Welcome and Opening Remarks

The Power of Partnerships: Working Together to Strengthen Broadband Infrastructure

Lunch

Proactive Broadband Planning

Break

Broadband Programs and Funding Opportunities

What Does the Future Hold for Virginia Broadband?

Open Q&A

Adjourn
Welcome and Opening Remarks

Bob Stolle
Senior Vice President of Policy and Regional Initiatives, Center for Innovative Technology

Laura Spining
Director of Broadband USA Partnerships, BroadbandUSA, National Telecommunications and Information Administration, U.S. Department of Commerce
The Power of Partnerships: Working Together to Strengthen Broadband Infrastructure

Strong partnerships lead to sustainable projects that meet community goals. Industry and civic leaders will share insights and describe how they developed their partnerships and worked together to accelerate broadband deployments.

Eastern Shore of Virginia Broadband Authority
Robert Bridgham, Executive Director

Prince George County and Prince George Electric Cooperative
Jeff Stoke, Deputy County Administrator
Mike Malandro, President

Bland County and GigaBeam Networks
Eric Workman, County Administrator
Michael Clemons, President

Moderator: Katherine Bates, Manager for State and Local Partnerships, BroadbandUSA, National Telecommunications and Information Administration, U.S. Department of Commerce
An independent, not-for-profit public authority, originally formed by the Counties of Northampton and Accomack, to provide broadband services on the Eastern Shore of Virginia.
<table>
<thead>
<tr>
<th>ESVBA Grant Funding</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Accomack County</td>
<td>$ 200,000</td>
</tr>
<tr>
<td>Northampton County</td>
<td>$ 66,000</td>
</tr>
<tr>
<td>Total Planning Phase Funding</td>
<td>$266,000</td>
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</table>

<table>
<thead>
<tr>
<th>Backbone Construction</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EDA/DHCD Funding</td>
<td>$4,509,800</td>
</tr>
<tr>
<td>NASA 2008</td>
<td>$1,786,000</td>
</tr>
<tr>
<td>NASA 2009</td>
<td>$2,000,000</td>
</tr>
<tr>
<td>Total Backbone Funding</td>
<td>$8,295,800</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Community Network Construction</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Town of Parksley</td>
<td>$ 450,400</td>
</tr>
<tr>
<td>Town of Cape Charles</td>
<td>$ 489,900</td>
</tr>
<tr>
<td>Town of Onancock</td>
<td>$ 200,000</td>
</tr>
<tr>
<td>Town of Chincoteague</td>
<td>$ 479,500</td>
</tr>
<tr>
<td>CDBG-R Grant</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>Total Community Funding</td>
<td>$2,619,800</td>
</tr>
</tbody>
</table>

Total ESVBA Grant Funds: $11,181,600
In 2013, at the 21st annual Eastern Shore of Virginia Harvest Festival, ESVBA made its first, non-mandatory, installment payment to reimburse the two counties for their initial investment.

The ESVBA has since refunded 100% of initial start up contributions from the two counties and continues to operate from a strong financial position.
The ESVBA is still managed by a five member Board of Directors appointed by both Accomack and Northampton Counties.

The current Board of Directors members consists of:

- Elaine Meil, Chair
- Scott Webb, Vice Chair
- Mike Mason, Treasurer
- Charles Kolakowski
- Peter Lalor
Fast Facts

~320 mile carrier grade network

10 years of stable operation

Runs 85 miles from MD border to VA Beach

Serves a variety of industries:
- Education
- Commercial
- Government
- Healthcare
- Wholesale
- Residential

Hundred satisfied customers
April 2008
ESVBA was formed under a joint resolution between the Counties of Accomack and Northampton

September 2016
ESVBA launches fiber to the home trial.

November 2017
ESVBA board officially adopts the region-wide expansion of FTTH.

October 2013
ESVBA begins repayment of public funds from authority start-up.

April 2017
ESVBA expands residential FTTH trial.

