Government funding promoting the deployment of Fiber to the Home (FTTH) in Rural areas

- The Rural Digital Opportunity Fund (RDOF)
- The Consolidated Appropriations Act, 2021 (CAA)
- The Coronavirus Aid, Relief, and Economic Security Act (CARES)
- The Infrastructure Investment and Jobs Act (IIJA) & Broadband Equity, Access and Deployment Program (BEAD)
- The American Rescue Plan Act of 2021 (ARPA)

According to the U.S. Department of Commerce and the NTIA, 22.5% of U.S. households are estimated to not have access or the ability to purchase broadband internet.

- 17.3% of rural households and 1.2% of urban households lack fixed terrestrial access to speeds greater than 25 megabits per second (Mbps) for download and 3 Mbps for upload.
- 25 Mbps+/3 Mbps< or less is considered to be unserved according to the FCC’s Broadband Deployment Report.
Multi-Dimensional Considerations Drive The Selection Of The Right FTTH Architecture

**Services & Roadmap**
More connections to more places carrying more data – Growth and flexibility in your network

**Market Dynamics and Demographics**
Winning in a highly competitive, fast moving market environment requires network topology solutions that are designed for scalability, adaptability and upgradability.

**Operations**
Optimizing deployment and maintenance labor requirements through product and network selection

**Business Metrics and Financial**
Scalable network to maximize ROI (Return On Investment) and minimize TCO (Total Cost of Ownership)

**Geographic & Regulatory**
Deployment geography will drive network selection decisions and introduce constraints on network build techniques

**Infrastructure and Network**
Optimize network selection to suit the environment, expected take rates and be scalable enough to flex to future requirements
Consider FTTH Network Density Requirements

**FTTH Network Densities Drive The Architecture And Product Sets**

<table>
<thead>
<tr>
<th>Density</th>
<th>Population Range</th>
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</thead>
<tbody>
<tr>
<td>Dense Urban</td>
<td>&gt;30,000*</td>
</tr>
<tr>
<td>Urban</td>
<td>5,000 - 30,000</td>
</tr>
<tr>
<td>Suburban</td>
<td>1,500 – 5,000</td>
</tr>
<tr>
<td>Outer Urban</td>
<td>275 – 1,500</td>
</tr>
<tr>
<td>Rural</td>
<td>50 - 275</td>
</tr>
<tr>
<td>Very Rural</td>
<td>&lt;50</td>
</tr>
</tbody>
</table>

- Typically utilizes centralized architecture with a preponderance of Multi-Dwelling Units (MDU)
- FDH’s maybe deployed in the OSP or within the MDU
- Typically, is a SFU neighborhood, or mixed with MDU’s
- Expected take rate influences topology solution set
- Density drives repeatability of distribution build
- Cable usage and installation becomes a larger part of the overall build cost
- Cascaded splitting and TAP topologies can lower TCO & speed deployments
- Smaller FDHs & cables may be utilized
- Often expressed in # of homes per linear mile

*Living Units Per 2.5² km*
Network Topology Choices

**Centralized**
- 1:64 splitter
- "Home Run" individual fibers from Splitter to Subscriber
  - Maximum network flexibility
  - High Fiber count – Increase installation and civils cost

**Cascaded - Star**
- Splitters distributed within the network
  - Reduced fiber count – infrastructure needs
  - OLT Port utilization and provision of PtP services within the network

**Cascaded - Daisy chain**
- Cable accessed at each terminal location and spliced to splitter
  - Minimizes cable hauling, allows for simple PtP integration
  - Requires cable prep and splice at each location

**Cascaded - Indexing**
- Plug and Play cascaded PON
  - Greatly reduces installation requirements and speed of deployment
  - Increased optical loss due to increased connectors

**Cascaded - TAP**
- Single fiber network diverting part of the signal to the splitter
  - Lean fiber network with longer reach capabilities
  - Additional planning and pre-engineering requirements
Network Topology Comparison

Savings vary dependent on deployment environment
Why?

