



WIRELINE EVOLUTION

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Thank you.



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Putting Broadband in a Logical Context

Just a little "bit" to think about.....

- A bit is a tiny piece of data.
- A megabit is a 1M tiny pieces of data.
- A gigabit is roughly 1,000 megabits.
- A terabit is roughly 1,000 gigabits.
- At a rate of 1 gigabit/second (Gbps) an entire full length movie can be downloaded in 2 minutes.
- At a rate of 1 terabit/second (Tbps) an entire Blue-ray movie can be downloaded in 1 second.
- Verizon typical peak traffic in US alone equates to 8 terabits/second (Tbps).
- 8 terabits is roughly equal to 1.6M HD simultaneous movie streams.
- VZ has 90,000 miles of circuits capable of carrying 100 Gbps, enough to circle globe > 3 times.
- FiOS video on demand traffic spikes 60% during typical NE snowstorm (vs typical Thanksgiving).
- 32% portion of Netflix traffic flowing through VZ FiOS Internet traffic during peak usage time.

Nearly all of this has very little to do with the legacy landline network pre-fiber.



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Why we need Wireline Evolution



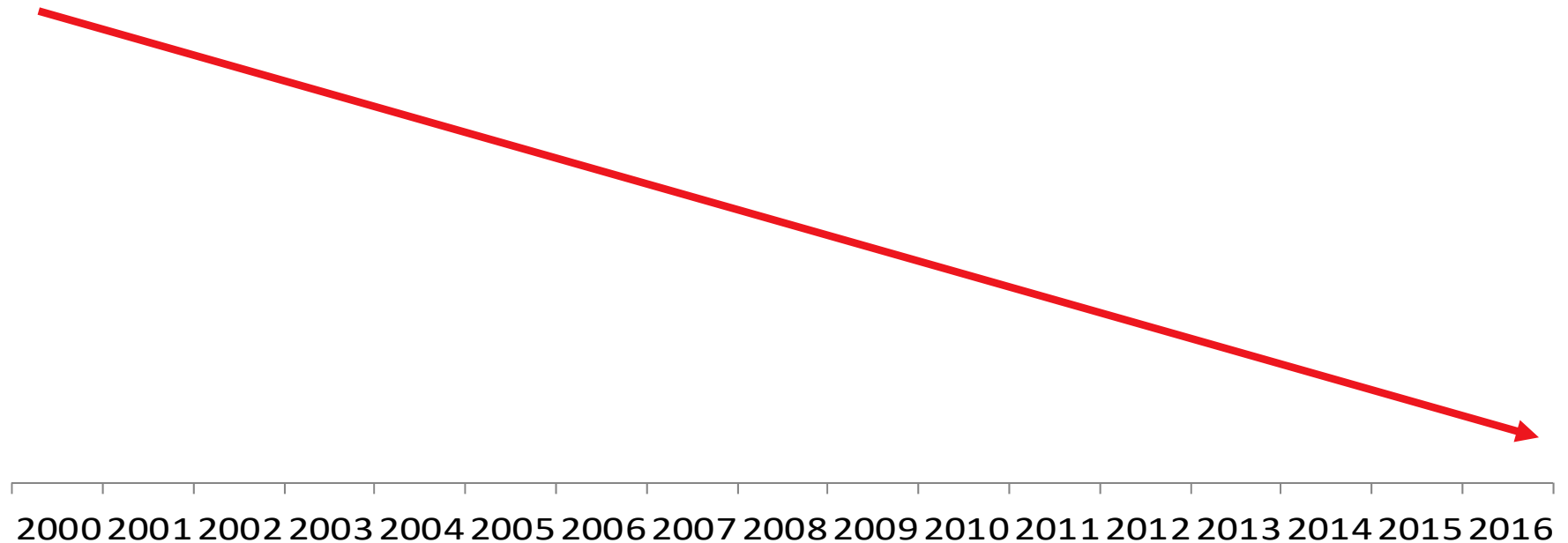
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1) Copper utilization has been declining



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Customers Are Fleeing Copper



Significant loss of consumer copper lines



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Customer Options Continue to Grow



Customers have more choices than ever



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Our Verizon Neighborhood - When I Started



Our Verizon Neighborhood - 2012

- >30% already cut the cord



- 60% bundle



10%



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Our Verizon Neighborhood - 2016