October 2018
19 Eastern Shore Communities have access to Residential FTTH Service from the ESVBA.
All backbone electronics are NEBS compliant and engineered to Telcordia standards
Offer Ethernet ELAN & ELINE Services, SONET services, WISP Services, Dedicated Internet, and FTTH
IPV6 enabled network providing massive capability (340 undecillion addresses - $3.4\times10^{38}$)
Virtual and physical network monitored 24/7/365
Proactive network threat and mitigation monitoring
Speeds up to 100 Gbps and wavelength services
The ESVBA’s network consists of two major components:

1. **The Backbone** - This part of the ESVBA’s network begins at Wallops Island and runs south along the Eastern Shore of Virginia to Virginia Beach. Along this route, regeneration facilities are located in Wallops Island, Tasley, Exmore, and Cheriton.

2. **Community Networks** - regionalized networks that are connected to the backbone.
   
   Examples include:
   
   a. Chincoteague
   b. Parksley
   c. Onancock
   d. Belle Haven
   e. Exmore
   f. Willis Wharf
   g. Nassawadox
   h. Eastville
   i. Cape Charles
Wholesale Partnerships
WHAT WE’VE LEARNED
Planning a Community Broadband Roadmap

Community leaders are uniquely qualified to assist in developing a community broadband vision and goals. In order to implement this vision, a broadband planning process should be undertaken. NTIA and CIT staff will provide guidance and tips for moving from vision to goals.

Don Williams
Senior Specialist for Broadband Development Infrastructure, National Telecommunications and Information Administration, U.S. Department of Commerce

Chuck Kirby
Vice President of Broadband Programs, Center for Innovative Technology

Moderator: Phyllis A. Errico, Esq
General Counsel, Virginia Association of Counties
Proactive Broadband Planning
Virginia locality representatives will discuss steps they have taken to implement broadband-friendly policies, proactively plan to pursue funding opportunities, and leverage preexisting assets to help expedite broadband deployment.

Debra Bryan
Associate City Attorney - City of Virginia Beach

Bryan David
County Administrator - Orange County

Carl Boggess
County Administrator - Bedford County

Moderator: Caroline Luxhoj
Broadband Program Administrator, Center for Innovative Technology
Orange County
Rural Broadband Initiative
“In a paper published in 1936, the British mathematician Alan Turing proved that a
digital computer, which at the time existed only as a theoretical machine, could be
programmed to perform the function of any other information-processing device. And
that’s what we’re seeing today. The Internet, an immeasurably powerful computing
system, is subsuming most of our other intellectual technologies. It’s becoming our map
and our clock, our printing press and our typewriter, our calculator and our telephone,
and our radio and TV.”

“...employment and economic output...[are] strongly related to broadband deployment, particularly in certain service sectors, such as finance, education, and healthcare. Surprisingly, even manufacturing employment appears to be related to broadband penetration.”

Orange County
Orange County Board of Supervisors  
Two-Year Priorities  
FY2018-2019_FY2019-2020  
(adopted 4.18)

### Vibrant Economic Development

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>Through the Orange County Broadband Authority (OCBA), continue with development, implementation, and management of an “open-access” fiber optics network and the Rural Broadband Initiative with the overarching goal of making high-speed broadband affordable and available to all residents and businesses.</td>
</tr>
<tr>
<td>2</td>
<td>Initiate a process to collaborate on economic development with the Towns of Gordonsville and Orange.</td>
</tr>
<tr>
<td>3</td>
<td>Continue to develop, implement, and manage the Germanna-Wilderness Area Plan annual work program to include infrastructure planning (water, wastewater, transportation, and telecommunications), land use and development, economic development, and historical and cultural assets.</td>
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### Effective, Reflective Government

