

Assessing the Impact of Regulation on Deployment of Fiber to the Home

Copper Plant Expense Reduction and FTTH Deployment

Prepared for:

CORNING

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Building from our existing fiber-to-the-home (FTTH) deployment model, Corning has asked CSMG to consider the impact of any expense savings derived from overbuilding an ILEC's copper plant with FTTH and retiring the copper

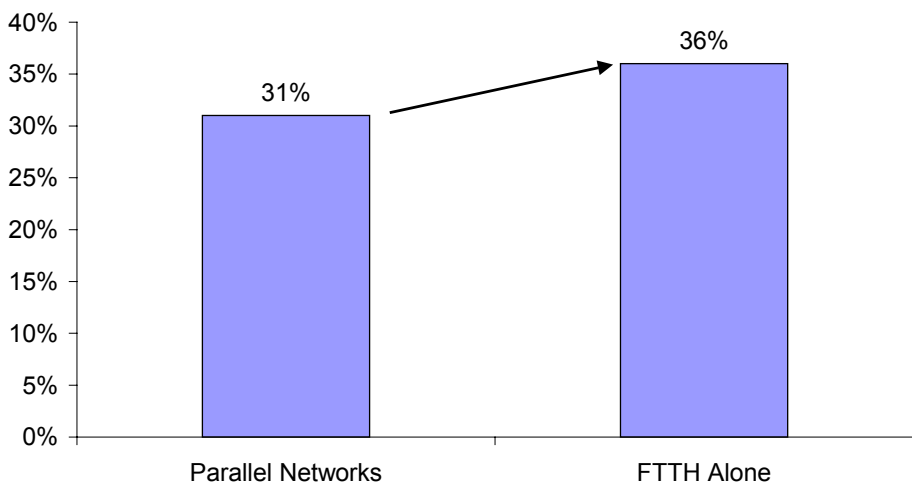
- The analysis outlined in this presentation was conducted as a scenario from our FTTH deployment analysis which was submitted to the FCC on April 5th 2002. These results should be taken in the context of the CSMG presentation titled "Assessing the Impact of Regulation on Deployment of Fiber to the Home" dated April 5, 2002
- Unless otherwise noted, all assumptions and methodologies employed in this analysis are the same as those used for the 2002 presentation
- In the 2002 presentation, as an ILEC deployed FTTH, it was expected to maintain its copper plant in order to provide service for customers not interested in FTTH data and video services, but also in order to meet expected regulatory requirements
- If ILECs were allowed to stop maintaining that portion of the copper plant that serves subscribers which have elected to use FTTH, they would be able to save on planned operating and capital expenses
- This expense reduction would appear as an offsetting cost benefit in our model, which would allow some marginal COs to become NPV positive, thus increasing deployment of FTTH in an unregulated scenario from our initial base case

By deploying FTTH, an ILEC can capture both new revenues from FTTH services as well as reduce the costs associated with maintaining its legacy copper in a given central office

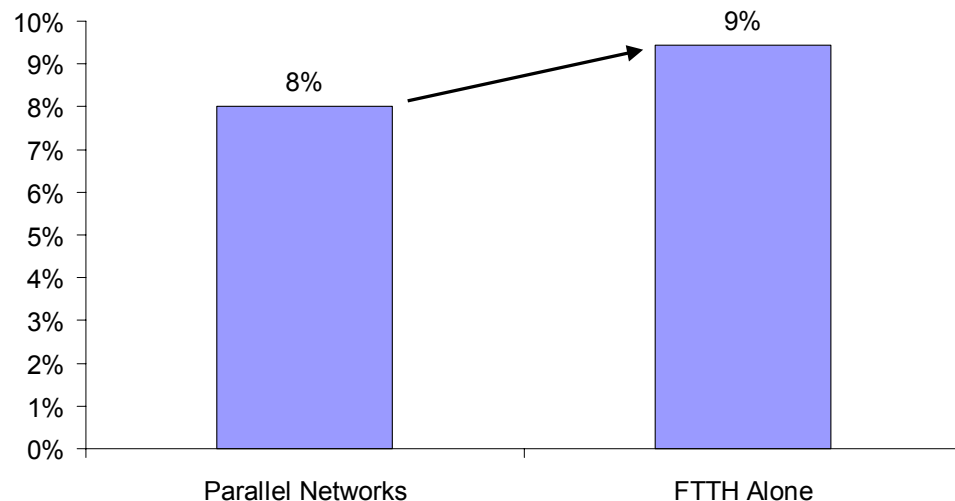
- We believe that the expense reduction associated with overbuilding copper plant with FTTH will increase deployment 16% (from 31% of households in our 2002 analysis to 36% of households)
 - This new scenario translates to 9% of COs nationwide, as opposed to 8% in our previous analysis
- For the current analysis, we consider only the economic benefit derived from avoiding copper rehabilitation and relief (R&R), which is a category of budgeted expense for any ILEC associated with standard maintenance of the copper outside plant
 - Rehabilitation is the replacement of copper lines that have been damaged or otherwise degraded over time
 - Relief refers to the replacement of copper facilities which serve areas where there is no more physical capacity to serve customers due to geographic expansion or increased demand
- When an ILEC overbuilds a CO with fiber, it removes the need for maintaining much of this plant since fiber facilities have much higher transmission capacity (even after accounting for the increased bandwidth of new services) and because fiber has lower general maintenance costs than copper wire

