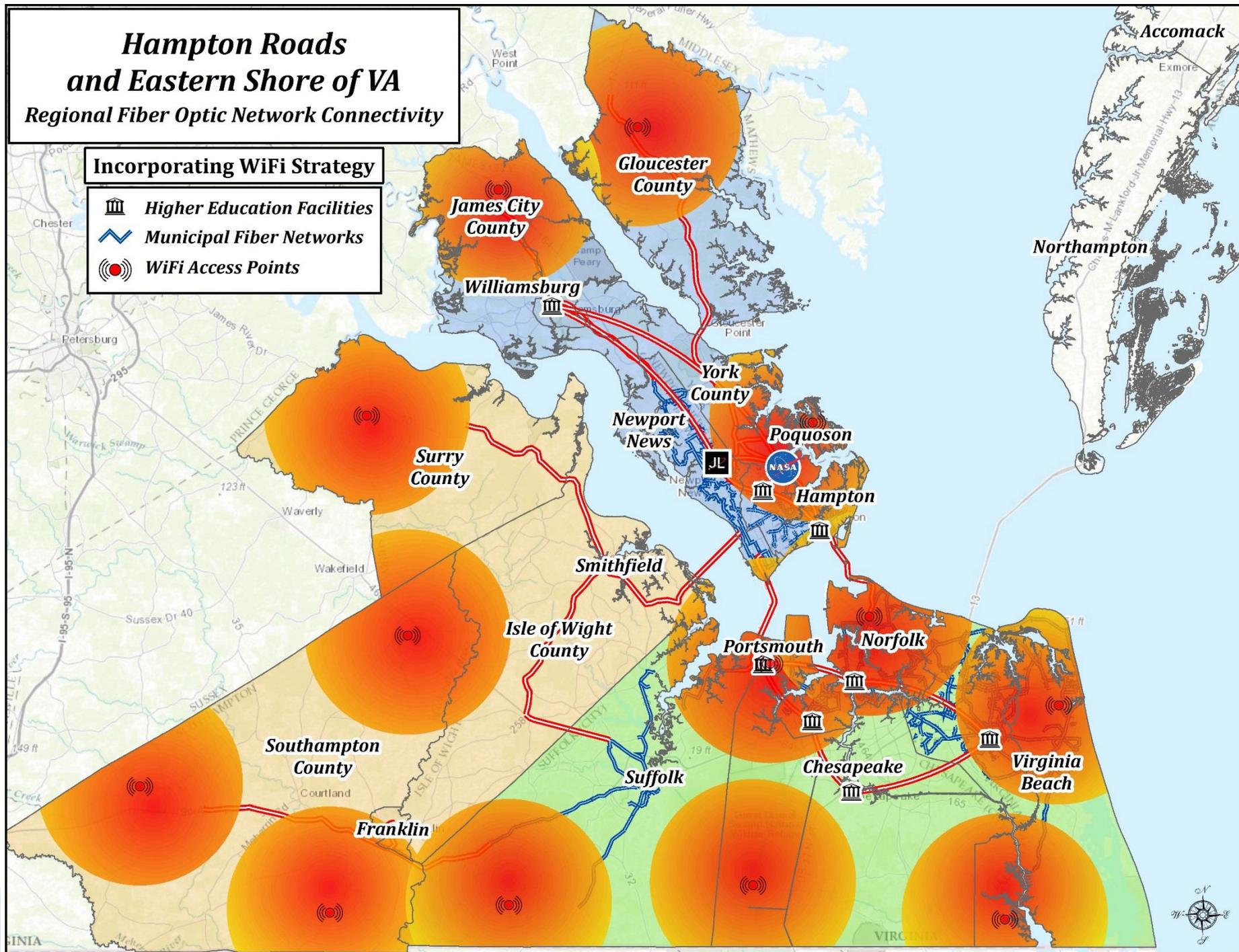


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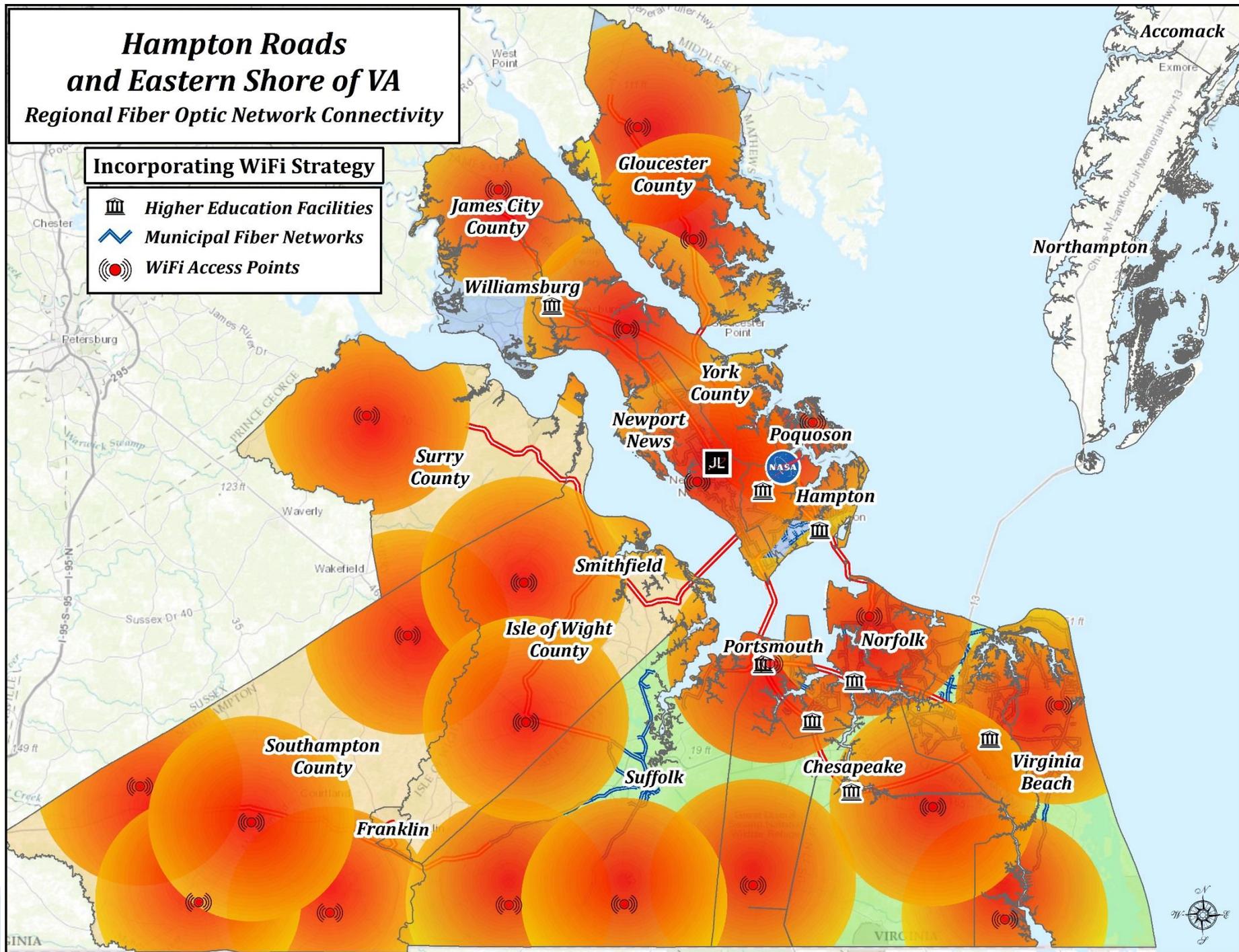