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<th>Description</th>
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<tr>
<td>5</td>
<td>Enhance the overall fiscal planning and budgeting process for general government, Orange County Public Schools, Constitutional Officers, and outside agencies to align with the Board’s Financial Policies and Capital Projects financing strategies.</td>
</tr>
<tr>
<td>6</td>
<td>Make targeted technical corrections to specific ordinance language with respect to land use and development, and subdivisions.</td>
</tr>
</tbody>
</table>
Common Barriers and Opportunities

- The “death by distance----last mile” conundrum for under and unserved areas
- Not solved solely by private sector or public sector – a public/private solution is needed much like rural electrification in the early 20th century
- Goal is to reduce capital costs and start-up operating expenses for telecommunications (broadband) companies to enter under and unserved markets
- Critical elements are use of publically owned or controlled vertical assets for wireless broadband; deployment of low cost, open-access fiber optics network and backhaul (the “middle mile”); and, leveraging local government capital expenditures for education and public safety.
Orange County Public Schools
Fiber Project

- Why is fiber connectivity between facilities important?
- Reliable and secure transmission of voice, video, and data for testing, classroom instruction, administrative connectivity & communication, and security
- Federal Communications Commission’s Second E-Rate Modernization Order – Universal Service Access Corporation (USAC) Grant Funding Opportunity- awarded to OCPS on June 30, 2017
- Self-Provisioned Fiber Solution Demonstrated by OCPS: “…an organization’s ability to self-construct and own their own high-speed networks independent of specific service providers.”
Orange County Public Schools & Orange County “Open Access” Fiber Optics Network Project

- Cooperatively procured pricing (design specifications, easements, fiber optic conduit and cabling, handholds, materials, and labor)
- Orange County increased the USAC funded 2 strands per school facility to approximately 10 strands per school facility
- Overall strand count for both OCPS and Orange County (majority of strands will remain dark and will be “lit” based on demand):

<table>
<thead>
<tr>
<th>Total Strand Count for Network</th>
<th>Schools</th>
<th>General Government</th>
</tr>
</thead>
<tbody>
<tr>
<td>288</td>
<td>84</td>
<td>204</td>
</tr>
</tbody>
</table>
Orange County Public Schools
Fiber Optics Funding Sources

- Selected Vendor: Computer Cabling & Telephone Services, Inc.

<table>
<thead>
<tr>
<th>Total Project Cost</th>
<th>$1,772,754</th>
</tr>
</thead>
<tbody>
<tr>
<td>USAC E Rate Funding (80%)</td>
<td>$1,005,403</td>
</tr>
<tr>
<td>Additional County USAC Match Funding + 10% VPSA Match</td>
<td>$330,423</td>
</tr>
<tr>
<td>Additional County Capital Funding (to increase strand count)</td>
<td>$436,928</td>
</tr>
</tbody>
</table>

| Total County Capital Investment | $767,351 (general fund dollars) |

Orange County Public Schools ~33 Mile Fiber Build
Joint Public Safety Land Mobile Radio (LMR) “Open Access” Fiber Optics Network Projects

- Opportunity to leverage fiber optics network with components of the Public Safety LMR system for economy of scale and function (contract awarded to Harris Corporation 7/18; $9.1MM K; P25-700MHz; 6 new radio towers 3-user group design public safety, wireless internet service providers, and cellular telephone carriers)

- Opportunity to have high-speed, affordable broadband delivered over-time to the county’s underserved areas by inducing retail fiber operators to provide fiber to the premises (FTTP) for unserved residences and businesses along the network route and to induce private sector Wireless Internet Service Providers (WISPs) to utilize the fiber-served LMR communications towers which are designed to serve multiple users beyond public safety (WISP and cellular providers)

- Ability to use the Public-Private Education Facilities and Infrastructure Act of 2002 (PPEA) to operate and maintain network and its components

- PPEA Qualifying Projects (Code of Virginia §56-575.1):
  - utility and telecommunications and other communications infrastructure
  - any technology, equipment, or infrastructure designed to deploy wireless broadband services to schools, businesses, or residential areas

