

# Proof of Concept

## Gigabit City Modeling – Fiber Build-out in Huntington, West Virginia

### Introduction

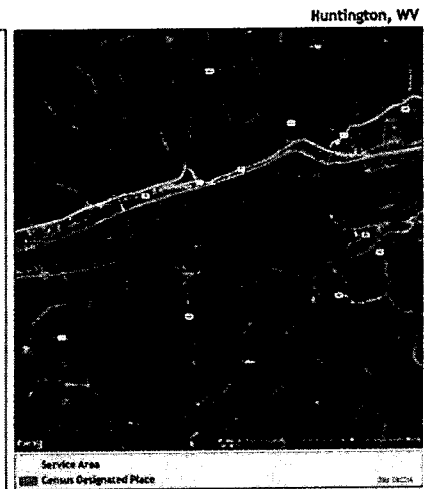
CostQuest Associates, in partnership with L.R. Kimball, presents this Proof of Concept Summary in support of the State of West Virginia’s Broadband Program. The purpose of this summary is to present a full fiber deployment (FTTp) scenario for Huntington, WV. The model and resulting report shows a financial model and business case for build out of Gigabit-speed broadband deployment in Huntington. The results are, in fact, a Feasibility Study that can be used to support policy making and economic development work for the community.

The model assumes a 10-year business case that includes all aspects of deploying and maintaining an advanced broadband network across the community. This includes capital deployment costs, operations and maintenance costs, recurring and non-recurring revenue and success-based capital costs related to a growing subscriber business.

The model uses the most advanced geospatial and network modeling available today. CostQuest’s modeling approach is the same used by the FCC and many national and local broadband providers.

#### Summary of Approach

- The Gigabit Broadband Model estimates the costs and potential profitability and ultimately the viability of the network
- The underlying geospatial/mapping model determines an efficient routing and architecture of the network
- The underlying cost model’s use of an extensive demand and demographic database provides the ability to understand potential take rates, costs and the revenue flows related to the network plan to understand the economics of each “fiber-hood”
- The Study looks at deployment costs, the costs to maintain the network and the expected revenue



### Summary of Results – Huntington, WV

The results of the financial modeling are driven by a core set of assumptions on take rate, engineering parameters, costs inputs and revenue models. These assumptions can be changed and the results can be updated instantly. Key assumptions for these results can be found on the following page of this summary.

#### 10 Year Business Case - Huntington, WV

Assumes a market-wide average take rate of 32.2%, levelized over 10 years. Take rate varies across rate plans/services and business, residential and anchor institution locations.

Total Annual Capital Costs	\$ 3,060,390
Total Annual Operational Costs (OPEX)	\$ 3,544,042
Total Annual Revenue	\$ 6,734,204
<b>Annual Contribution Margin (before excess earnings Income Tax)</b>	<b>\$ 129,773</b>
<b>Net Present Value per Customer/Month</b>	<b>\$ 0.34</b>

#### Total Capital Costs for Deployment

**\$26,466,909**

#### Total Subscribers Served

Residential	5,667
Business	2,092

#### Total Structure Footage

Distribution	940,970
Feeder	152,926
Middle Mile	93,620

## Summary of Results (cont'd) – Huntington, WV

### Key Financials by Neighborhood/Area

	Beverly Hills	Northcott Court	Washington Square	West Huntington	Total - All Huntington
Total Annual Capital Costs	\$ 49.02	\$ 36.79	\$ 38.72	\$ 42.11	\$ 40.20
Total Annual Operational Costs (OPEX)	\$ 52.59	\$ 43.87	\$ 46.26	\$ 47.83	\$ 46.56
	\$ 101.61	\$ 80.66	\$ 84.98	\$ 89.94	\$ 86.76
Total Annual Revenue	\$ 87.38	\$ 89.21	\$ 88.21	\$ 88.00	\$ 88.47
<b>Monthly Contribution</b>	<b>\$ (14.24)</b>	<b>\$ 8.55</b>	<b>\$ 3.23</b>	<b>\$ (1.95)</b>	<b>\$ 1.71</b>

### Key Assumptions and Inputs

The following are the key assumptions and inputs that drive the outcome of the model. These parameters, and others, can be adjusted.

Input Used	Length of Study	Average Useful Life of Assets	Assumed Provider Size	Revenue		Take Rates	
				Residential Rate Plans	Business Rate Plans	Residential Rate Plans	Business Rate Plans
	10 years	20.5 years	Large	120/70/8.99	150/100/8.99	40/45/15	10/80/10
Comments	Can adjust the period	Standard for typical deployment	Large carrier w/ good buying power and brand awareness	Video Bundled/High Speed/Low Speed	Video Bundled/High Speed/Low Speed	Video Bundled/High Speed/Low Speed - The take rates vary by neighborhood and are driven by income and other demographic drivers	Video Bundled/High Speed/Low Speed - The take rates vary by neighborhood and are driven by income and other demographic drivers

#### Other Key Inputs/Parameters

Depreciation, cost of money and income taxes	Poles -- Pole Placement Hours for owned poles
Revenue	Conduit -- CAPEX if conduit is rented
Customer Prem equipment -- (Modem, Set top, remote, etc)	Conduit -- UG Material prices for conduit, duct/innerduct, manholes if conduit is owned
Structure Sharing -- Sharing of feeder and distribution cable on same structure	Poles -- CAPEX for attaching cable to non-owned pole
Fiber -- Drop Material Prices/ft	Poles -- Pole/Anchor/Guy Material Prices if owned poles
Fiber -- Fiber Cable Material Prices/Ft	Conduit -- Duct Rental Rates
Fiber -- Material Prices for Termination of Fiber on Panel in Node Location	Pole/Conduit -- Mix of Free vs Non-Free
Eqpt Material Prices and Capacities -- DNT	Poles -- Attachment Rates
Eqpt Material Prices and Capacities -- Fiber Splitter	% Customers Choosing each offering: LowData, HighData, Video&HighData
Eqpt Material Prices, Labor and Capacities -- Fiber Drop Terminal	CircuitPowerFactor
Equipment Material Prices and Capacities -- OLT	SwitchPowerFactor
Labor Rates	UseRegionalCostAdjustment
Miscellaneous Loadings	FLEC to Book Capex adjustment
Buildings -- Free Building Space	AssumedAreaDensity
Buildings -- Land and Building CAPEX	AssumedCompanySize
Fiber -- Cable placement and splicing hours	Poles
OPEX Factors -- Operating Expense factors	Conduit
Plant Mix - Mix of Aerial, Buried and Underground plant	CarrierType
Structure -- structure (incl Buried) Sharing with other Parties	Company
Installation Expenses -- Data Only	Length of Study
Installation Expenses -- Video / High Speed Data	DiscountFactor
Conduit -- Underground conduit/duct/innerduct placement hours for owned conduit systems	
Excavation costs -- Buried Excavation Hours	
Excavation costs -- Underground Excavation Hours	

### Potential for Expanded Analysis

CostQuest has assessed the viability of a FTTP build-out in 21 cities across West Virginia. The assessment of communities is based on current supply of service, demand, demographics (income, education and other factors), business environment, business locations and types, current infrastructure and other factors. The below communities represent the best potential for a positive business case for advanced network deployment:

Charleston and South Charleston, Teays Valley, Wheeling, Morgantown, Weirton, Vienna, Huntington and Martinsburg

Other communities may warrant further assessment.