

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



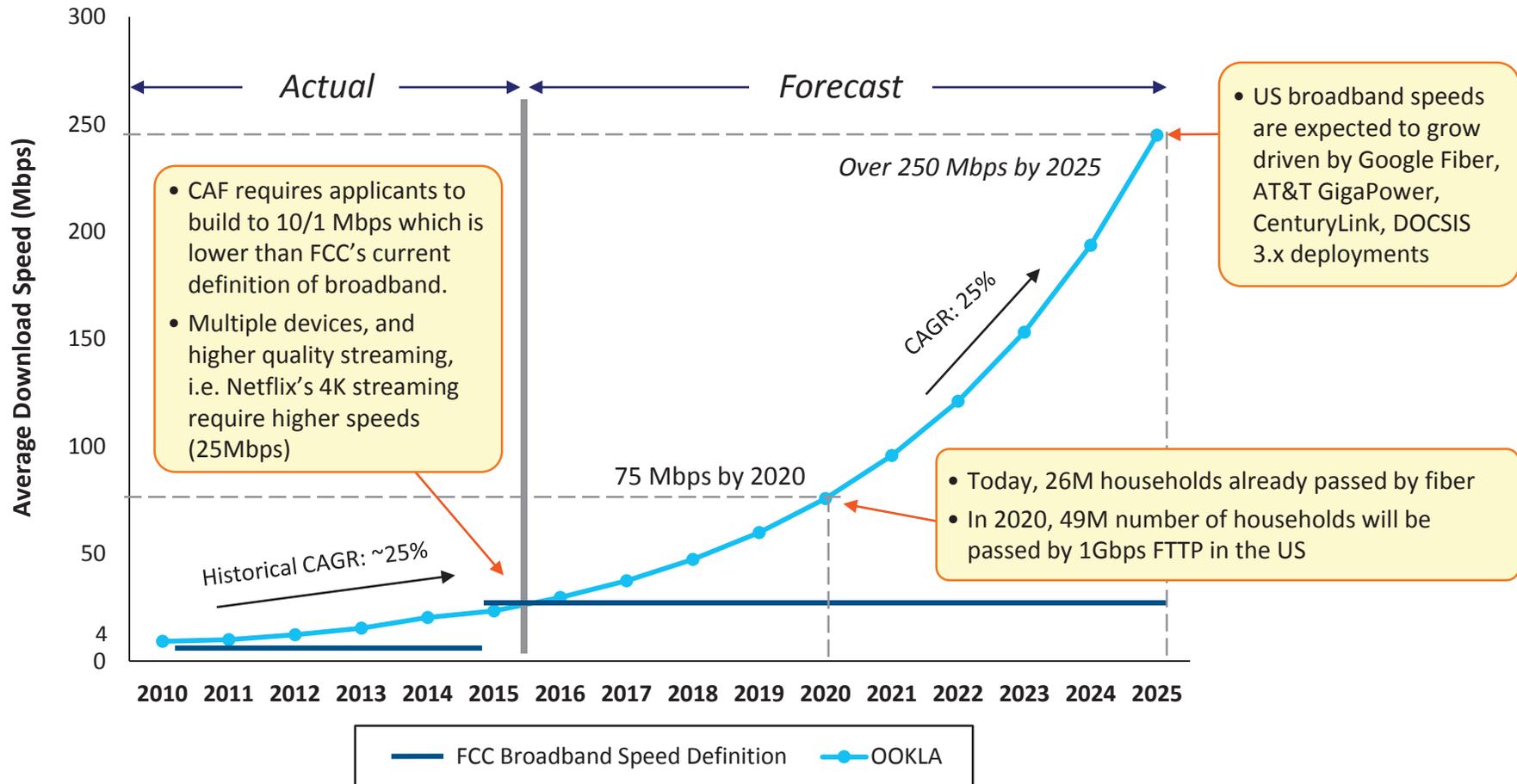
November, 2015

## 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

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

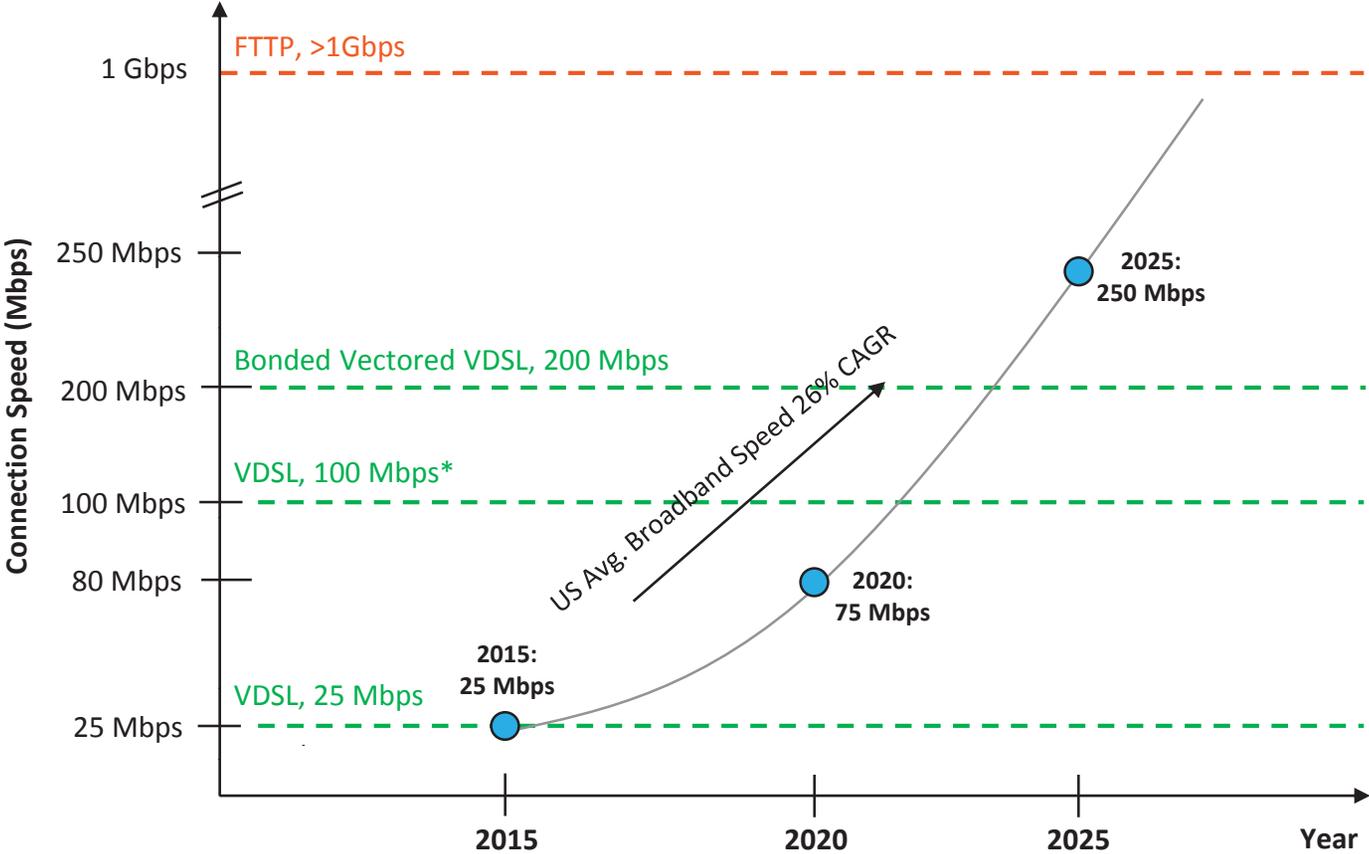
**US Download Speeds, Actual & Forecast**



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
<ul style="list-style-type: none"> <li>• Within 5 years we expect any common VDSL speeds in urban areas to be in excess of FCC's 25 Mbps requirement</li> <li>• Within 10 years, we believe that current needs will require an upgrade to FTTP</li> </ul>