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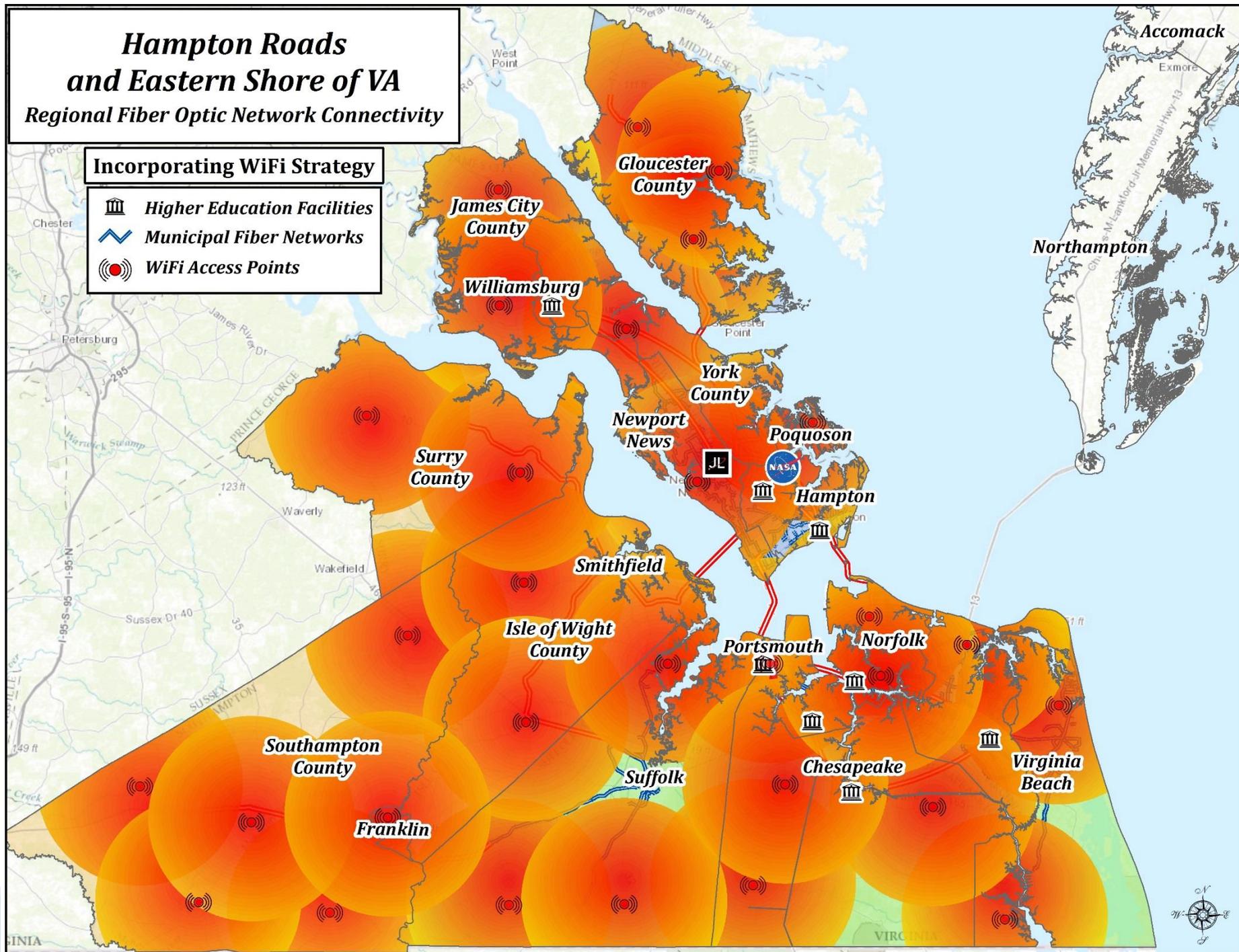