- ~~>30%~~ **49%** already cut the cord



- 40% bundle



8%

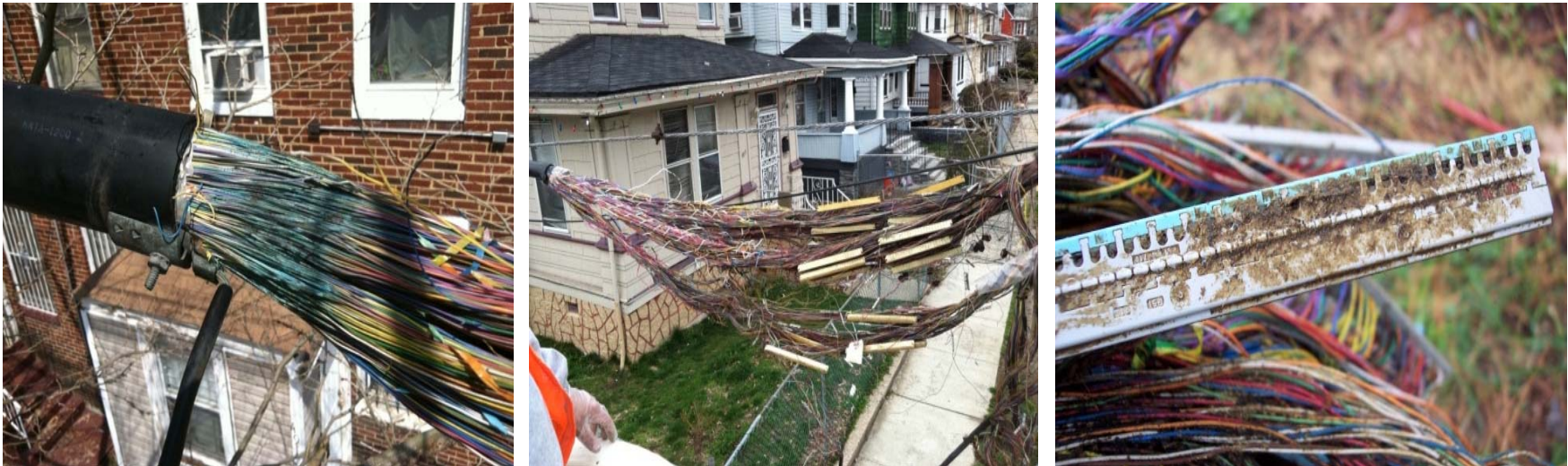
2) Copper is fragile



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Copper Is Fragile

Copper deteriorates despite ongoing, expensive maintenance



Noise, crosstalk, static



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How can we best serve today's customer without sacrificing the future?



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Wireline Evolution



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What is Wireline Evolution?

Wireline Evolution Is

- A way to leverage the latest technology to meet the needs of our **existing** and **future** customers
 - Deliver better reliability & efficiency, leverage technology
 - Maintain & reduce customer cost
 - Position network for the future

