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November 18, 2015

VIA ECFS

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, D.C. 20554

Re: Connect America Fund, WC Docket No. 10-90

Dear Ms. Dortch:

On November 16, 2015, Heather Burnett Gold, President/CEO, Fiber to the Home Council Americas ("Council"), Stan Fendley, Director, Legislative and Regulatory Policy, Corning, and the undersigned, Edward A. Yorkgitis, Jr., Kelley Drye & Warren LLP, Counsel to the Fiber to the Home Council, met with Nicholas Degani, Legal Advisor to Commissioner Ajit Pai. The purpose of the meeting was to discuss the Connect America Fund (CAF) Phase II competitive bidding process and the order on circulation to establish a framework for that process.

The Council understands the Commission is considering establishing for the competitive bidding process broadband performance categories to distinguish bidders and potentially provide a preference for bidders that, should they win, will deploy all-fiber networks to eligible (unserved) areas. The Council submits this proposal is sound because: fiber is the most superior technology with which to provide high broadband performance service; fiber is the choice of consumers and businesses in urban areas; fiber confers tremendous economic benefits on communities and indiviudals; and fiber will provide the Commission with a superior, or at least equivalent, return on its CAF investment when compared to other wireline technologies. In the meeting, Council representatives focused on this last aspect and presented the attached presentation, which reviews the business model the Council developed to compare the financial returns from investments in all-fiber networks with the returns from investments in VDSL networks. The results from running that model demonstrate that all-fiber networks produce a

greater return over the life of the CAF II competitive bidding program and an even greater return when evaluated over a longer period.

All-fiber networks have proven in the lab and in the field to provide the highest broadband performance capabilities, and they will do so for decades. In effect, all-fiber networks provide the type of frictionless and future-proof broadband service that consumers, businesses, and institutions are increasingly demanding as their bandwidth needs soar. This verity is well-known to the Commission. It was the basis for the Commission's decisions to expand E-rate support for fiber deployments and to obtain a committment from AT&T to deploy fiber to more than 12 million households. The market also is reflecting the demand for all-fiber networks, as all types of providers are increasing their fiber deployments and the market share for DSL plummets. The greater value of all-fiber networks is further demonstrated by the economic benefits that they bring to communities and individual households.[1] We have reached the tipping point for all-fiber networks, and consumers in virtually all areas of the country should be able to reap their benefits.

All-fiber deployment also is a sound financial investment for the Commission's CAF program. Market events in urban areas make this clear, and providers that once thought there was a path from DSL to VDSL to all-fiber are finding it is less financially viable and are turning to invest today in all-fiber networks. The reasons are straightforward. First, cable competitors are making 100+ Mbps serivce a standard offering, and these competitors are moving to all-fiber networks. Second, as they access more video content over multiple devices, consumers are demanding higher speed broadband service. Third, a significant part of the DSL build, primarily related to the electronics, will need to be scrapped when the provider eventually moves to FTTP, while all the fiber costs will still need to be incurred.[2]

The financial model developed by the Council examines this final point – the financial outcomes of all-fiber and DSL investments – and it demonstrates that over the 10-year

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1 *See* "Early Evidence Suggests Gigabit Broadband Drives GDP," prepared by the Analysis Group for the FTTH Council (September 2014). A link to the study may be found at http://www.ftthcouncil.org/p/bl/et/blogid=3&blogaid=305 (last visited November 17, 2015); *see also* "Study Shows Home Values Up 3.1% with Access to Fiber," FTTH Council Blog Post, dated June 29, 2015, found at http://www.ftthcouncil.org/blog/study-shows-home-values-up-3.1-with-access-to-fiber (last visited November 17, 2015).

2 These "scrapped" facilities include DSLAM ports and modems and any upgrade to copper facilities. There also are other costs that will be "lost," including labor costs for powering the street cabinets, additional provisioning cost, project management cost, and IT systems cost.

term of the program, an investment in an all-fiber network has a higher net present value than an investment in a DSL network. Even assuming that the financial returns from deploying the technologies are comparable, the choice still should be to provide support for all-fiber networks because they enable far superior performance and are future-proof.