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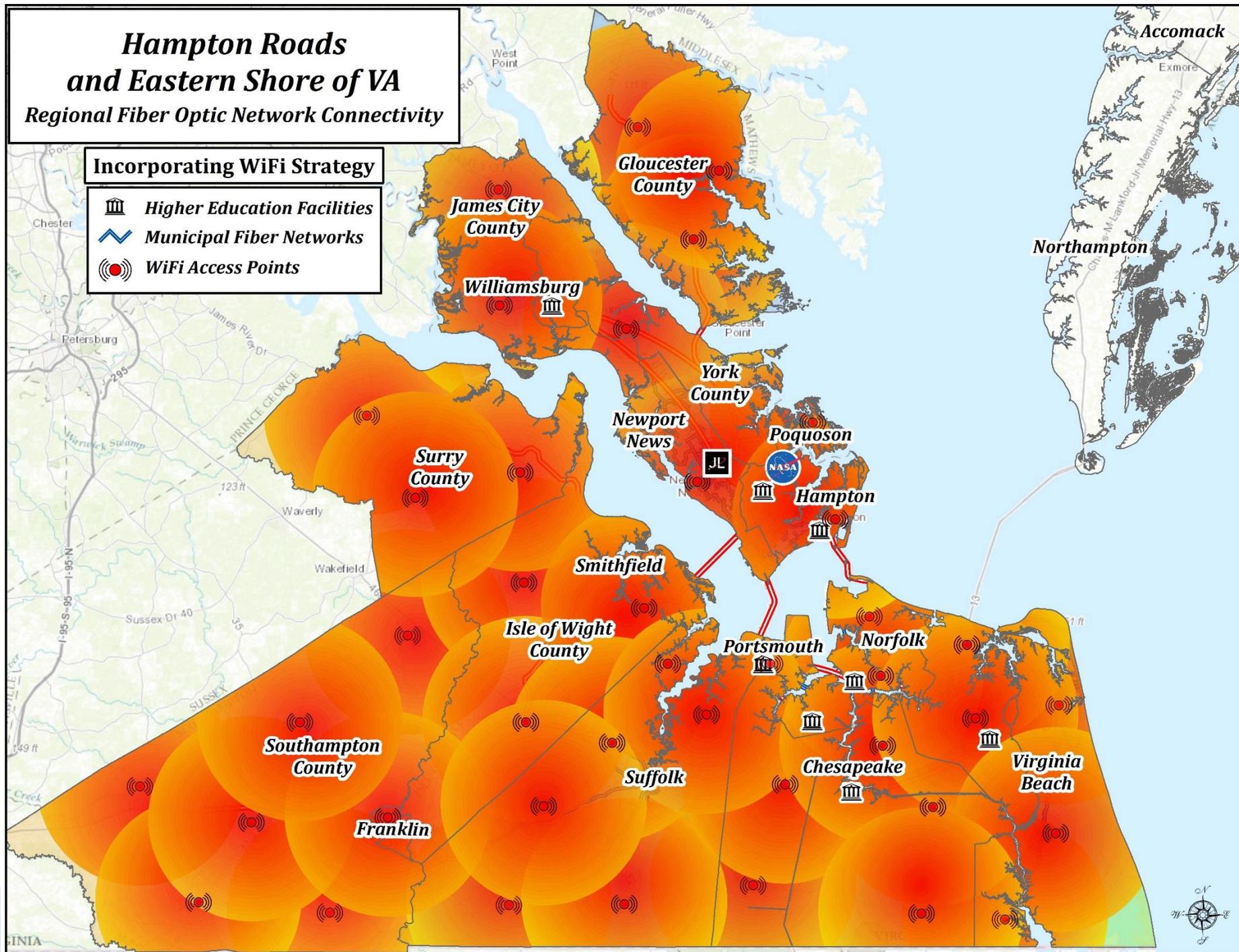


