Cooperative Model for Innovative Open-Access Telecommunications Network in Rural Virginia

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Overview

• Why an Cooperative Open-Access Telecommunications Network was needed in rural Virginia.

• What led to the strategy development, business model and implementation of the network.

• How does the cooperative model work, and what can rural America learn from the success of this model in rural Virginia?
The Need for Open Access Networks

• The PROBLEM: Region in south-central Virginia hit very hard by fundamental shifts in federal policy and the global economy. In early 2000:
  – Tens of thousands of job losses
  – Entire industries/way of life disappearing (Tobacco Farming, Textiles, Furniture, Traditional Industrial Manufacturing)
  – Low education, old skills of workforce
  – No competitive telecommunications carriers
  – Lack of ubiquitous broadband coverage
  – Very expensive telecom services
The Need for Open-Access Networks

- Idea formed in 2000 by Old Dominion Electric Cooperative, funded by EDA and Virginia Tobacco Commission, VT concept of having the Commonwealth of Virginia highways become e-corridors, VDOT rights-of-way
  - Lack of affordable, advanced telecom broadband infrastructure
  - Private sector has to be key player in the project
  - Transform the regional economy by creating a competitive advantage in economic development
The Need for Open Access Networks

• The SOLUTION: Invest in 4 key areas to improve the long term outlook of the region:
  – Build open-access telecommunications infrastructure
  – Build human infrastructure
  – Build conditions for innovation
  – Build regional development capacity
Building Open-Access Telecom Infrastructure

1. Create a world class fiber optic mesh network that spans the entire region, that “…leaves no county behind”.
2. Connect the region’s fiber optic network to the national and global infrastructure.
3. Create multi-media service access points (MSAP’s or POP’s) at strategic aggregation points across the region.
4. Deploy optical and wireless technologies for community infrastructure that reflect the best technical and economic choices available.
1. Create Fiber Optic Network
1a Create Fiber Optic Network

• Several Issues to overcome:
  – Political hurdles of 20 counties, 4 cities, 2 towns each with their own histories, agendas, ideas, and knowledge of telecom
  – Patchwork networks difficult to manage, harder to integrate
  – Capital and operational cost considerations
  – “It’s not the money but it’s the money”

• Solutions:
  – Cooperative business structure (not for profit) to manage project, oversee construction, insure compatible infrastructure/network connections for each county/city/town
  – Accountable for results to multiple stakeholders – open, equitable, public and visible
  – Grant dollars offset debt service payments – appropriate investment for the public good
1b Create Fiber Optic Network

- Design connected 100% of industrial, business, technology parks, incubators (>60)
- Open-Access *wholesale* fiber optic backbone network that all can use, including the incumbent carriers (Verizon, Quest, Sprint, Embarq, etc.)
- Not just dark fiber, but optical transport services (Layer 1 & 2 in OSI Model)
- Let private sector serve the end user-last mile
1c Create Fiber Optic Network

- 144 strand fiber backbone (SMF-28E)
- Over 1,100 route KM (120,000 fiber KM)
- 20 MSAP (POP) locations, with OC-48 and OC-192 backbone rings
- Carrier class standards using NORTEL at core
- 12 strands dedicated for “Public Use”
- Private sector use of the network
What’s our Fiber Network?

- MBC Installed highly advanced single mode fiber cable (SMF-28E) with Nortel carrier grade electronics
- 24 strands minimum to all industrial parks
- Strands connect to one or two MBC nodes
2. Connect Region to National/Global Telecom Infrastructure

- MBC owns fiber and transport network to Tier 1 data locations
- 200Gbps system - Infinera
- Why Equinix?
- 1Gbps of direct internet access from Tier 1 providers
  - $16/Mbps versus $266/Mbps
- Key to attracting new 21st companies to rural Virginia
3. Create MSAP’s (POP’s) in Region

- Access point for communities
- Electronic equipment add/drop
- Co-location for other providers
- Open-Access co-location policy
4. Deploy Optical/Wireless Technologies

• MBC build “open-access” towers...vertical real estate
• Private sector (cellular companies, wireless ISP’s) co-locate on facilities to reduce costs and improve services
• MBC owned towers creating opportunities for further wireless deployment in region
Enable Last Mile Infrastructure

Appomattox, VA
Problem to Solve?

Dial-up     ISDN     DSL     Cable     Wireless     T-1     T-3     OC-3     OC-12     OC-48     OC-192
54k        128k     768k     1.5MB     2.0MB     1.5mb     45mb     155mb     622mb     2.5gb     10gb

Ethernet Services: 10MB…..10GB

Residential/ Small Business    Carriers / Enterprise / Large Users
MBC Cooperative Open-Access Business Model

- Layer 1 & 2 open-access transport
- Don’t select last-mile winner/losers
- Private sector participation
- Flat rate wholesale pricing model
- Level the playing field for broadband services
- Metro Ethernet, TDM, wavelength services
- Willing to provide dark fiber
How does Cooperative Model Work?

• Telecommunications companies join MBC as a cooperative member
• MBC provides open-access to network, regardless of carrier, needs, or competitive position
• MBC provides optical transport and/or dark fiber to telecom company to expand their reach, lower their cost, or improve their service.
• Telecom company determines their ultimate service to end user retail “customer”
• Members shares in profitability of MBC through Capital Credits
Considerations for Applying MBC Cooperative Open Access Model

• Work closely with private sector telecom providers and local communities on where infrastructure builds would do the most good
• Encourage private sector participation
• Single entity for ownership and management of the network
• Wholesale only, provides more opportunity for retail service providers
Results to Date

• Mid-Atlantic Broadband Cooperative members, include the Institute for Advanced Learning and Research (Virginia Tech), the New College Institute and the Southern Virginia Higher Education Center, actively support a broad variety of distance learning programs in cooperation with community colleges throughout Southern Virginia.

• MBC members are implementing telemedicine connectivity at multiple clinics and hospital facilities throughout Southern Virginia. This opportunity was made possible through a FCC award to the University of Virginia-Telehealth Center with matching funds provided by the Virginia Tobacco Commission.

• MBC enables members to expand the reach of advanced affordable broadband to residential and small businesses throughout Southern Virginia.

• The Virginia Tobacco Commission has provided and continues to finance interconnect regional broadband networks to provide seamless connectivity through rural Southwestern and South-central Virginia.

• Broke even January 2008, stimulated both 700+ jobs (most above the prevalent wage) and $800 million investment in the Virginia Tobacco Commission footprint, now a recruiting tool for Virginia Economic Development Partnership in rural and working 4 mega projects today.
THE BEGINNING...