



# SHENTEL

Always connected to you

The fastest internet. The clearest voice. The sharpest TV.

1-800-SHENTEL | [www.shentel.com](http://www.shentel.com)



Shentel will ensure that rural communities have access to the same level of telecommunication services as those found anywhere else in the US.

*Shentel Mission Statement*



# Overview

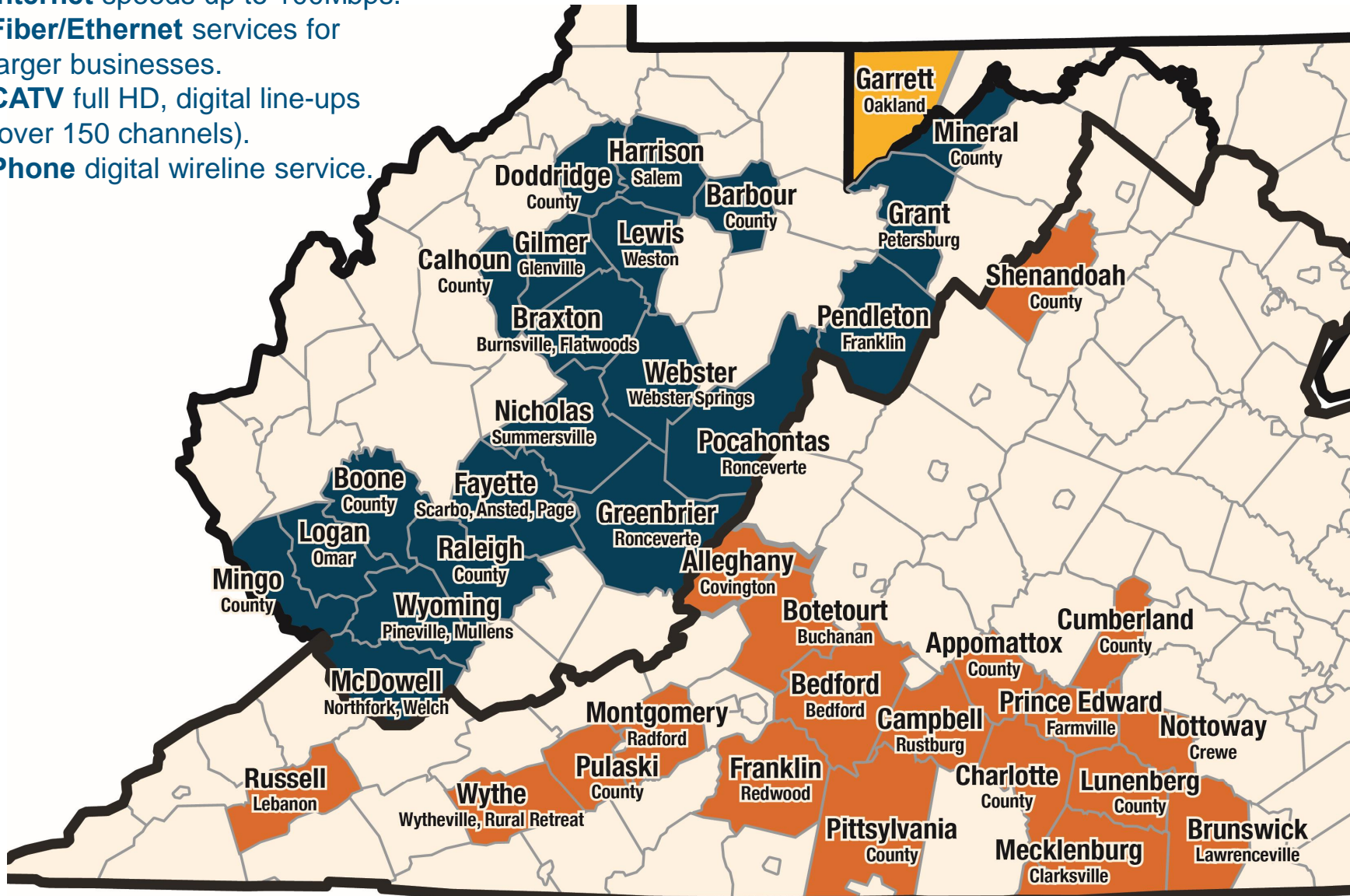
- “ 114 year old company (NASDAQ: SHEN) focused on delivering Broadband, CATV, and phone, and wireless service (Sprint branded) to rural markets in Virginia, West Virginia, Maryland, and Pennsylvania
  - . Advanced/upgraded network
  - . Great customer support
  - . Local community investment
  