- Orange County’s Rural Broadband Initiative has removed the capital cost barrier to “last-mile” broadband by leveraging its investments in an expandable, scalable fiber optics and wireless tower network
Fiber Optics Network & Public Safety Tower Siting

- New Public Safety Tower
- Leased Tower
- School
Middle Mile Network Route Diversity

US Route 29 North

US Route 33 West

State Route 20

State Route 3

Dark Fiber Lateral (IRU)

School/County Fiber

County Fiber Lateral

Equinix-Culpeper
Orange County Broadband Authority (OCBA)

- Organized under the *Virginia Wireless Service Authorities Act*, Chapter 54.1 of Title 15.2 of the Code of Virginia (modeled after Virginia Water and Waste Authorities Act)
- State Corporation Commission issued charter in June of 2016
- Board of Supervisors serves as the Board of Directors for OCBA
- OCBA operated as a component unit enterprise of the County empowered to contract network operations, maintenance, and consumer sales and service to private sector telecommunications providers; issue debt; and, otherwise use business-like practices similar to local or regional water/wastewater authorities, airports, landfills, etc.
- “Open Access” Fiber Optics Network and *Rural Broadband Initiative* transferred to OCBA for implementation and management
- **OCBA will solicit private-sector WISP and FTTP partner(s) under the authority of the Public-Private Education Facilities and Infrastructure Act of 2002 (PPEA)**
Professional Services

- **Professional Engineering Services:**
  - Fixed wireless broadband propagation analysis and public safety radio design conducted by Federal Engineering Corporation

- **Professional Telecommunications Engineering Services (inside plant):**
  - Network configuration and hardware support conducted by GCR Communications

- **Fiber Optics Installation:**
  - Fiber installation awarded through cooperative procurement to Computer Cabling Telephone Services Inc.

- **Fiber Installation Oversight (outside plant):**
  - Inspection and construction management conducted by GranCo Diversified

- **Broadband Consulting:**
  - Professional broadband business consulting services provided by Blue Ridge Advisory Services Group, Inc.
  - Needs assessment, business plan, organizational performance plan, dark fiber and tower lease business development, etc.

- **Communications Plan and Web/Digital Platform Development:**
  - Firm(s) to be procured
“[change is realized by individuals] ...who take the next step; not those who theorize about the 200th step.”

President Theodore Roosevelt
Thank You

R. Bryan David
County Administrator
orangecountyva.gov
bdavid@orangecountyva.gov
Proactive Broadband Planning

Virginia locality representatives will discuss steps they have taken to implement broadband-friendly policies, proactively plan to pursue funding opportunities, and leverage preexisting assets to help expedite broadband deployment.

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Moderator: Caroline Luxhoj
Broadband Program Administrator, Center for Innovative Technology
GLOBAL CONNECTIONS

MAREA: faster, stronger, more resilient
- **Speed:** 160 tbit/s (16 million times faster than average home internet)
- **Length:** 4,000 miles long
- **Diversifies** connectivity through the Atlantic

BRUSA: the highest capacity subsea cable connecting the Americas
- **Speed:** 138 tbit/s
- **Length:** 6,500 miles long

The cables will have a route-diverse backhaul that connects to Ashburn, VA, which houses the most dense concentration of data centers in the world.
GLOBAL CONNECTIONS

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MAREA and BRUSA Beach Manhole

Cable Landing Station
C.L.U.B. – City Attorney’s Office

Communication – Land Use – Broadband
- Real Estate/Land Use/Contracts attorneys and staff
- Monthly meetings to discuss cross-section topic areas

S.C.O.R.E.
Smart City Organization for Regional Enhancement
- Created group within locality
- Weekly meetings at first, then as needed
- Provide framework for replication in each locality

Franchise Workgroup and Subcommittee
Initiated by Information Technology Dept.
- Review every franchise request for fiber or small cell placement
- Teach each other about our areas of expertise
- Coordinate projects and review route maps

5G Workgroup – City Manager
Initiated by City Manager
- Necessitated by industry’s desire to attach to government-owned structures
- Include all areas – libraries, schools, public safety, PW and PU, IT, attorney, administrators, Parks & Rec, Visitor’s bureau, etc.
**Smart City Organization for Regional Enhancement (SCORE)**

**REGIONAL SCORE TEAM:**
Designees of the CIOs, acts as the cities’ SCORE liaison, working collaboratively on regional initiatives.