In our free market scenario (without any mandated unbundling of fiber facilities), including cost savings associated with retiring copper facilities to subscribers served by FTTH would result in a 16% increase of FTTH service area coverage over our 2002 base case

Percent of Households Able to Purchase FTTH (Addressable)



Percent of COs Nationwide Deployed with FTTH

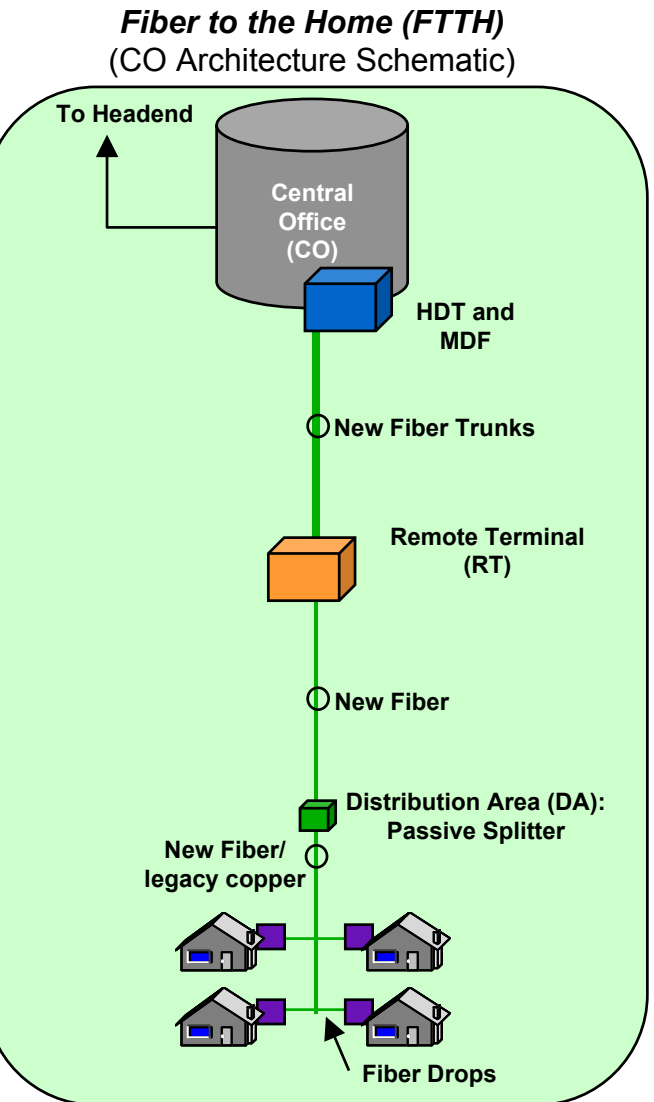


Including the cost savings associated with fiber deployment in the FTTH business case makes certain marginal COs more economically attractive, thus increasing deployment over our base case scenario

The 16% increase in households served by FTTH facilities corresponds to a 18% increase in the number of COs deployed

Source: CSMG analysis

Rehabilitation and relief expense savings are derived from no longer having to maintain copper plant in the feeder cables and distribution area (DA) of a CO- and are expected to run at roughly \$25 per year for each copper loop in service before deploying FTTH