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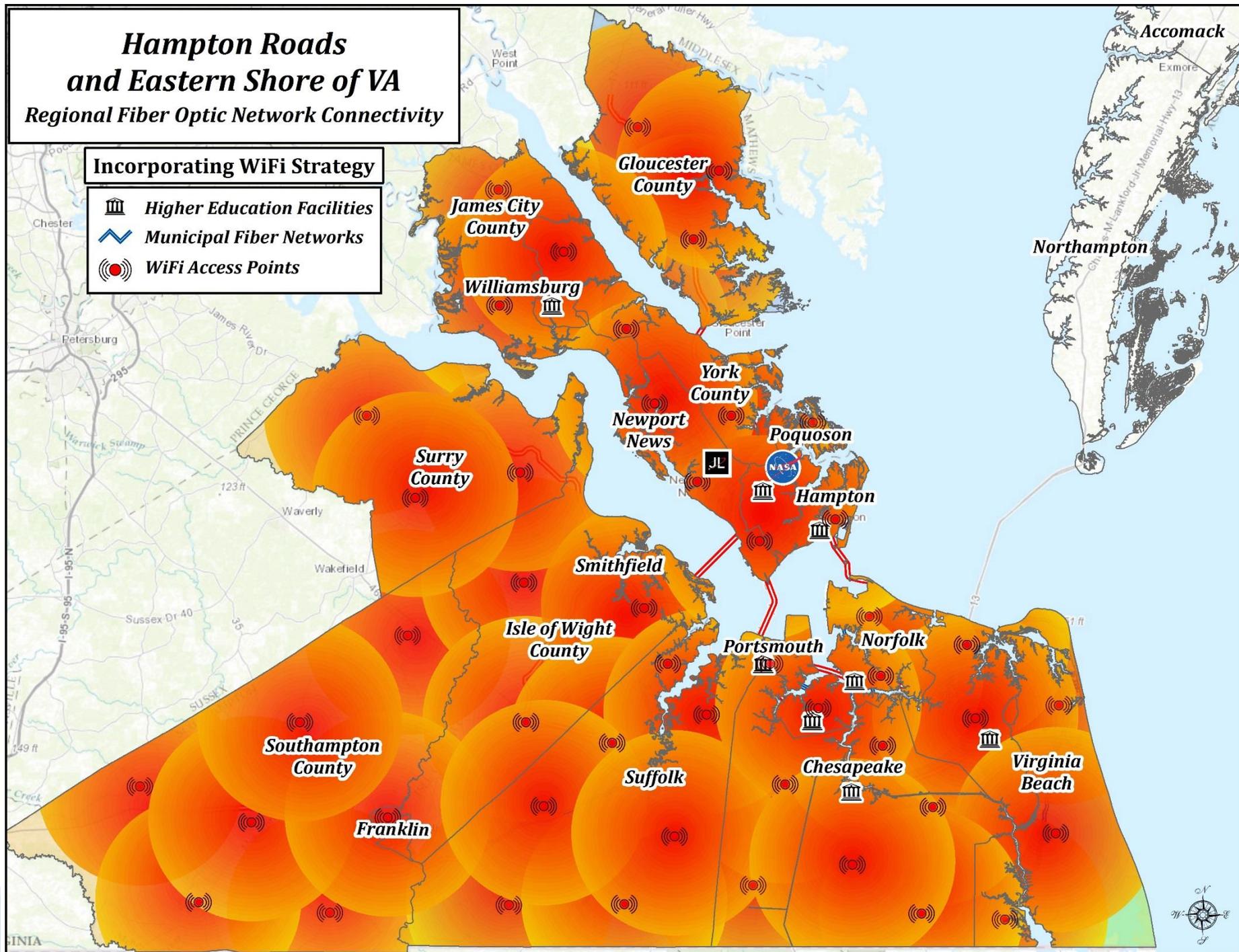