This letter is being filed electronically pursuant to Section 1.1206 of the Commission's rules.

Respectfully submitted,

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Counsel for the Fiber to the Home Council Americas

Attachment

cc: Nicholas Degani

Connect America Fund: Phase II Competitive Bidding Process and the Financial Value of Fiber Deployment

November, 2015

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There are both economic and policy reasons to support FTTP in the Phase II competitive bidding process

- The FTTH Council understands the Commission is considering providing a preference in the CAF II competitive bidding process for applicants that will deploy FTTP infrastructure to eligible areas in the 10 year period for the program

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- The Council supports these proposals for two primary reasons:
  - Fiber is universally adopted as the preferable technology to provide high performance broadband service over many decades ("future-proof") to meet increasing consumer demand
  - Investment in fiber is preferable to investments in "interim" technologies from a financial standpoint. Providing a preference for fiber deployment is a financially sounder way to spend CAF funding

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- To demonstrate the financial value of fiber, the Council developed a model comparing the net present value (NPV) of FTTP and VDSL deployments with an eventual upgrade to FTTP
- Given the current growing rate of connection speeds and the eventual need to upgrade DSL facilities within a certain number of years, the aggregate cost of FTTP will be less than DSL over the long term

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- Preference for FTTP investment is further demonstrated by market events in more urban areas where providers are increasingly favoring FTTP deployments over DSL. Rural markets should have comparable technology as long as the difference in subsidies is reasonable

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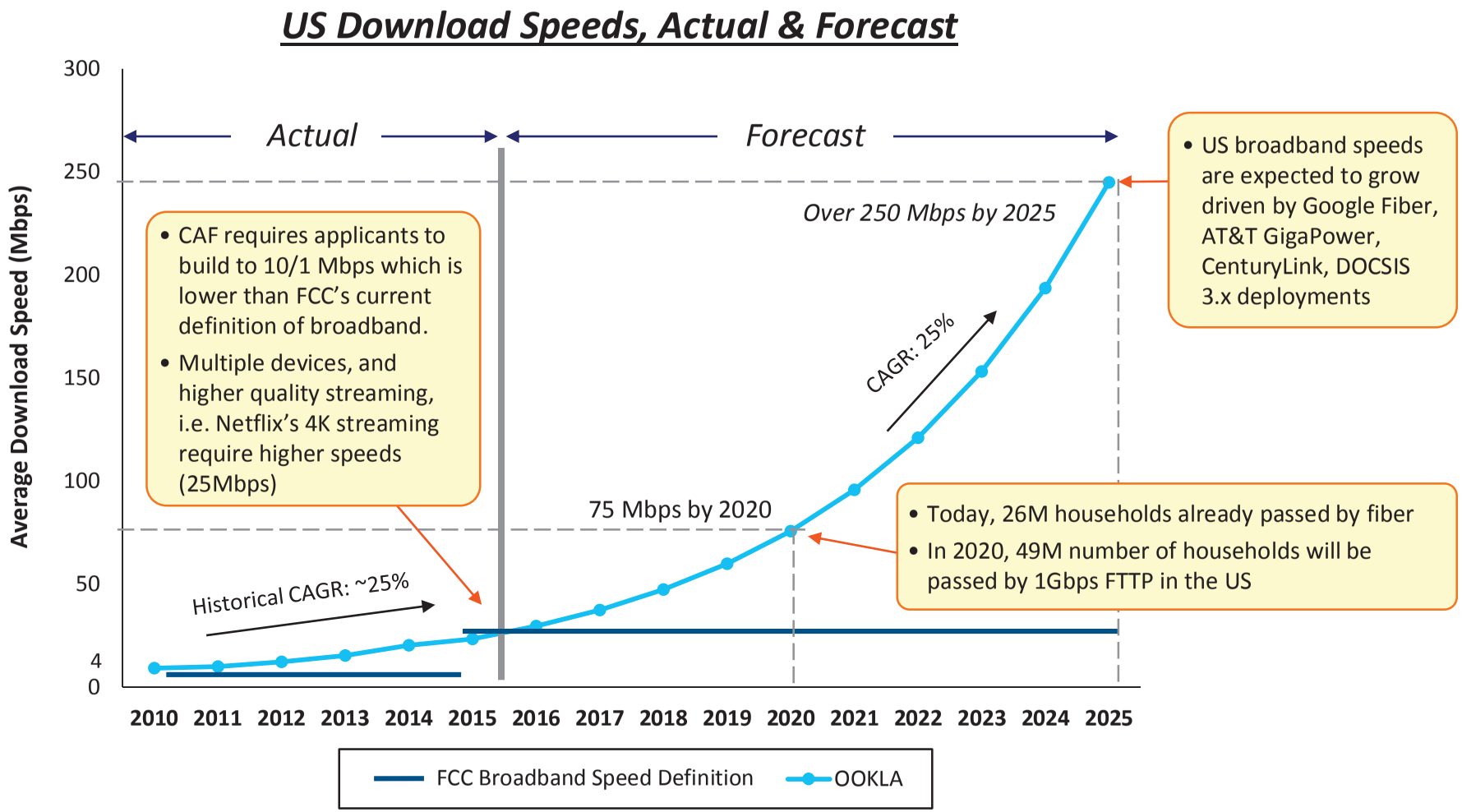
Typical urban speeds will grow substantially over the next 10 years driven by heavily deployed FTTP and new applications