- “  *wireless* acquisition 2016
- “ 1,256 employees in VA, WVA, MD & PA
  - . 130 open or new positions
- “ \$650 million in annual revenues and profitable (consolidated results based on nTelos acquisition, and Shentel wireless, wireline and CATV segments)

# Shentel Highlights

- “ First telecom provider in the state of VA or WV to offer 100G (gigabit ethernet) service
  - . Middle mile+capacity → critical to ensure end-user INET speeds
- “ Significant investments in rural communities
- “ E-Rate Leadership
  - . VA . 12 public school systems, 4 library systems, and 2 rural healthcare providers (Appomattox, Campbell County, Frederick, Harrisonburg, Mecklenburg, Nelson, Shenandoah, Warren, Craig, Covington)
  - . WV . Wyoming County Public Schools, Grant Memorial Hospital
- “ Forbes 100 Most Trustworthy Companies in America Award+ (2013, 2014, 2016)

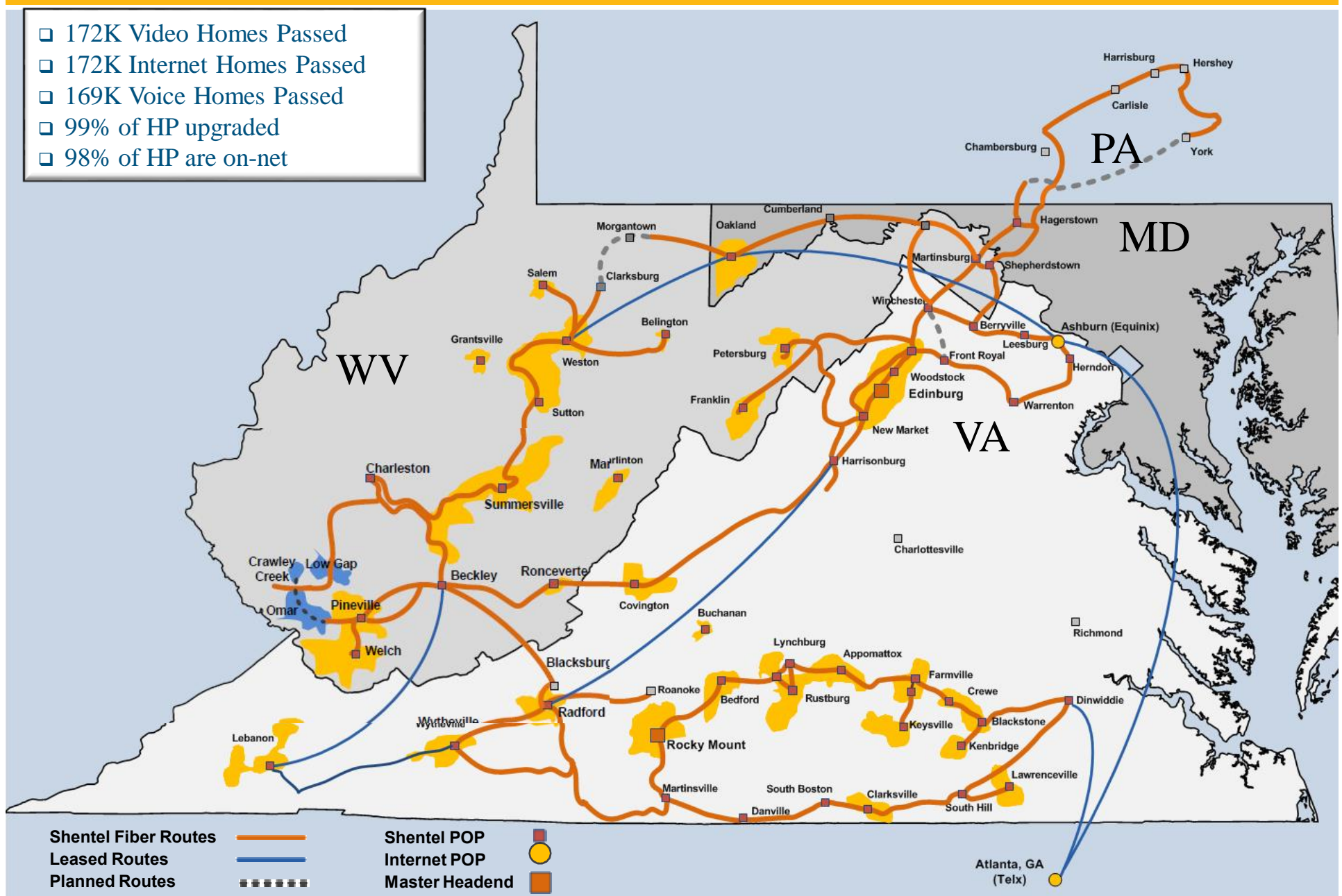
# Shentel Cable Operations

- “ **Internet** speeds up to 100Mbps.  
**Fiber/Ethernet** services for larger businesses.
- “ **CATV** full HD, digital line-ups (over 150 channels).
- “ **Phone** digital wireline service.





- ❑ 172K Video Homes Passed
- ❑ 172K Internet Homes Passed
- ❑ 169K Voice Homes Passed
- ❑ 99% of HP upgraded
- ❑ 98% of HP are on-net



## Shentel Cable

- Company leads with Broadband
- We own/control our backbone fiber network and our telephone switch
- Local/Regional focus