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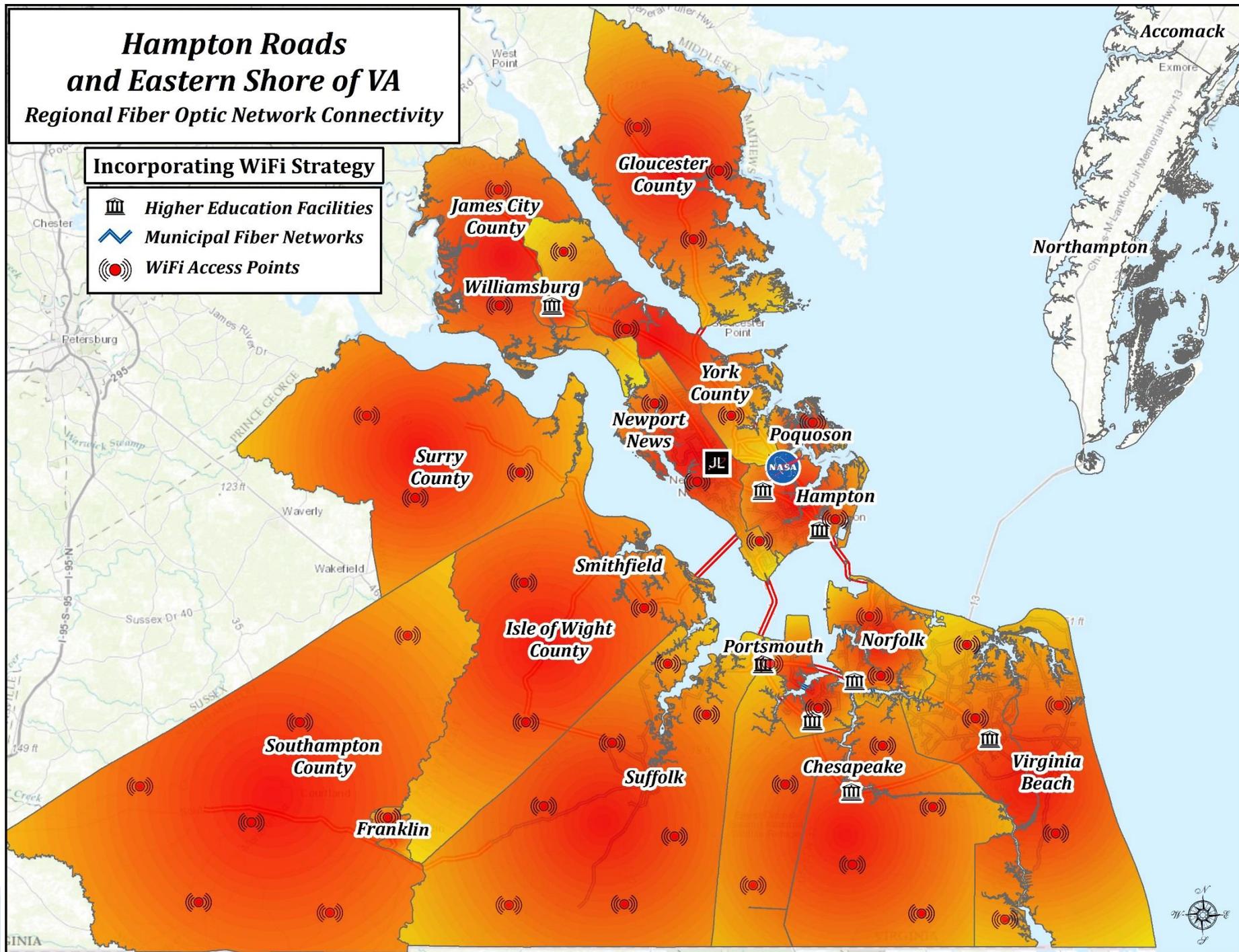