\* At a 1,000 ft distance with VDSL vectoring  
Source: Cisco, OOKLA, Experian, FCC

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

- Publicly 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:



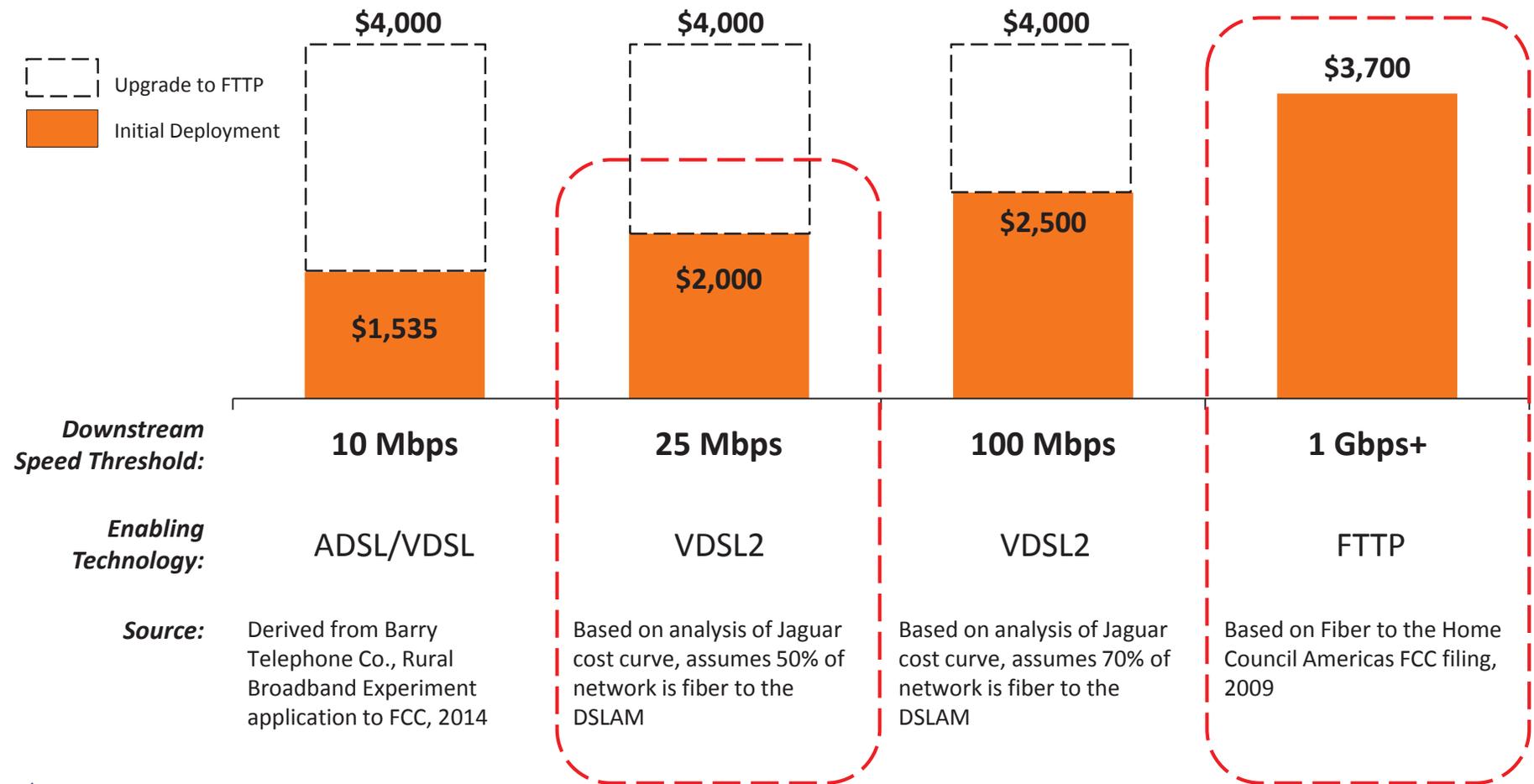



### Opex Savings Benchmarks

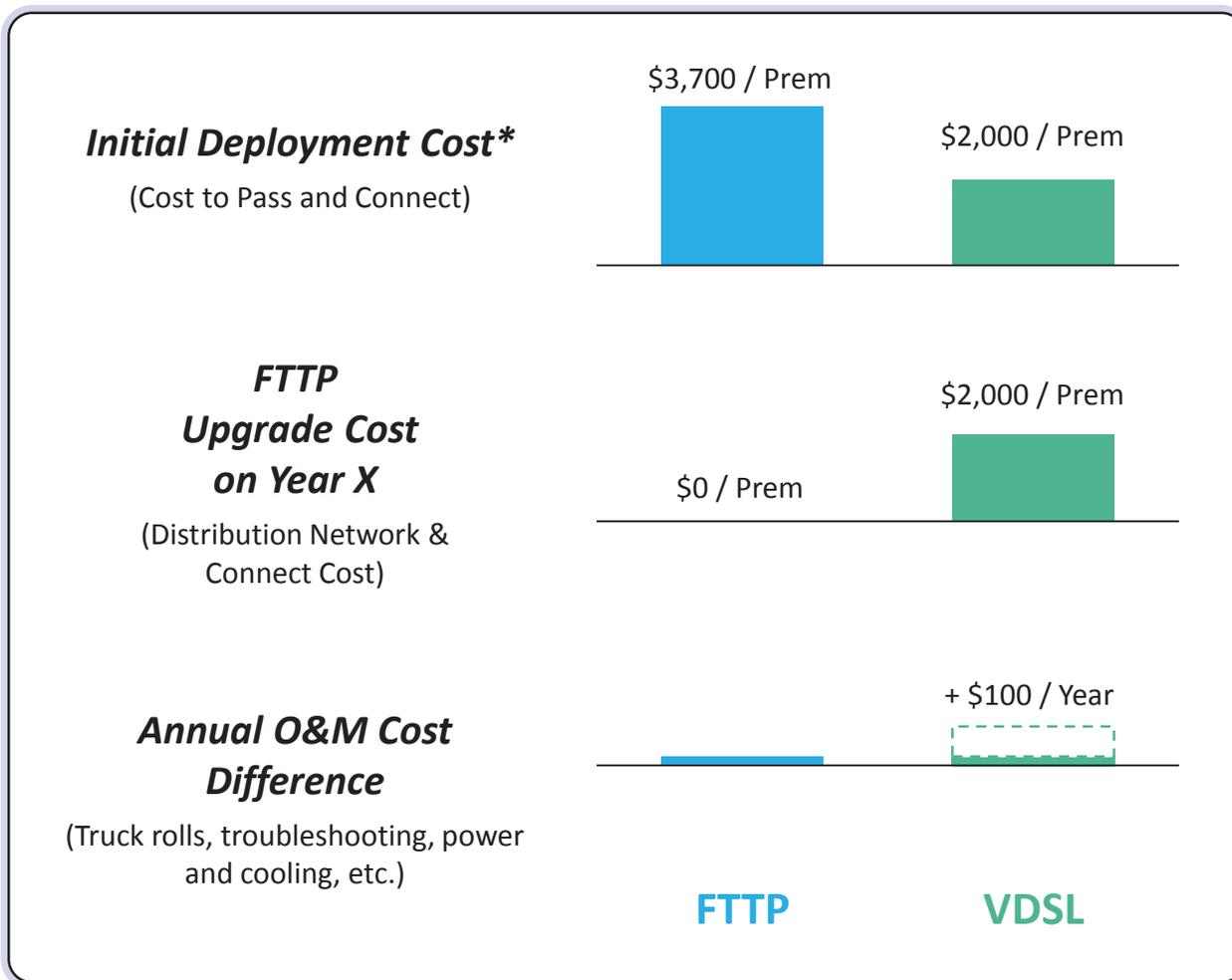
<i>Operator</i>	<i>Annual Opex Savings (\$/line/year)</i>
	\$110
	\$99