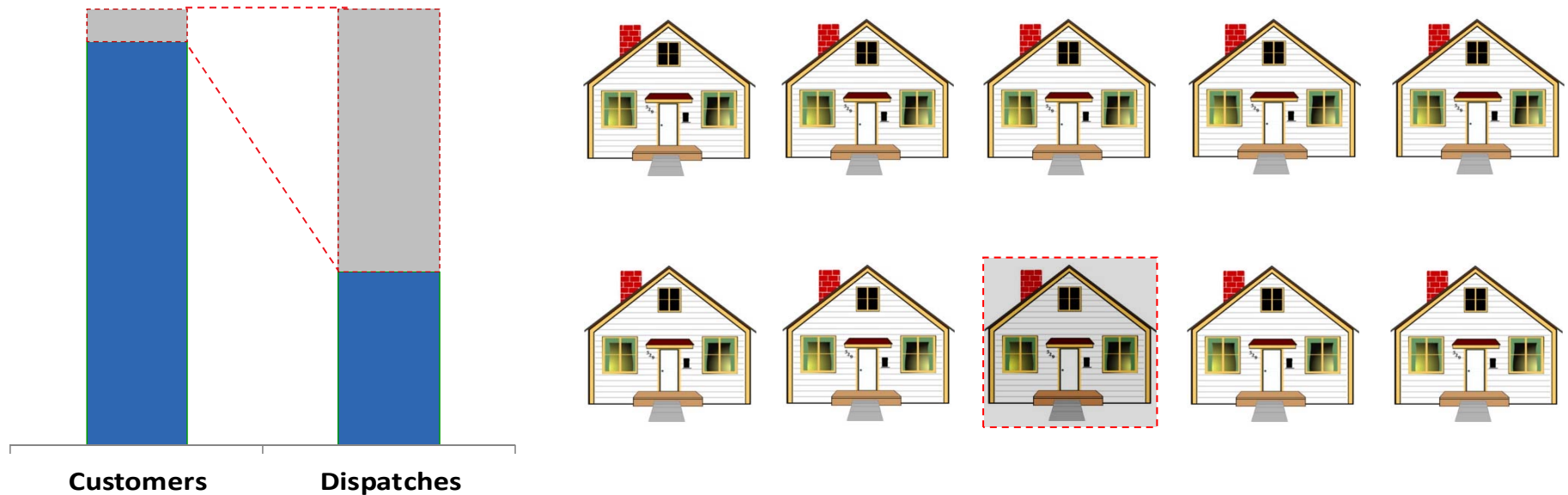
Wireline Evolution Is Not

- The IP transition
- A way to charge customers more money
- Anti-competitive
- The complete end of copper



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Identify Customers in Need



10% of customers drive 70% of dispatches



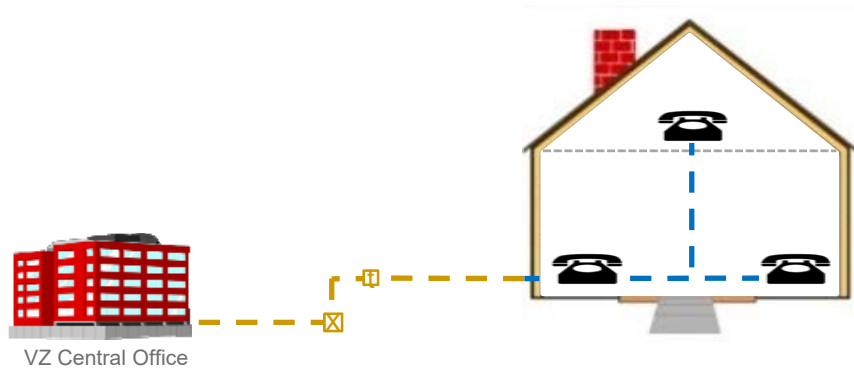
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Where Fiber Runs Parallel To Existing Copper