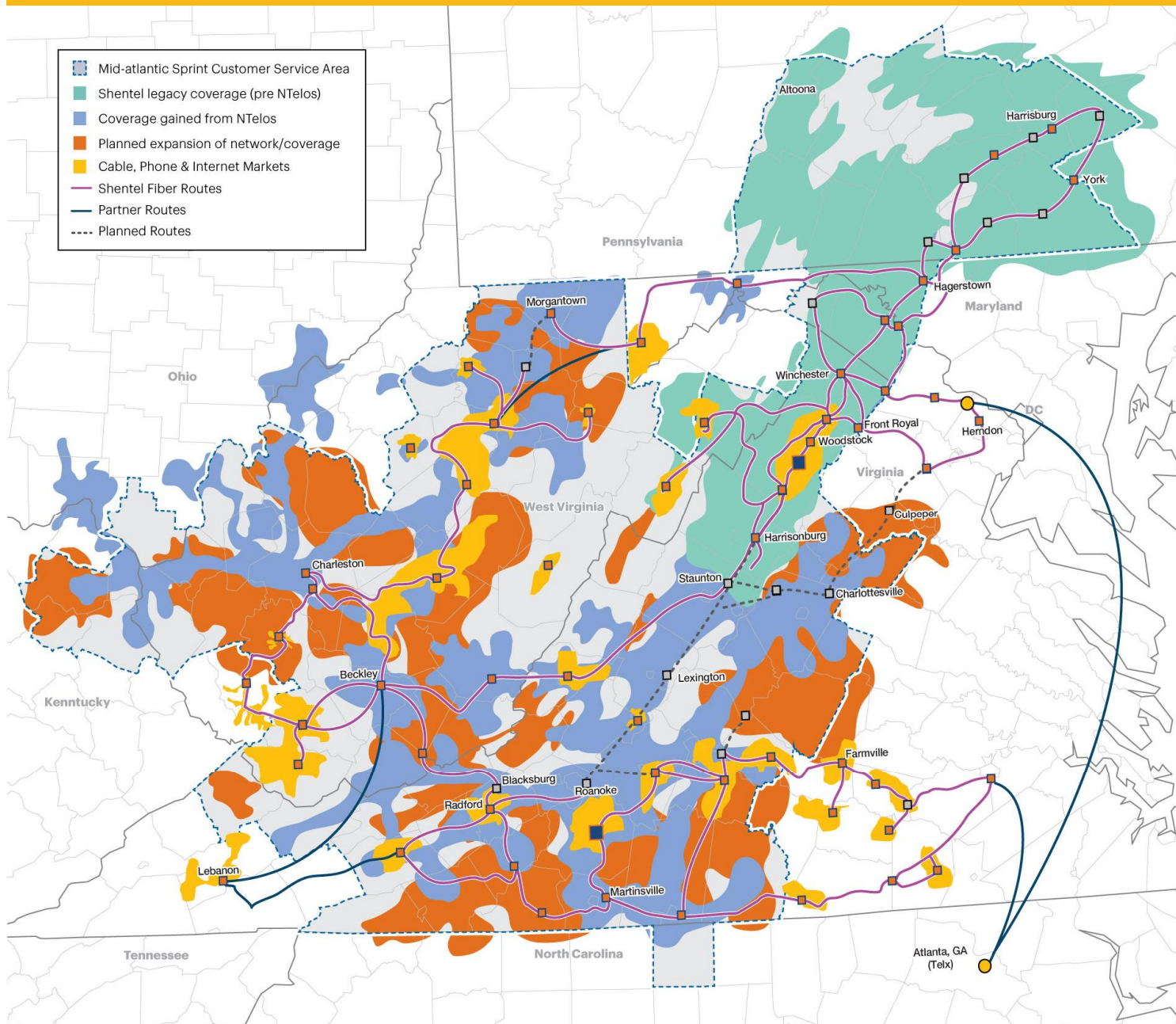
## Competitors

### Verizon/CenturyLink/Frontier

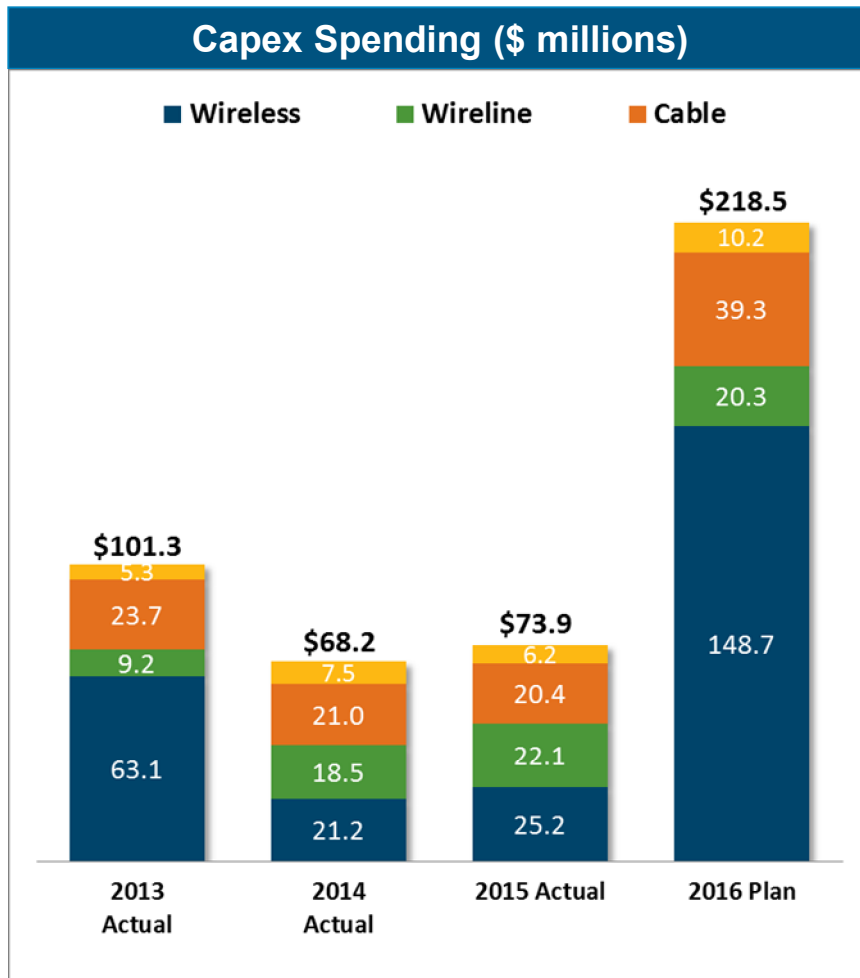
- DSL. slower service
- Requires significant capital expenditure to offer comparable service to Cable
- Loss of cash flow from shrinking voice service
- Bundling of satellite video with their voice and DSL