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<sup>1</sup>**



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

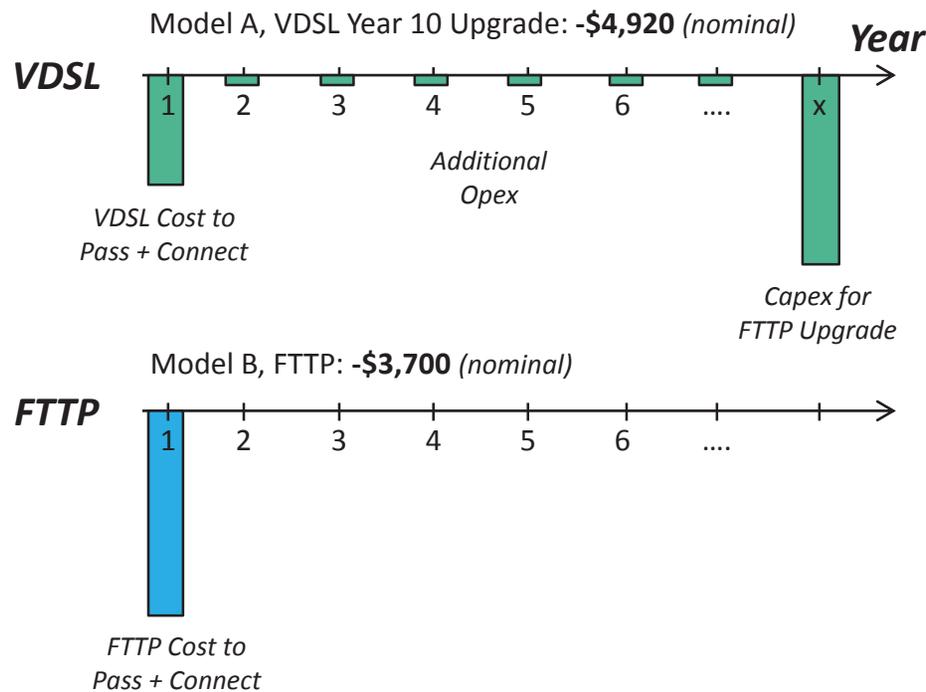


\* Based on low density areas, i.e. < 50 HH/sq. mile

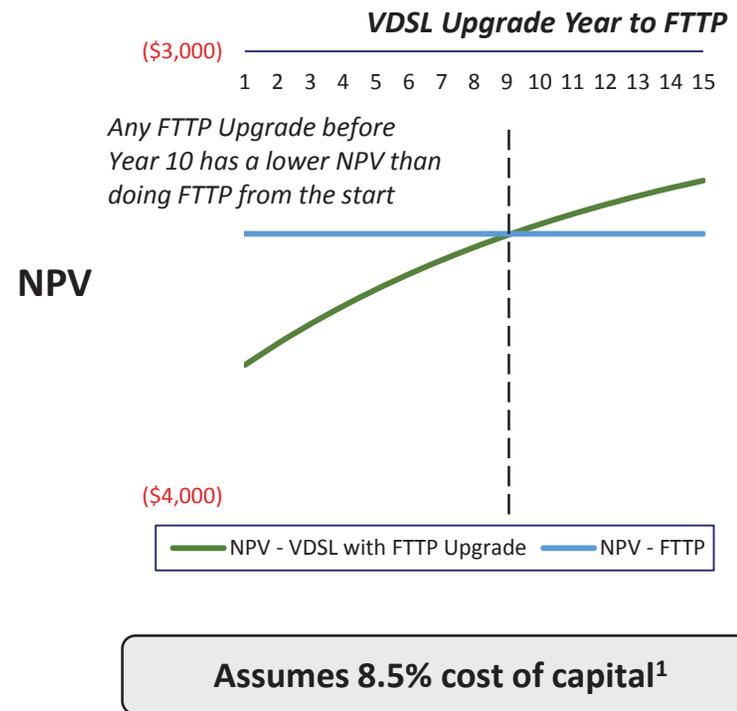
Source: Cartesian

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



**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**

## 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



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FIBER TO THE HOME  
**COUNCIL**  
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