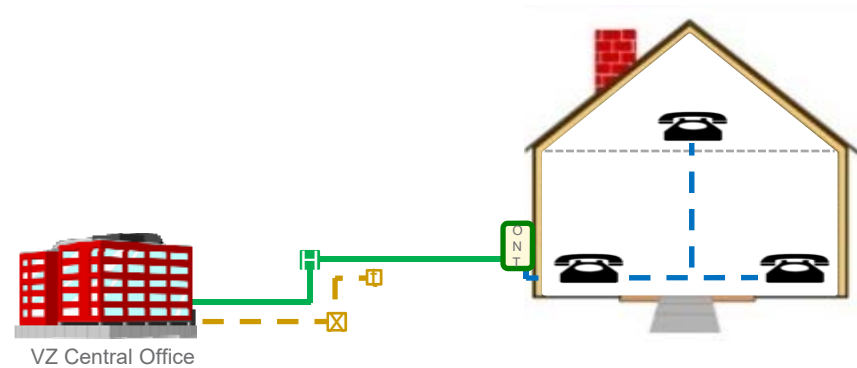


Fiber Migration Process

Copper-Fed Home Configuration



Fiber-Fed Home Configuration



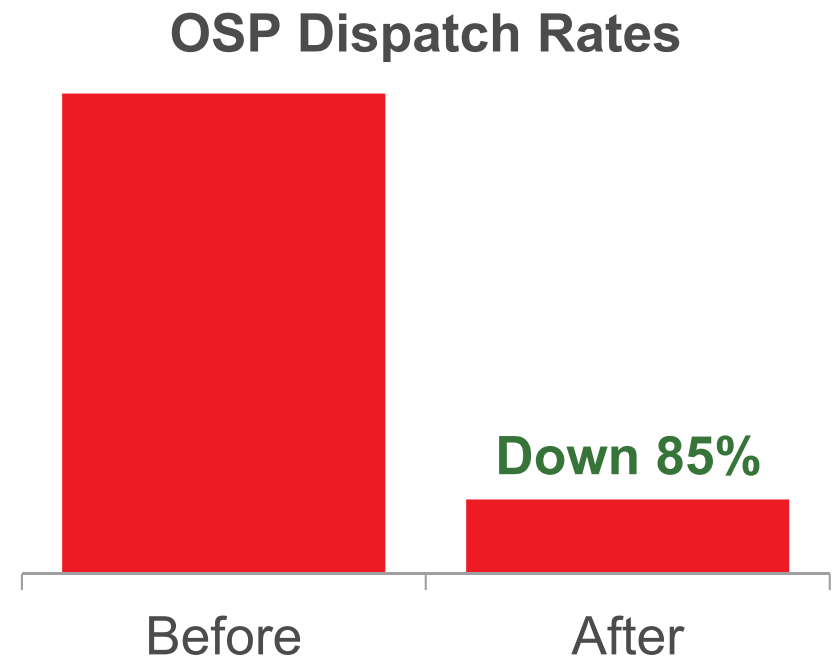
Over 5 million customers better-served



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Where Are We Today?

- Over 5 million fiber migrations
- More than 3M dispatches avoided
 - Fewer service disruptions
 - Eliminates the need for the customer to wait for a service call

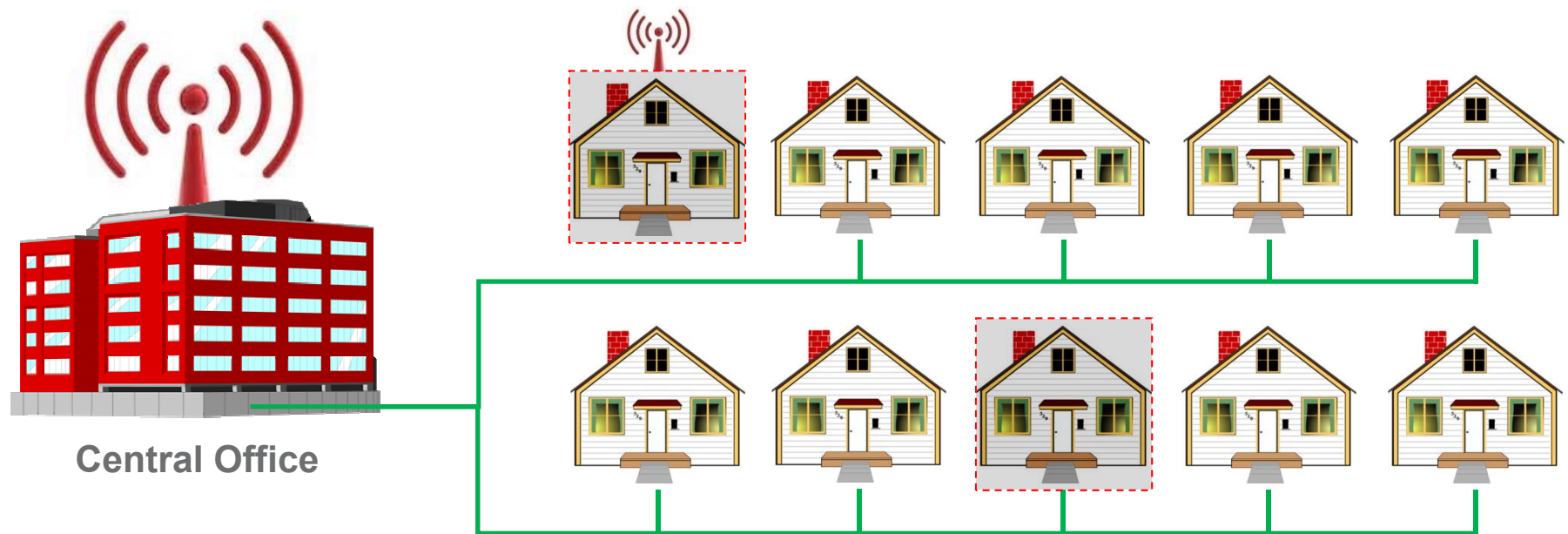


Where do we go from here?