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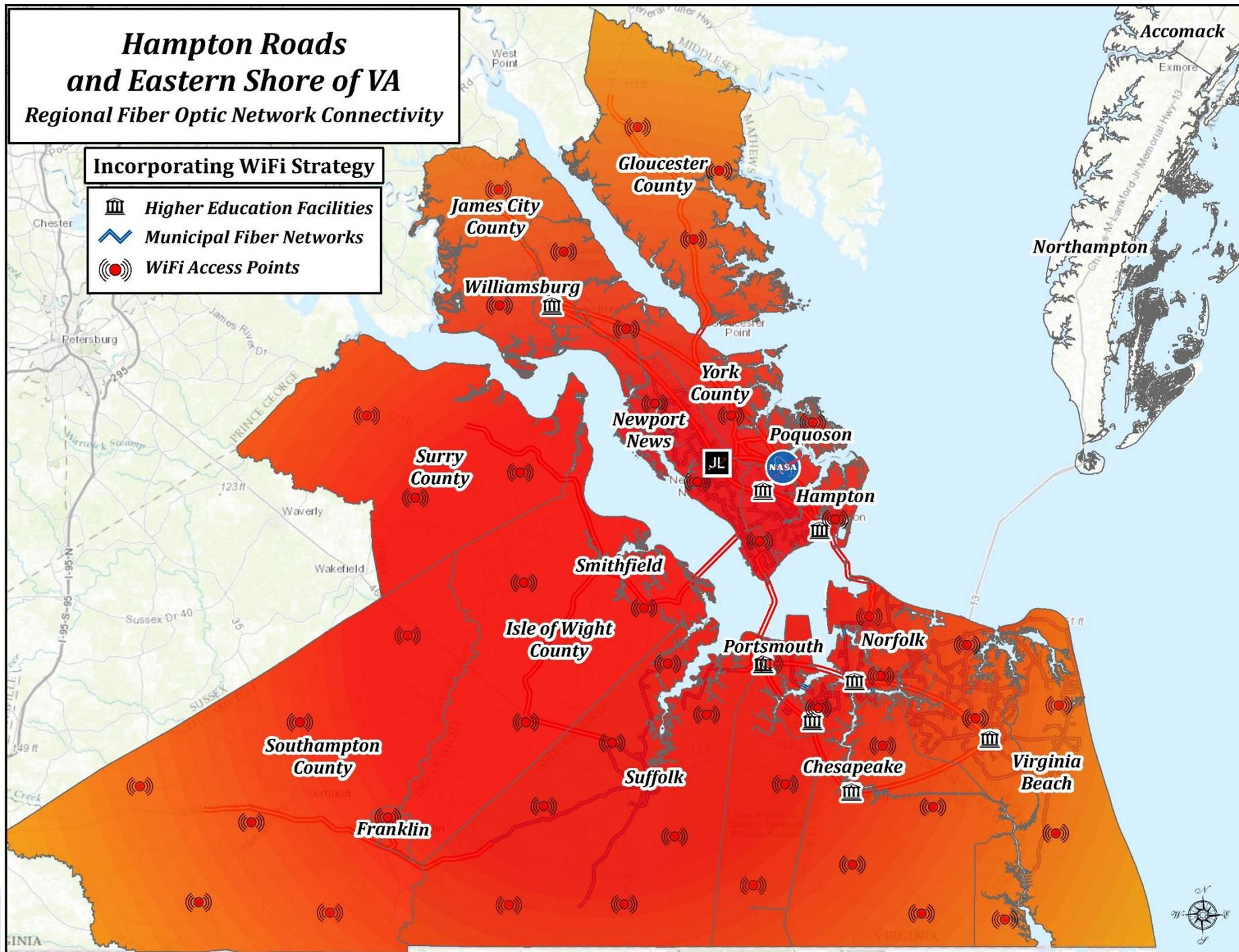