- Hardened connectors replace splices reducing total installed cost
- Lower skills can install
- Points of flexibility for reconfiguration of networks
- Reduces turn-up and repair time
- Reliable and robust solutions

Challenges

- SKU / over-length Management
- Cleanliness / Craft interaction

Types

- Single Fiber
- Multi-Fiber

Hardened Connectivity to Speed Deployment and Add Points of Flexibility
Building and deploying a future-ready fiber network quickly and cost-effectively is challenging and differs per deployment scenario. Leverage the FTTH ePlanner in your planning efforts.

Considerations include:
- Density – square or linear miles
- Underground or Aerial build
- Expected take rate
- Spare fiber capacity
- Optical budget
- Permitting & Regulatory

Industry tools are available to address these challenges. CommScope designed the FTTH Network ePlanner to help you navigate the many decisions in planning your FTTH network designs.
Thank You!

Questions???

Deliver broadband to everyone

LEARN MORE > LINK

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Leading Supply Chain Partner for Fiber Deployment

- Over 70+ active projects currently under management
- Leverage Broadband Network Experience to Streamline Deployments and Projects
- FTTx Expertise – Regional, Technical, Product, and Customer Service
- Agile, Efficient, and Local Stocking Locations
- Kitting, Logistics, and Inventory Management
- Specialized Sales Teams for Broadband
Supply Chain Services for Fiber Builds

- Internal organization to specifically address fiber opportunities:
  - Full product scope includes OSP, ISP, Make-Ready, MRO, Tools, and Safety
  - Operational footprint allows the best branch to serve – Responsive team to provide operators e-solutions
  - Project Management for large-scale network deployment
  - Future Proofing Your Network for Upgrades and Provisioning
  - Contractor Network for Installation – Continuous Monitoring and Post-Launch Support
# Supply Chain and Inventory Solutions

## RFI/RFP Process

<table>
<thead>
<tr>
<th>Technology and Build Selection</th>
<th>Complete Bill of Materials Needed</th>
<th>Manpower / Contractor Selection, Local Hiring</th>
<th>Facility Requirements Support</th>
</tr>
</thead>
</table>

## RFQ Process

<table>
<thead>
<tr>
<th>Supplier Selection</th>
<th>National Pricing on Products and Services</th>
<th>Training and Technical Support</th>
</tr>
</thead>
</table>

## Project Management

<table>
<thead>
<tr>
<th>Warehousing, Storage and Delivery</th>
<th>VMI, Product Staging and JIT</th>
<th>Construction / Contractor Coordination</th>
<th>On-site / Off-site Project Management</th>
</tr>
</thead>
</table>

## Ongoing Support

<table>
<thead>
<tr>
<th>Technology Expansion</th>
<th>Maintenance and Upgrade Project Plans</th>
<th>Disaster / Emergency Response with Stock and Product Staging</th>
</tr>
</thead>
</table>
Emergency Response Support

• 24/7 access to a highly motivated resource team that has successfully supported restoration events for events such as hurricanes, heat waves, fires, wind, tornadoes, snowstorms, pandemics, and other disasters

• TVC mobilizes resources from throughout the country, sending drivers, trucks, material, buyers, and warehouse workers to the point of need quickly and efficiently

• Storm Material Management inventory required will be procured in the following order:
  – Supplier inventory
  – Locally-based and branch network inventory
  – TVC storm stock
  – Other customer inventory

• Reclamation Process:
  – Difficulty in accurately predicting the quantities of storm items needed to service a storm realizes that material will be returned after the storm is over
  – TVC will commit the additional resources identified above to help in the return of material back to inventory

• Annual Incident Planning and Training includes:
  – Accurate material lists of “must-have, never-out” items to streamline the procurement timeline and minimize waste
  – Staffing plans to provide the resources necessary to support the storm response
  – Logistics models to understand where products and services need to be provided
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