Source: Cisco, OOKLA, Experian, FCC, RVA

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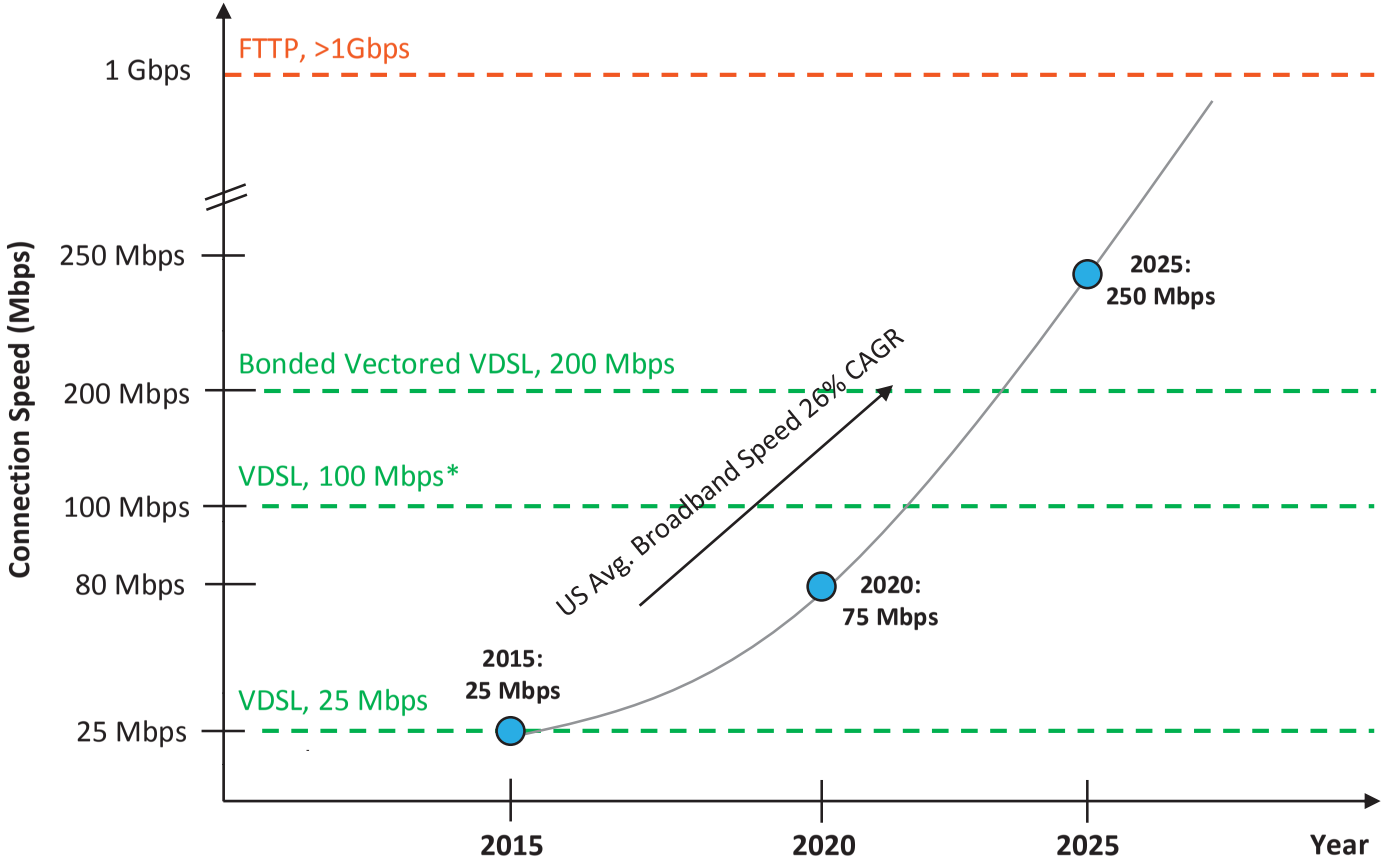
Given fast growing speed requirements, any VDSL upgrade to existing copper plant would have to be replaced with FTTP within the next 10 years