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Pre-Engineering Study

- **City of Virginia Beach funded \$85k for the assessment and white paper**
- **CTC Technology and Energy**
- **Scope and Timelines:**
 - **Create a middle mile strategy to enhance economic development and jurisdictional connectivity**
 - **Develop white paper (Outline) Aug 02, 2017**
 - **Assess existing assets Aug 25, 2017**
 - **Develop network design and cost estimate (Financial Analysis) Sep 08, 2017**
 - **Develop financial model (Economic ROI) Sep 22, 2017**
 - **Develop dark fiber lease fees and governance policies Sep 22, 2017**
 - **Draft Report Sep 29, 2017**
 - **Final Report Oct 13, 2017**
- **Though there is quantifiable governmental benefits for each jurisdiction to implement a broadband strategy the significant outcome resides in the creation of high paying jobs.**

Hampton Roads Economic Development

Target Industries and Sectors

Job creation efforts are focused on the priority industry sectors shown on the following chart.

| Business Services | Information, Analytics and Security | Advanced Manufacturing | Life Sciences and Healthcare | Maritime, Logistics and Supply Chain | Aviation, Aerospace and Defense |
|---|-------------------------------------|----------------------------------|------------------------------|--------------------------------------|--|
| Professional Services | Cybersecurity | Advanced Manufacturing | Specialty Pharma | Port Related Operations | Defense Activities |
| Financial Services | Modeling, Simulation and Training | Advanced Industrial Technologies | Medical Devices | Maritime Services | Maintenance, Repair and Overhaul (MRO) |
| Shared Services | Software Development | Food and Beverage Processing | Biotechnology | Ship Building and Ship Repair | Aviation Related Manufacturing |
| Management Consulting | Game Development and Mobile App | Smart Sensors Manufacturing | Diagnostic Testing | Supply Chain Operations | Air Service Development |
| Policy Associations | Energy Solutions | Materials Science | Pharmaceuticals | Distribution and Warehousing | |
| Government Contracting | | | Clinical Trials | | |
| Contact Centers | | | Bio Informatics | | |
| | | | Medical Simulation | | |
| Corporate and Regional Headquarters – Centers of Excellence – Research and Development | | | | | |

Funding Strategy for Regional Broadband

➤ **GO Virginia Grant Goals**

- **Collaboration Between Two or More Localities**
- **Collaboration with Higher Education**
- **Potential to Create High Paying Jobs**
- **Promotes Innovation**

➤ **2017 Grant Application Timeline**

- **Project submission: 31 October 2017**
- **GO VA Regional Council review and consideration list: 15 November 2017**
- **GO VA State Board funding selection: 12 December 2017**

➤ **Phases and Potential Funding:**

- **2017 GO VA request to construct the main Southside fiber loop (phase 1)**
- **2018 GO VA request to construct the main fiber loop throughout Peninsula (phase 2)**
- **2019 GO VA request to connect Peninsula to Southside (phase 3)**
- **2020 GO VA request to integrate/expand fiber infrastructure for other Hampton Roads jurisdictions (phase 4)**

Request for Council Support

1. **Endorse participation in regional broadband initiative**
2. **Authorize briefing to HRPDC**
3. **Collaborate with PDC to prepare GO Virginia application**