### Dish/DirecTV

- Bundling of telco, DSL and voice with their video
- Satellite internet is fast but has limited capacity
- No local presence



- " 4.3 million covered POPs
- " 1 million total subscribers
- " 24% penetration of covered POPs
- " 1,408 base stations after elimination of 148 redundant sites



- 2016 Capex Spending:
  - 56% Upgrades and Expansion of nTelos network
  - 17% Network Expansion
  - 11% Additional Network Capacity
  - 10% Network Maintenance
  - 6% Success-Based



# Broadband Industry Topics

## “ Wireline

- . Connect America Fund Phase 2 → FCC funding for broadband (CAF 2)
  - “ CenturyLink
  - “ Verizon
- . CIT toolkit to help private providers understand
- . Virginia grant money

## “ Wireless

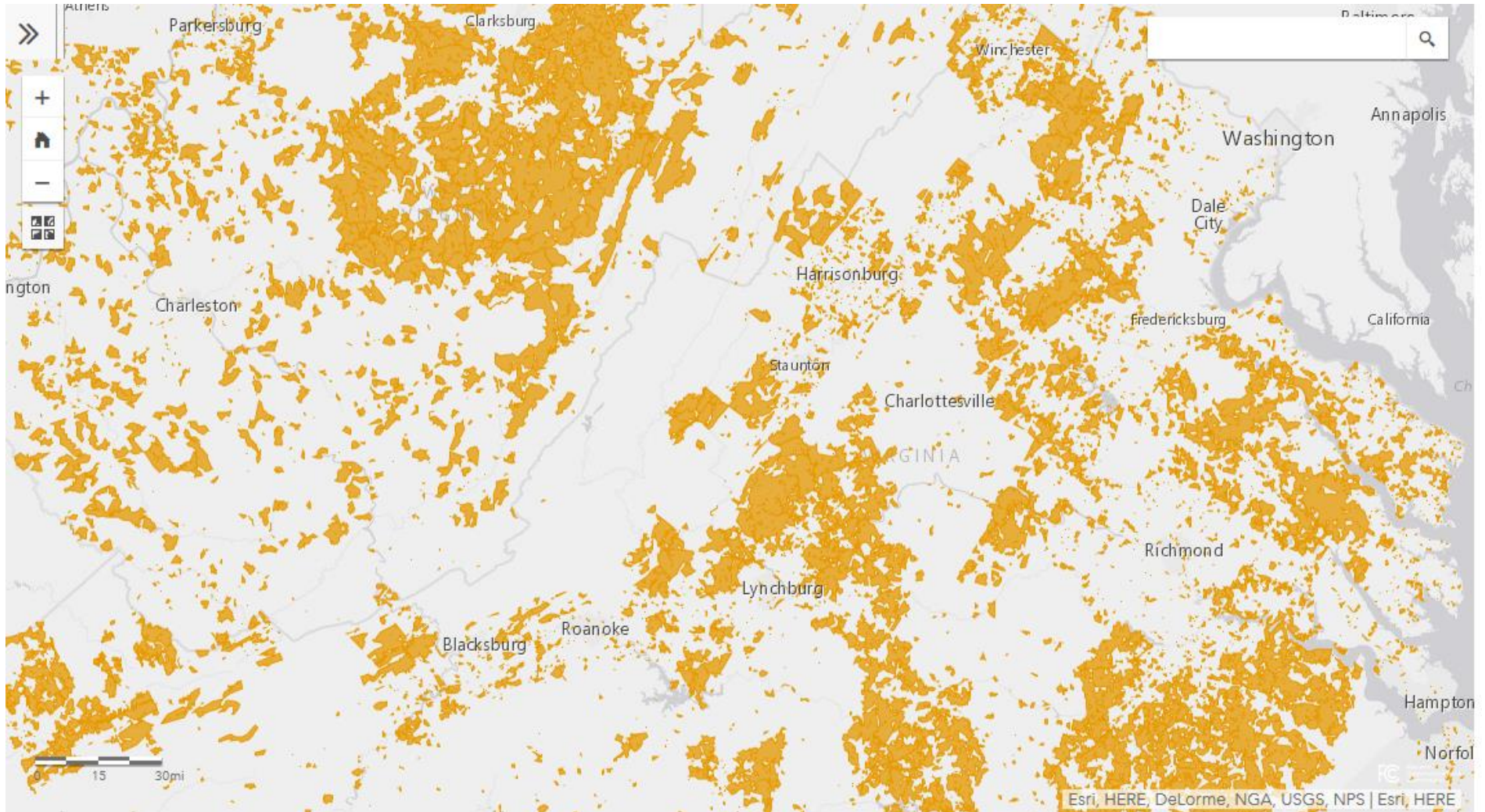
- . 4G versus 5G

# CAF 2 (CenturyLink areas)





# CAF 2 . Auction (Verizon areas)



# Shentel Observations

- “ Underground utilities where Shentel is not in the trench create long-term problems (uneconomical to dig-up)
  - . Developers applying for construction permits need to coordinate with telecom providers
  - . How else can we help ensure a %dig once+policy?
  
- “ Improved **communication** and **cooperation** needs to be developed between
  - . Municipalities,
  - . Power companies, and
  - . Telecom providers



# Wireless Topics

- “ Mobile data usage (video streaming) is growing exponentially
  - . **Network densification** → offload traffic from Macro sites to smaller sites.
- “ 4G created broadband capable speeds
- “ 5G is coming
  - . Higher frequencies that have high data capacity
  - . Require more small cells