- In order to meet parity with urban networks, upgrade to FTTP will be required

US Connection Speed Evolution vs. Access Technology Capabilities



Comments

- Within 5 years we expect any common VDSL speeds in urban areas to be in excess of FCC's 25 Mbps requirement
- Within 10 years, we believe that current needs will require an upgrade to FTTP

* At a 1,000 ft distance with VDSL vectoring

Source: Cisco, OOKLA, Experian, FCC

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Annual Opex savings from FTTP deployments versus DSL deployments have been reported by operators (notably Verizon) to be as high as $110 in urban areas

- We believe $100 per line per year in operating expense savings will be reasonable in rural areas covered by CAF II

Comments

- Publically available statements from operators that have transitioned to FTTP and numerous other studies indicate that FTTP provides significant operational cost benefits due to lower fault rates and lower maintenance with fewer active components in the network
- Sources include:

Opex Savings Benchmarks

Operator	*Annual Opex Savings ($/line/year)*
verizon BellAliant	$110
HBC	$99

Source: Verizon Earnings Call Statements by Doreen Toben, former Verizon CFO (September and December 2015), Bell Aliant statements at 2011 FTTH Conference panel, Hiawatha Broadband protective order as referenced in Broadband Availability Gap (FCC, 2010)

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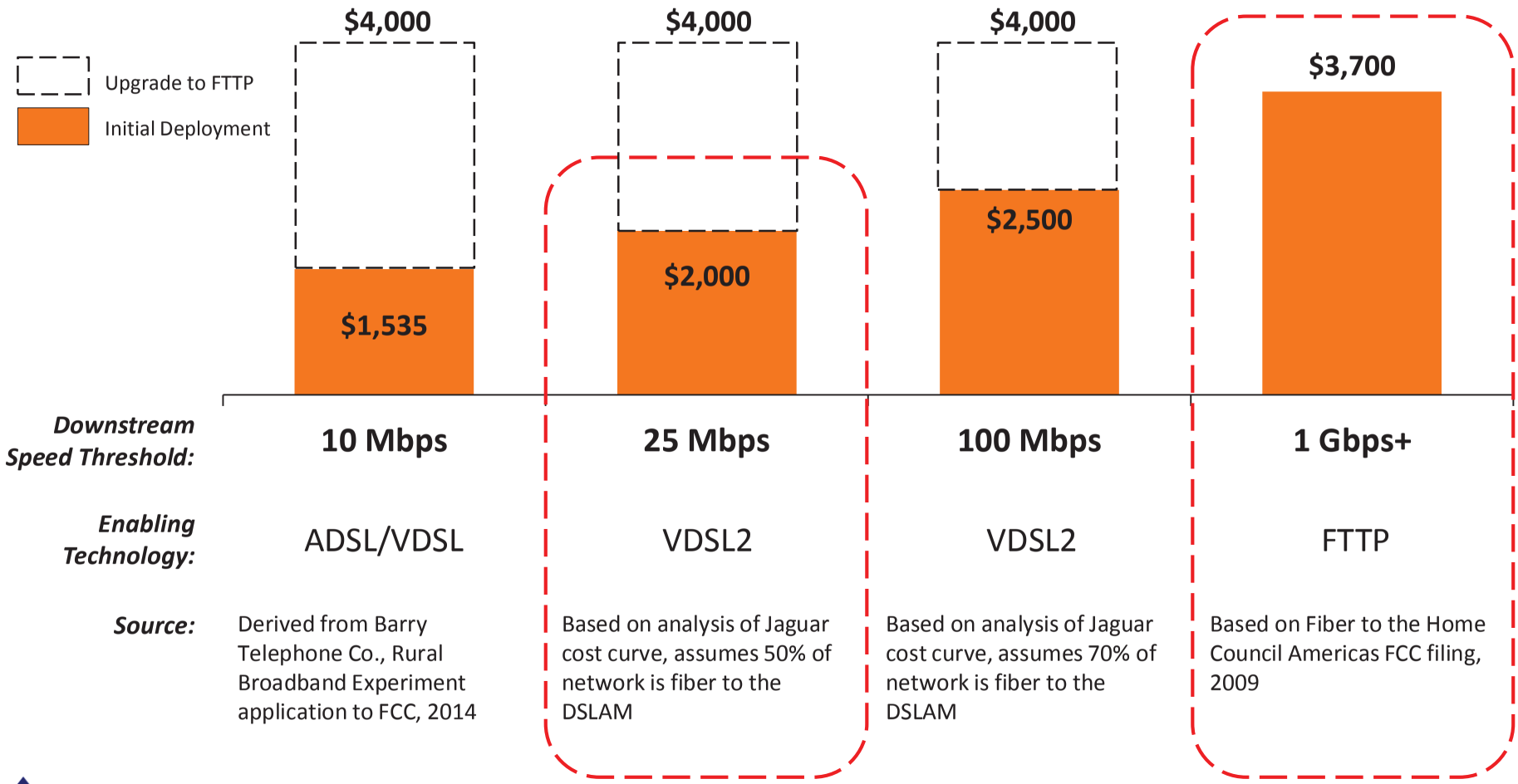
A 2-stage VDSL upgrade is always more expensive in nominal terms than an one-off FTTP deployment without any further upgrade needs

Benchmarks for Upgrade Capex by Technology in Low Density Areas[1]