**SCORE FRAMEWORK**

- CITY ADMINISTRATION
- SMART CITY ORGANIZATION FOR REGIONAL ENHANCEMENT SCORE
- DEPARTMENTAL LIAISON

SCORE is an organizational framework adapted by HRPDC
Broadband Taskforce – Various city leaders, staff, council members, higher education, community leaders met to discuss regional effort

Hampton Roads Planning District Commission (HRPDC) coordinated and facilitated the efforts

HRPDC established a **Steering Committee**, representing the region’s 17 localities.

**SCORE** was introduced and presented as a replicable framework to evaluate, manage, track, prepare for smart city/region initiatives, and report to the Steering Committee.

**A unified approach to:**

- Evaluating best practices
- Managing smart city initiatives
- Tracking longitudinal progress
- Preparing for smart region initiatives starting with the five cities
The Regional Connectivity Ring is a 103.11 mile dark fiber, open access ring, which will serve as the foundation for smart region development and digitally-empowered communities.

Each city will house a Network Operations Center (NOC) to manage their portion of the ring.
Broadband Programs and Funding Opportunities
Listen to state and federal partners share the latest on broadband funding opportunities.

Tamarah Holmes
Associate Director of Community Development Policy, Virginia Department of Housing and Community Development

Timothy S. Pfohl
Grants Program Administration Director, Virginia Tobacco Revitalization Commission

Richard Jenkins
General Field Representative for Virginia, Rural Development for U.S. Department of Agriculture – Rural Utilities Service/Telecomm Program

Moderated: Courtney Dozier
Virginia Deputy Broadband Advisor and Chief Deputy, Department of Housing and Community Development
Broadband as a Community Development Tool

Tamarah Holmes, Ph.D
DHCD Resources for Broadband

- Appalachian Regional Commission (ARC)
  - Planning
  - Deployment

- Community Development Block Grant (CDBG)
  - Planning
  - Deployment - economic development, telemedicine, and distance learning

- Virginia Telecommunication Initiative (VATI) area must be unserved. Deployment, primary residential and ancillary community anchors and businesses
Appalachian Regional Commission (ARC)

- Fosters economic development and improves the quality of life for Appalachian citizens of 25 counties and eight independent cities in Virginia
- ARC funding is directed to projects that include water and sewer service to communities, workforce training for skilled trades and professionals, regional economic restructuring efforts and heritage and cultural tourism
- The Virginia ARC program may also be available to help with the development of access roads to support the location or expansion of an industry
The goal of the CDBG Program is to improve the economic and physical environment in Virginia’s communities through activities which primarily benefit low- and moderate-income persons, prevent or eliminate slums and blighting conditions or meet urgent needs which threaten the welfare of citizens.

Provides funding to eligible units of local government for planning and implementing projects that address critical community development needs, including housing, infrastructure and economic development.
Community Development Block Grant (CDBG)
Virginia Telecommunication Initiative (VATI)

The goal of VATI is to enhance sustainability and competitive advantages of communities throughout the Commonwealth by preparing those communities to build, utilize, and capitalize on telecommunications infrastructure.

Funding
$4 million available for FY2019
Virginia Telecommunication Initiative (VATI)

- Units of local government (Towns, Cities, Counties, EDA/IDA, Broadband/Wireless Authorities, Planning District Commissions, etc.)
- Must have private sector provider as a co-applicant.