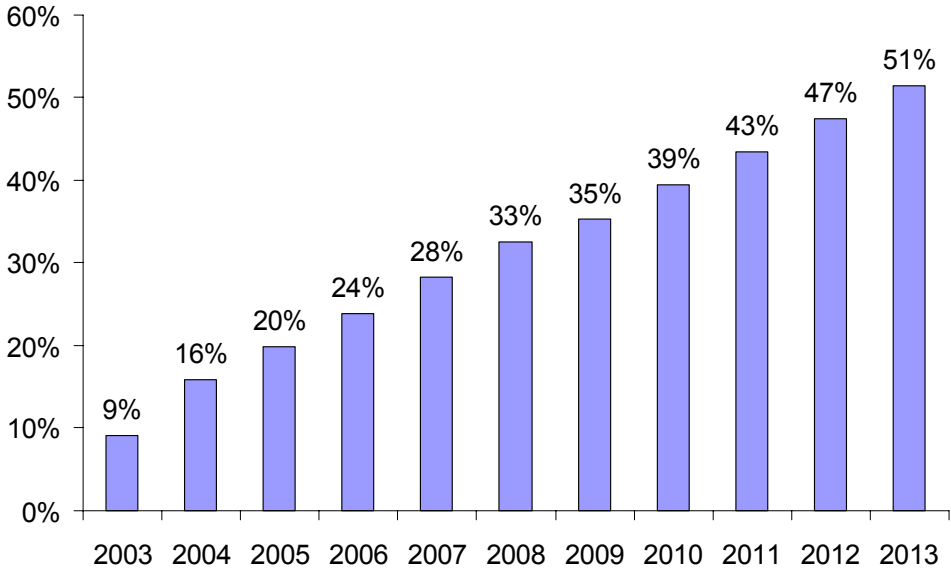
Central Office to Distribution Area	
Rationale	Key Assumptions
<ul style="list-style-type: none"> Fiber overbuild permits avoidance of R&R expense for copper feeder trunks Overbuilding increases the capacity of feeder cables and removes the need for copper maintenance included in current ILEC budgets 	<ul style="list-style-type: none"> Roughly 50% of copper line R&R costs are incurred from the CO to DA All feeder cables are assumed to be overbuilt with fiber, removing all need for R&R in this segment

Distribution Area to Drop Cable	
Rationale	Key Assumptions
<ul style="list-style-type: none"> Fiber overbuild reduces copper requirements though the DA, thereby avoiding part of the remaining R&R expense This assumes that legacy copper network intelligence is pushed outside of the CO via deployment of DLCs or next generation MSPs so that many homes with copper drops are served with fiber in portions of the DA 	<ul style="list-style-type: none"> Remaining 50% of R&R costs are incurred from the DA to the home Fiber served homes avoid 100% of R&R expense Copper served homes assumed to avoid 40% of R&R

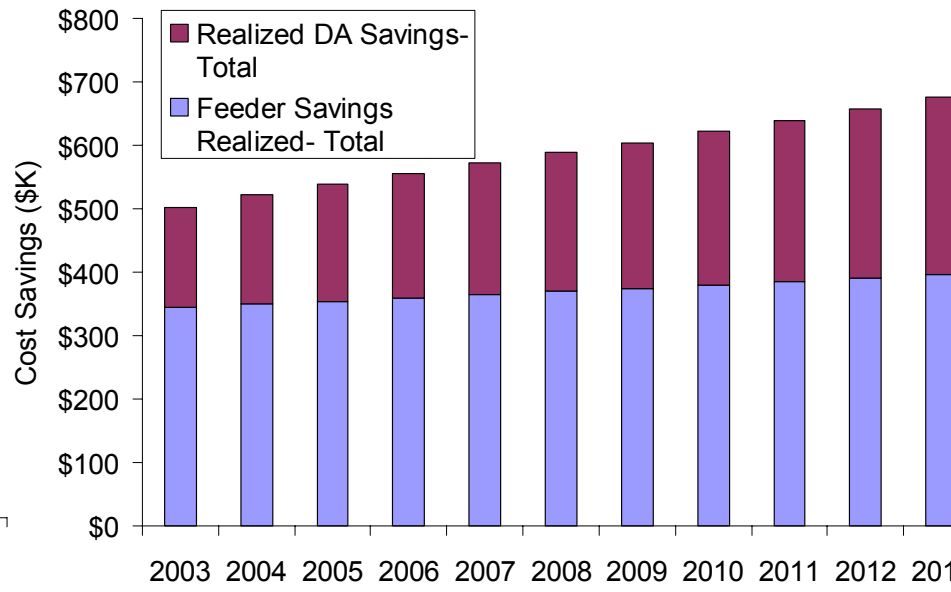
Source: CSMG internal benchmarks

Penetration for our sample CO of Amarillo, TX, increases steadily over time to 51% of addressable HHs. This drives expense reduction of \$500K per annum, increasing to \$650K in 2013 (derived from both fiber and copper based HHs)

**Total Penetration of FTTH Services
Sample CO: AMRLTXFL**



**Realized Annual Cost Savings (\$K)
Sample CO: AMRLTXFL**



- The product penetration assumptions in our previous presentation drive overall FTTH deployment
- HH penetration of FTTH assumes that households take 1.3 FTTH products per home in 2003, increasing to 2.0 products per home in 2013

- Savings is derived primarily from the reduction of R&R expenses in the feeder area
- Savings derived from the DA increases over time as the penetration of FTTH into addressable homes increases

Source: CSMG analysis