1. Less than 50 households/square mile

Source: Barry Telephone Co., FCC

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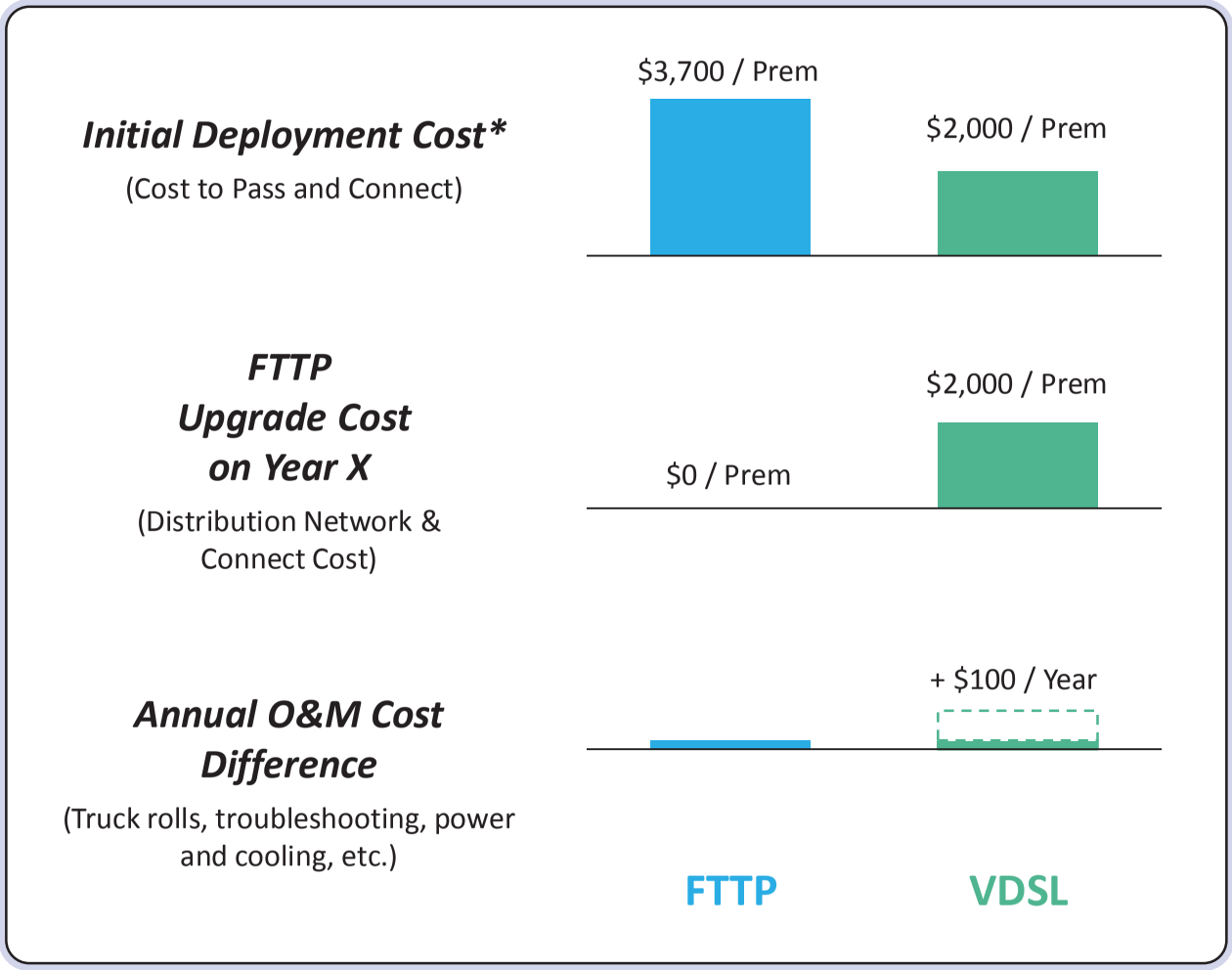
Capital costs for fiber-to-the-premises are higher than upgrading current copper plant to VDSL, but ongoing operating costs for FTTP are much lower than VDSL



Comments

- Upgrade cost from VDSL to FTTP involves deployment of local network, i.e., network from street cabinet to premises, additional passive (splitters) and active equipment (OLT, ONT)
- Additional VDSL Opex occurs until the final upgrade to FTTP and includes higher operations and maintenance costs of the outside plant, more frequent truck rolls, higher cost of troubleshooting / customer support, and higher power consumption (DSLAM vs. OLT)
- VDSL abandoned capital expenses after upgrade to FTTP include DSLAMs, modems, labor expenses related to installation, copper plant /in-house cabling fixing, provisioning and project management