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Network Transformation



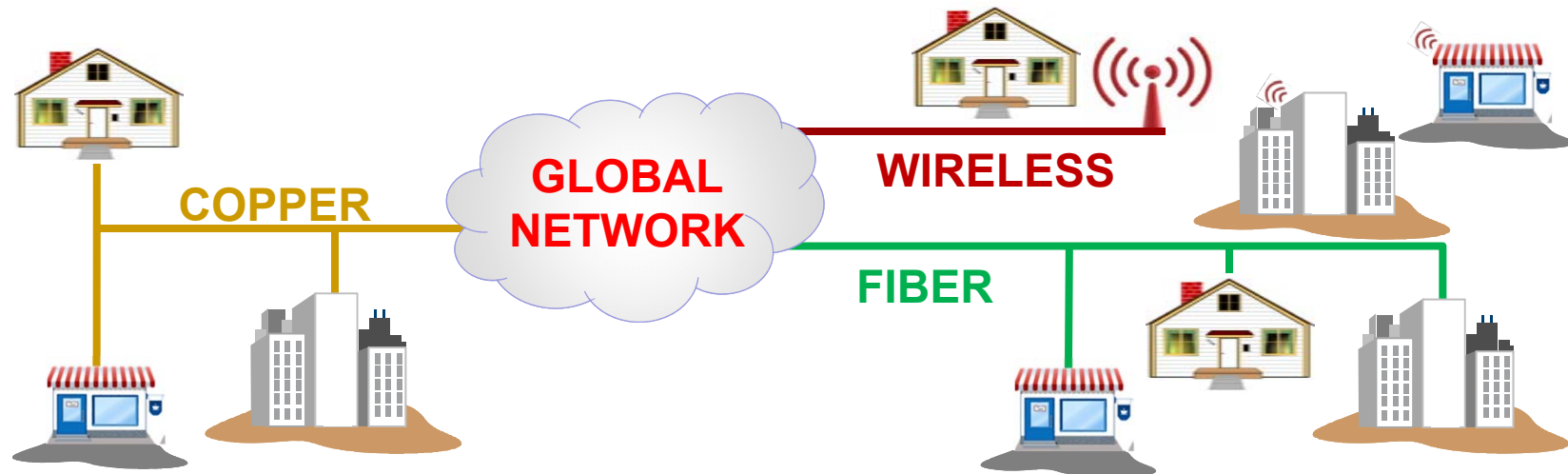
Fiber built out & over time most copper is eliminated.



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Looking Ahead At Verizon

- Continue to migrate customers to best service option.
- Pursue legacy plant retirement wherever practical.



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What Happens In Copper-Only Areas?

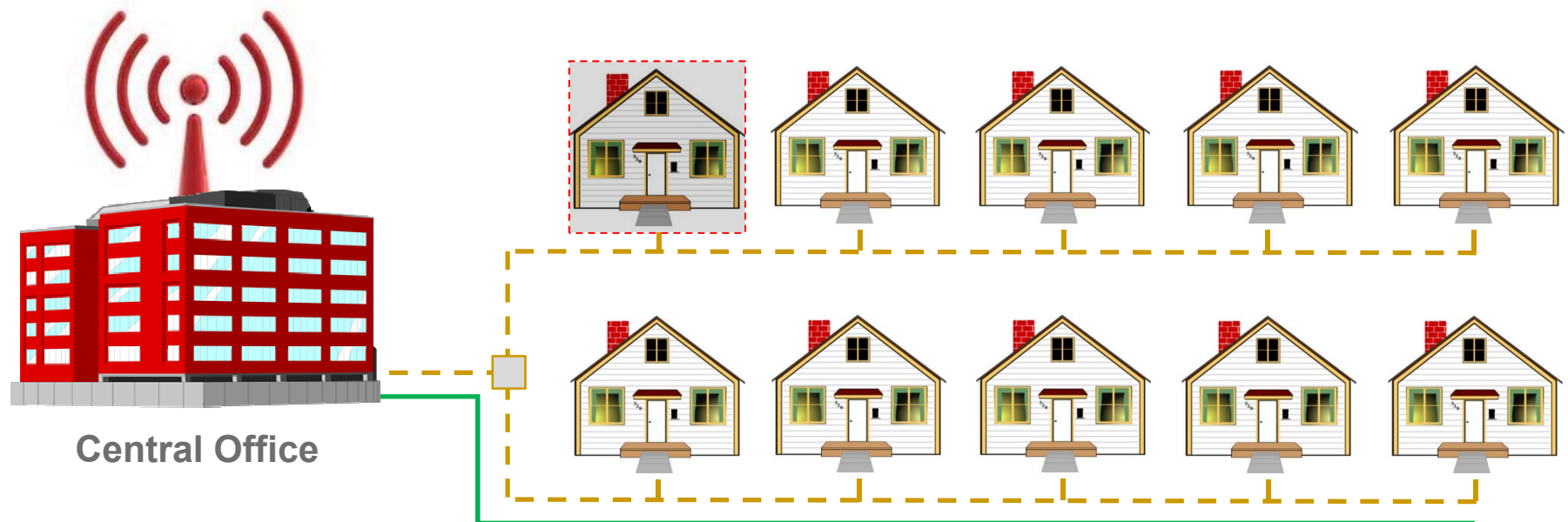


Access to, type, & timing of broadband migration is a business decision!



