Policy Considerations for Telecommunications Deployment

We all know that broadband is vital for economic prosperity, yet there are many areas in Virginia that still lack affordable broadband service. In most cases, service providers cannot expand their broadband services without assurance of a timely return on their investment. When the costs of extending infrastructure and services to new areas cannot be recouped within a certain amount of time through reasonably affordable monthly subscriber fees, then it makes no business sense for a broadband provider to expand service.

The good news is that there are measures that local governments can take to help alleviate some of the business constraints associated with broadband expansion. If treated like any other economic development initiative, localities can help accelerate broadband expansion through the use of incentives and local investments, such as access to right-of-ways and easements, "dig once" opportunities, installation of open access conduit, and streamlined permitting. Close collaboration and cooperation with service providers can change the economics of broadband deployment. Changing the math increases the possibility for faster, economically-sound expansion of broadband service throughout the state.

The following list of policy considerations to help expedite broadband deployment has been compiled with the help of local broadband service providers.

Recommend updated guidelines for telecommunication wiring of new or renovated homes, businesses, and public buildings

CAT5/6 wired directly to the central circuit using "home run wiring" or "star topology", not branched or daisy chained. All use of CAT3 and non-twisted pair wiring should be discontinued.

Each point where the wiring is chained opens up the possibility of interference, power influence, and improper wiring termination. For FTTH and even DSL with conjunction with IPTV, it is extremely important to have home runs. POTS (plain old telephone) service only takes two wires (1 Pair). 100Mbps Ethernet takes 4 wires (2 pairs); 1,000Mbps takes 8 wires (4 pairs). A CAT5/6 wire is twisted pair and has 4 (twisted pairs). The reason for the twist is to reduce "cross talk" between pairs, especially if they are used for separate services (for example: you can use 2 pairs for 100Mbps Ethernet and 1 pair for phone service).

http://en.wikipedia.org/wiki/Category_5_cable
http://en.wikipedia.org/wiki/Category_6_cable
http://en.wikipedia.org/wiki/Daisy_chain_(electrical_engineering)
http://en.wikipedia.org/wiki/110_block

Renovations of older structures should include provisioning non-metallic conduit, to allow telecommunications services to enter the building, feeding into centralized "communications rooms". The non-metallic conduit should be equipped with radius elbows that won't kink the telecommunication cables. The conduit should be adequately spaced from electrical wiring. Conduit and electrical wiring should never cross paths, if possible. Renovation blueprints and other documentation should always include telecommunication conduit routes.

Ensure that grounding codes are up-to-date & adhered to residential and commercial codes

Common grounding in buildings is critical to equipment protection and aids in limiting power surges, lightning damage and power influence. Improper building grounding can impact the delivery of broadband services to an entire neighborhood, not just the improperly grounded building.

AEP has recently updated their policies and will no longer allow other utilities to attach a grounding clamp to the meter base. There is a grounding/bonding bus bar that is being placed on some newer houses. The grounding/bonding bus bar is attached to a ground wire that goes back to the panel box and has a series of set screws for other utilities to attach under.
Reference: http://www.jacobsonengineering.ca/documents/power_infl_UofA_2005_1.pdf

Review and update permitting policies to facilitate broadband delivery

Permitting requirements vary by locality. Requiring weekly or daily permits instead of an overall project permit creates delays which equate to additional expense and budgeting issues, and administrative overhead for both the service provider and locality staff. Some localities depend on permits for tracking where work is being done. Some service providers recommend requiring maps and weekly updates (not permits) to indicate where infrastructure work is being done and when.

Consider utility zoning for telecommunication equipment, hut, co-location sites

Very few Virginia localities have setup utility zoning. Normally, the lots that telecommunications huts or co-location buildings are built on do not need to be as large as a residential or commercial

lot. The facilities need enough land to have a grounding field, for earth grounding electronic equipment, and room for backup power such as a generator which may require fuel storage tank when natural gas is not available at that site. Excessive zoning requirements like setbacks and green spaces can inhibit a provider's ability to purchase or use a site; it should be possible for these sites to have small footprints.

Create a local "dig once" policy

Considered by many to be the easiest and most effective policy change to help expedite and reduce the cost of future broadband deployment. "Dig once" policies are designed to reduce the number and scale of repeated excavations for the installation and maintenance of broadband facilities in rights of way.

The largest expense of building out broadband infrastructure is the construction phase. "Greenfield utility deployments" (development of utilities like telecommunications, water, electric, etc., before buildings, roads and sidewalks are paved) are always less expensive than deploying to an area that is already developed.
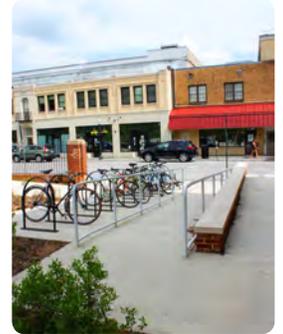
A few ways localities can facilitate broadband deployment though "dig once" policies:

- Require developers to have large utility easements that allow for placement of all utilities, including telecommunications infrastructure or conduit, underground before roads or paved and sidewalks are poured.
    - * This can be taken a step further by defining standards for where each type of utility is placed in the utility easement in order to minimize utilities crossing each other and the need for "pot holing" to locate other utilities.

- Localities can partner with developers to plan the installation of open-access conduit systems (including service access pedestals and/or hand holds) throughout any new development at the time other underground utilities are installed, ensuring the conduit system is brought to the main development entrance where telecommunication providers can access the conduit for service delivery.

- When a locality plans to renovate, repair or build new streets, sidewalks, parking lots etc., open access conduit could be installed when the ground is open. During the planning stage, all service providers should be notified of the opportunity to utilize the conduit or to coordinate with the locality for new infrastructure installation.
    - * If open access conduit is installed, it could be leased to service providers thus paying for itself over a period of time. It can also be used to manage tight right-of-way areas.

- The open access conduit system would need to strategically place adequate hand holds and/or pedestals for service providers to use and to house splice cases.

Local cooperation and collaboration with service providers just might be the key factor to expanding broadband services quickly and economically. Even the smallest actions localities can take, like adopting "dig once" policies, can significantly reduce the cost of deploying new broadband services. The FCC estimates that running fiber through an existing conduit is three to four times cheaper than constructing a new aerial build.

Reducing the cost of deploying broadband services is one more way that Virginia localities can work to ensure that broadband is available to every citizen.

REFERENCE: Virginia's state building codes and regulations are administered through the Virginia Uniform Statewide Building Code (USBC), and its associated standards and regulations for industrialized or modular buildings, manufactured homes and amusement devices. The USBC contains the building regulations that must be complied with when constructing a new building, structure, or an addition to an existing building. They must also be used when maintaining or repairing an existing building or renovating or changing the use of a building or structure.

If treated like any other economic development initiative, localities can help accelerate broadband expansion through the use of incentives and local investments.

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