* Based on low density areas, i.e. < 50 HH/sq. mile

Source: Cartesian

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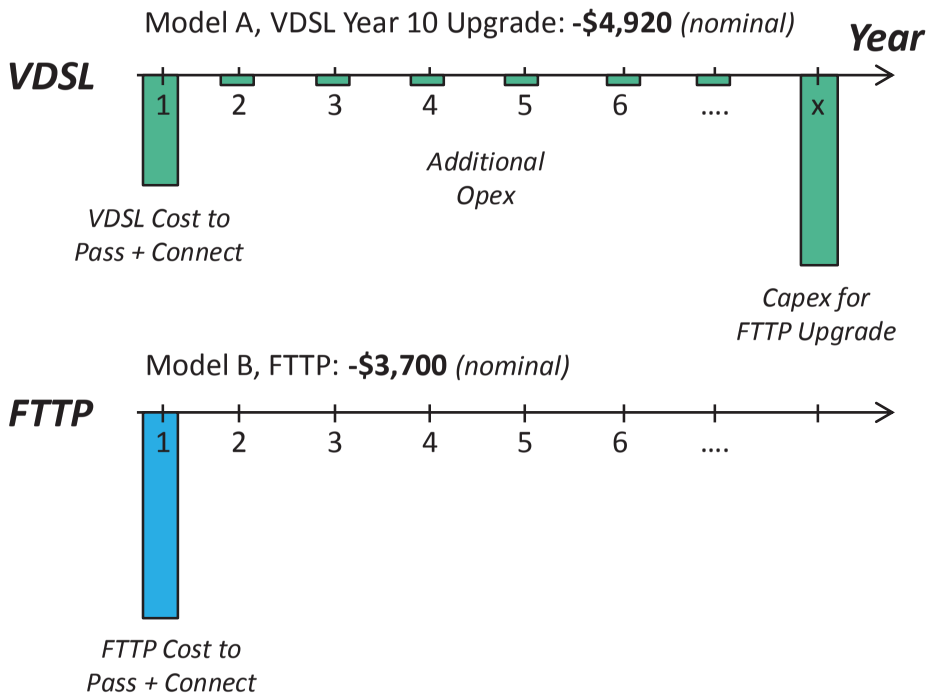
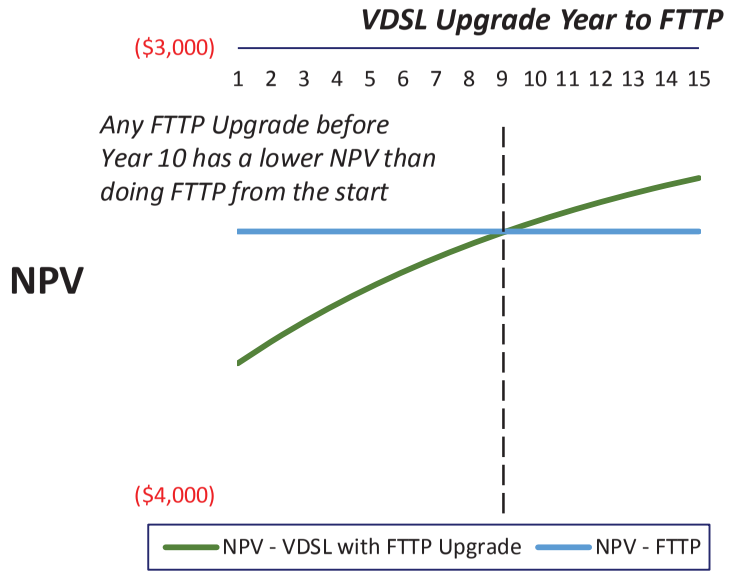
Given that upgrades will be required in the future, FTTP is always the most effective way to lower absolute costs and is cheaper than VDSL when deployment is required within 10 years

VDSL vs. FTTP Cash Flows per Year



VDSL vs. FTTP NPV over Upgrade Year



Assumes 8.5% cost of capital[1]

Funding for a 25Mbps VDSL project with an upgrade to FTTP before Year 10 would be less economical than having deployed FTTP from the beginning

[1] Connect America Model uses 8.5% cost of capital

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FTTH Council can consider a number of policy suggestions that will necessitate fiber-to-the-premises build-outs

Summary

- Because urban connection speeds will increase beyond the thresholds that can be provided by VDSL, upgrades to FTTP will be required in the future
- Given this, it is economically efficient to upgrade to FTTP directly vs. incentivize a 2-stage upgrade process
- VDSL or any wireless based access network will not be able to provide speeds to rural areas that are sufficiently comparable speeds to urban speeds within the next 10 years
- Lastly, there's considerable socioeconomic benefit to communities by deploying fiber which in the past has been estimated up to $500 annual benefit per household in the US involving e-work, e-commerce, OTT video, e-learning, e-health and cloud computing benefit contributions

FTTH Council Recommendation

Necessary to have competitive auction framework sufficient preference for fiber so that CAF funding can be efficiently invested

Source: FCC Proposals, Cartesian

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