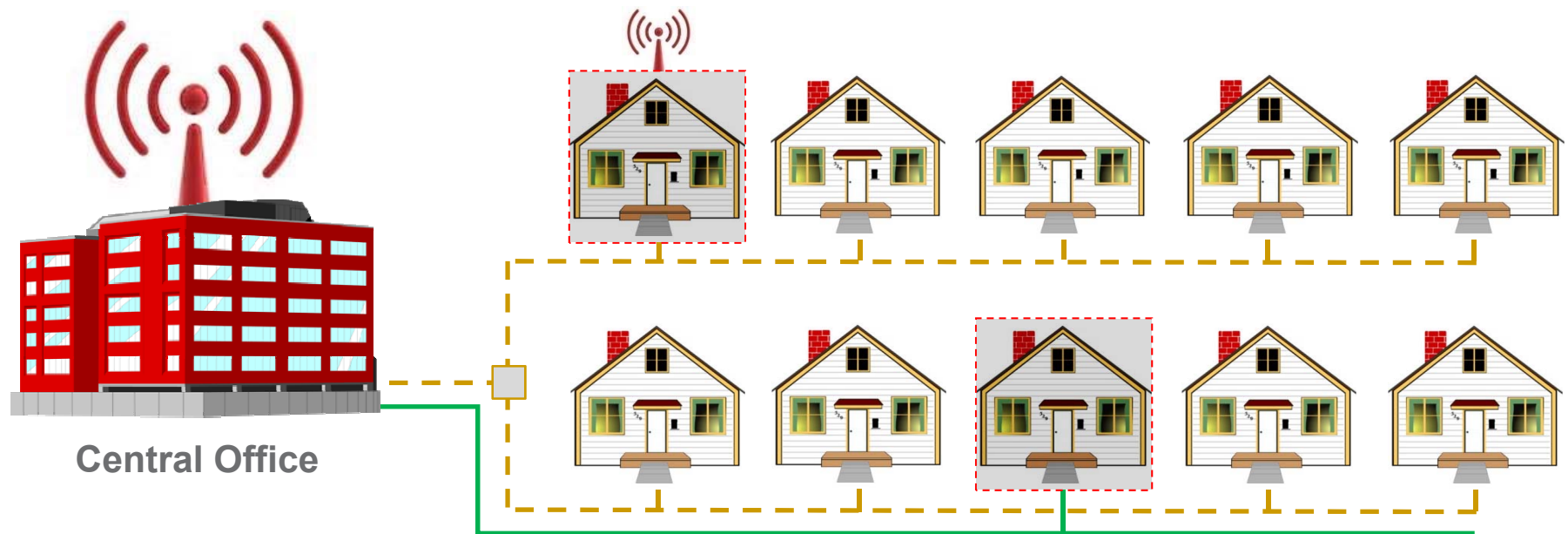
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What Happens In Copper-Only Areas?



... currently other options are available, with many more on the way.

Individual Customer Migrations



Where limited fiber exists, driven by history, some copper likely remains.



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Putting Broadband in a Logical Context

Just a little "bit" to think about; wireline & wireless trends not mutually exclusive!

- Broadband technology is critical to remaining a viable leader in the communications industry.
- Rapid network transformation is critical to making that transition to a 100% broadband world.
- Broadband migration is driven by customer demand for access, competition & deregulation.
- The timing & technology transition is & will remain a function of business cost-benefit analysis.
- Broadband expansion is at a hyper-critical point in the history of telecommunications networks.
- The transition of the wireless industry to a 5G platform is rapidly escalating the need for fiber.
- The next 10 years will be a period of historic transformation to a broadband & wireless world.
- Expect an explosion in M & A, industry consolidation, CAPEX investment, & device connectivity.
- Expect differences between landline & wireless; Telco & CATV to become virtually indiscernible.
- Expect competition to be intense inside & outside ILEC territories, across the nation & the world.
- Expect urban densely populated areas to experience the transition first...& the rest follow later.
- Current political climate will play a critical role in facilitating rapid infrastructure changes (maybe).

Nearly all of this has very little to do with the legacy landline network pre-fiber.

verizon

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Thank you.

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