# Small Cells

## Cell Types

Macro-cells

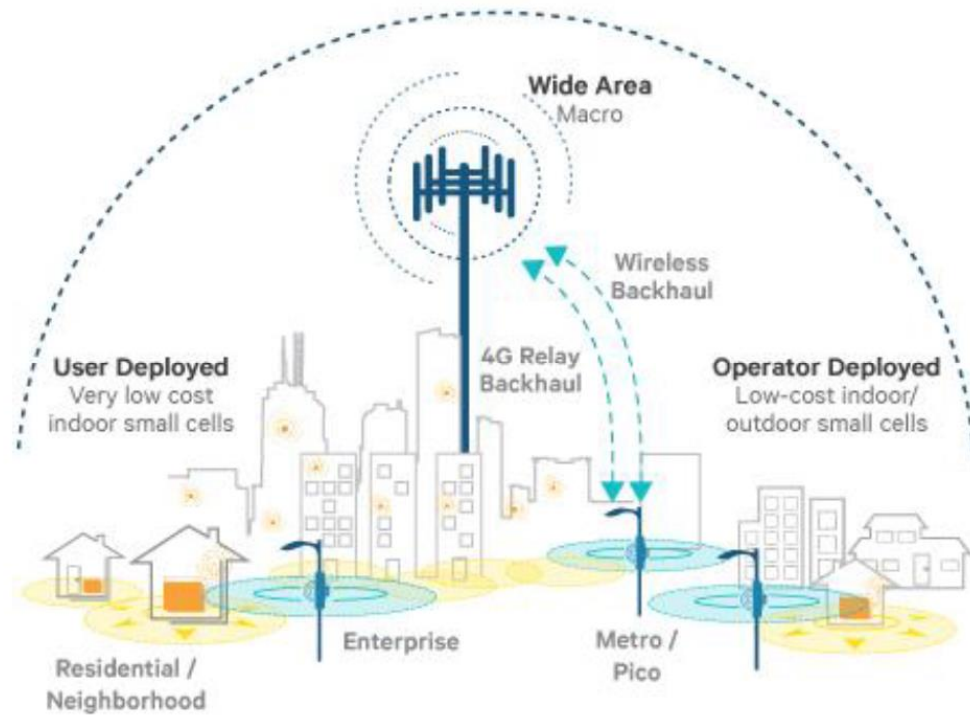
Metro-cells

Pico-cells

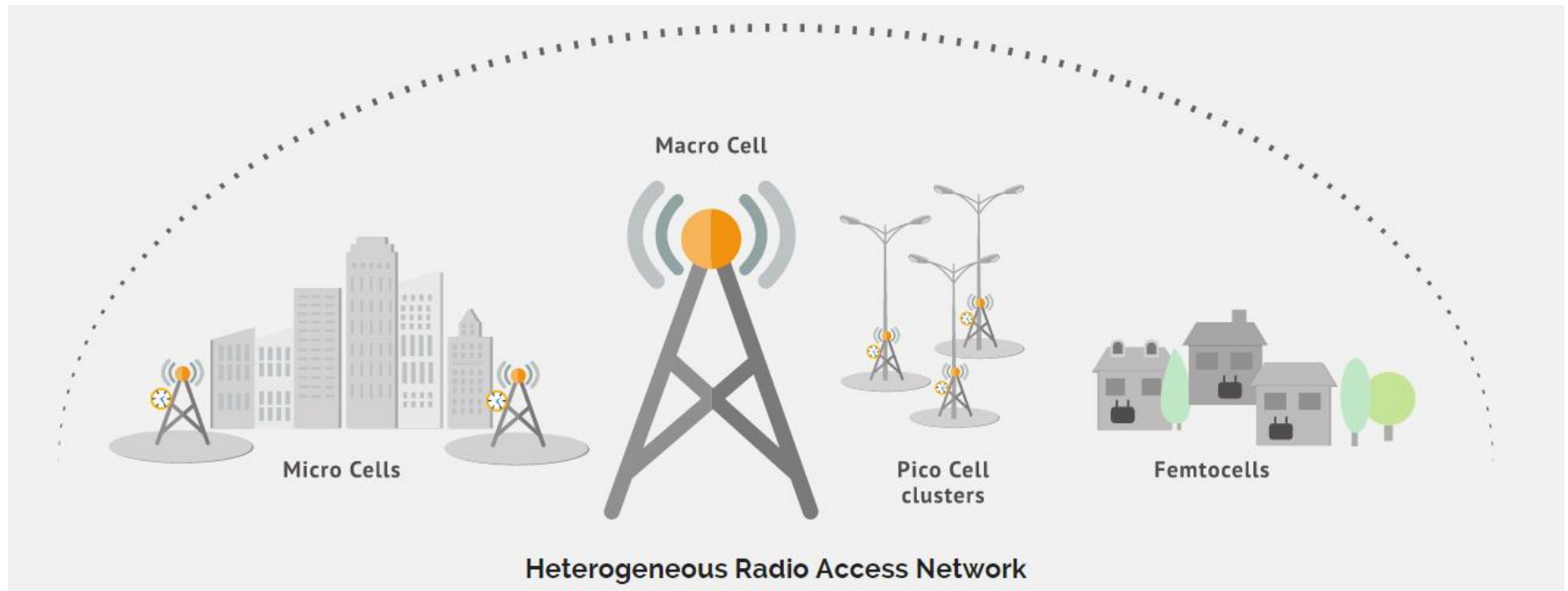
Femto-cells

Access Points

...



# Densification



Layering of cell sites to create more bandwidth capacity and fewer people per cell site.







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## Cell-ebration

### Virginia

#### County Starving For Better Wireless Service Loosens Regulatory Belt

Towers will go up easier in Fauquier County (VA) following an August 11 meeting by county supervisors. County officials, in an unanimous vote, eased regulations on towers up to 145 feet tall. Specifically, tower companies building under this height no longer need to prove all other locations have been exhausted, and shorter towers could not provide acceptable service. Previously, these rules applied to towers over 120 feet.

Robert Ridgell, vice chairman of the county's Broadband Advisory Committee, was quoted by *Farquier News* saying the changes are, "absolutely critical to some of the infrastructure we may need, especially in the southern end of the county, to provide broadband." There was no disagreement with the changes when they were proposed. The county has been suffering from poor cell service. The previous restrictions prompted tower companies to hint they would no longer apply to build within county borders.

More changes are expected to pass by the county board soon. A total overhaul of its tower regulations is underway.

# Summary

## “ Wireline Broadband

- . CAF II funding from the FCC
  - ” CenturyLink → 2016
  - ” Verizon (wireline) → 2017
- . Virginia grants
- . Requirements on any new subdivisions/lots (help us work with the developers)

## “ Wireless

- . Increasing need for smaller wireless sites (network densification for 4G and 5G)