Funding limited to up to 80% of project costs
Definition of Unserved

The proposed project area must meet the following requirements:

- Speeds 10 Mbps/1 Mbps or less
- Less than 10% service overlap within the project area.
### VATI Funded Projects

#### 2017 VATI

<table>
<thead>
<tr>
<th>Locality/Co-applicant</th>
<th>Award</th>
<th>Locality/Co-applicant</th>
<th>Award</th>
</tr>
</thead>
<tbody>
<tr>
<td>Augusta County/Lingo</td>
<td>$278,880</td>
<td>Albemarle County/Comcast</td>
<td>$473,366</td>
</tr>
<tr>
<td>Albemarle County/CenturyLink</td>
<td>$118,400</td>
<td>Mecklenburg County/Buggs Island Telco</td>
<td>$217,173</td>
</tr>
<tr>
<td>Bland County/WVVA.net</td>
<td>$192,141</td>
<td>Spotslyvania County/Comcast</td>
<td>$167,260</td>
</tr>
<tr>
<td>Gloucester County/Cox</td>
<td>$193,094</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greensville County/Telpage</td>
<td>$162,334</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$944,849</strong></td>
<td><strong>Total</strong></td>
<td><strong>$857,799</strong></td>
</tr>
</tbody>
</table>

- 1,666 Virginia residents, 32 businesses (7- home based), 2 community anchors will have access to broadband ≥10Mbps/3 Mbps.
- Actual implementation speeds range from 10Mbps/3Mbps to 2Gb
Contact Information

Tamarah Holmes, Ph.D
Associate Director
(804) 371-7056
vati@dhcd.Virginia.gov
Tobacco Region Revitalization Commission

Funding Last Mile Broadband in Unserved Communities

Tim Pfohl, TRRC Grants Director
TRRC Investments in Broadband

- $140M since 2003, to provide open access mesh network serving all 40 Tobacco Region cities and counties
- $14M leveraged more than $80M of ARRA BTOP
- Various recipients linked through LIT Networks to carry longer haul data traffic
- Has been a major factor in:
  - attracting data centers (e.g. Microsoft-Boydton)
  - serving K-12 and post-secondary
  - enabling the MBC/Microsoft TV white space pilot
  - expanding IT and cybersecurity training and job openings
LIT Networks  www.litnetworks.com
TRRC Now Focusing on Last Mile Broadband

- Many areas of tobacco region remain unserved or underserved by most definitions (less than 10/1 Mbps), limiting ability to telework, conduct e-commerce, complete educational assignments, etc.
- Commission made $11M of awards in March to serve 31,000+ premises, working with localities and private co-applicants, leveraging $16M match
- TRRC pays <50% of project costs to extend last mile service to unserved premises
March 2018 Grantees

- Appomattox & Shentel
- Appomattox & Central Va Electric Cooperative
- Bedford & Comcast
- BRCEDA & Wired Road
- Amelia/Dinwiddie & StraightUpNet
- Halifax & SCS/Acela
- Mecklenburg & Meck. Electric Cooperative
- Pittsylvania & SCS/Acela
- Sussex & Prince George Electric Cooperative
Round Two Upcoming

- Required **pre-application** due December 10\(^{th}\) with review at January 8 Commission meeting in RVA
- **March 1\(^{st}\)** due date for **full applications**
- Funding decisions at May 2019 Commission meeting
- Up to **$5 million** to be made available
- Dollar-for-dollar **match** required by Code of VA
- Emphasis on greatest number of premises passed at reasonable costs for construction and monthly subscriber packages
Questions?

- Contact info for TRRC staff at www.revitalizeva.org/about-the-commission/contact-us/
- Contact me directly at (804) 786-2403 or tpfohl@revitalizeva.org
What Does the Future Hold for Virginia Broadband?
Past and on-going activities have moved the needle for broadband access in the Commonwealth; but in order to bring universal broadband access to residents and businesses, we must accomplish more. Hear about the vision for Virginia broadband.

Evan Feinman
Virginia Chief Broadband Advisor and Executive Director of the Tobacco Revitalization Commission