PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR WEBSTER TOWNSHIP 1

**PULSE BROADBAND, LLC FTTH FEASIBILITY STUDY REPORT**

**WEBSTER TOWNSHIP, MI JULY 18, 2016**

Pulse Broadband LLC has been engaged by Webster Township to complete a detailed feasibility study for building a fiber-to-the-home network and offering broadband services (Internet and VoIP Telephone). Our analysis includes potential cost models based on various scenarios including aerial construction, underground construction and models in which areas not served by local cable companies and broadband providers have been broken out separately.

Pulse completed an on-site field review by Pulse technical outside plant staff. We utilized this visit to evaluate some of the initial assumptions built into the model and review the condition of the plant. We completed a bandwidth analysis to determine the availability of internet hand-off points and pricing. We conducted a thorough field assessment, analyzed aerial and underground construction, defined cost differences, and determined real- world costs for the Webster Township footprint. Finally, we completed several detailed financial models to evaluate economic feasibility of multiple scenarios. It is our pleasure to provide the results of this independent feasibility study. The feasibility study provides details for all of our calculations, but the highlights include:

1. Fiber plant miles. We determined fiber plant miles of 105.19 for the entire Township and 55.22 miles for the “unserved” areas of Webster Township. A complete description of the methodology used to calculate fiber miles is contained in the body of the report. This mileage was used to estimate both underground and aerial fiber construction. 2. Aerial construction using DTE poles. We have provided two models for aerial construction with one covering all homes in the township and the second only those homes currently considered to be “unserved” by cable and other broadband providers. It is critical to note the make ready costs are placeholders utilizing similar numbers provided by Consumers Energy for Lyndon Township. After repeated attempts, including telephone conference calls with the key DTE staff that is responsible for determining make ready costs for this kind of project, it was clear that the only way to obtain any useable information will be through DTE and its “make ready pole assessment program” at a cost of $54 dollars per pole. A detailed description of aerial cost projections is included in the body of the report. 3. 100% underground construction. If Webster Township decides to build an all underground network then the DTE make ready costs become a non-issue. Construction costs for the two models presented (unserved area only vs. the entire Township) range from approximately $5.6 million to $10.5 million. A detailed description of underground costs is included in the body of the report. 4. ISP partner. Our model projects capital costs of approximately $713,000 for an ISP serving the entire Township vs $423,000 for an ISP serving unserved areas only. A detailed discussion of ISP assumptions and associated model outputs is contained in the body of the report.

We look forward to working with Webster Township on this important strategic, regional infrastructure project which will bring the capability of gigabit broadband access to your residents and communities. We’ve included a paragraph at the beginning of the report to provide credibility for any reader unfamiliar with Pulse. Please free to distribute our report for any required business purposes and include my contact information as needed.

Sincerely,

Eric Freesmeier, CEO eric@pulsebroadband.net (314) 324-7347

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ABOUT PULSE BROADBAND Pulse was formed with the sole purpose of partnering with rural America to bring fiber technology to underserved areas. Since our formation in 2008, we have partnered with electric cooperatives, municipal entities, and private groups to build over 5,000 miles in successful FTTH projects. In addition to our fiber design and construction management expertise, we offer a full suite of telecom services, from feasibility studies of a new network to back office support services for existing companies. This 360° view of the industry, along with our years of hands-on experience, give Pulse the distinction of being one of the true leaders in the rural Fiber-to-the-Home industry.

There is no project too small, or too large, which is outside the scope of our expertise. Our projects have ranged in size from 25 miles with 900 passings to 1,800 miles with 26,500 passings. Each project has been unique and our collaborative approach with every owner has brought a customized solution. The variations and complexities of each project have given us invaluable real-world experience. These experiences enable us to take a deep-dive with each new client to ask the right questions, inspect critical areas, and discover hidden problems to ensure our studies, models, and designs produce the most accurate outcomes.

Pulse Broadband is a full-service firm offering feasibility studies, financial modeling, fiber design, technology selection, construction management, vendor (bandwidth, VoIP, video and network management) negotiations, and back office support. Our working knowledge in each of these critical areas allows us to make more informed decisions. Whichever service our clients need; this holistic approach gives them the confidence that they are setup for success.

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BANDWIDTH ANALYSIS **ANALYSIS OF PROVIDERS** Terie Hannay, our VP of Planning and Integration, conducted a thorough investigation of all local providers. She gathered their initial pricing, terms and connection points. Terie is happy to report that bandwidth is readily available at competitive prices.

The below quotes were received for the 5665 Webster Church Road address. The top quote received for Webster Township is from Birch Communications, a strong mid-tier provider. Their pricing for a 500MB circuit is $2,199 and a 1GB is $2,499. The model reflects the favorable pricing from Birch Communications of $2,199. Refer to the chart below outlining the available carriers and their preliminary pricing and terms (3 years).

**Summary of Provider Offerings**

**Provider 500 MB 1 GB Installation Term**

Cogent $3,287 $5,035 $2,000 3 yrs.

ATT $3,144 $4,336 $0 3 yrs.

XO Communications $4,461 $5,483 $0 3 yrs. Level 3 $4,873 $6,000 $0 3 yrs.

Birch $2,199 $2,499 $0 3 yrs.

ACC $2,944 $4,136 $1,500 3 yrs.

US Signal $3,665 $5,554 $0 3 yrs.

123.Net $3,639 $4,999 $0 3 yrs.

TelNet WW $2,545 $3,945 $0 3 yrs.

Century Link $6,086 $8,569 $0 3 yrs.

ComLink $3,285 $4,630 $0 3 yrs.

CONCLUSION Multiple providers have provided reasonable quotes and guidance that other locations would be similar. Bandwidth pricing could be negotiated further. We are confident that the ISP can provide adequate service with these prices.

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ELECTRIC PLANT DATA FIBER PATH MILEAGE CALCULATION A critical piece of data that drives the financial model is the calculation of constructed fiber mileage. This can be accomplished through several methods. Ideally, we prefer to utilize electric plant data for the analysis. Pulse made several attempts to acquire this information from local electric provider, DTE Energy. DTE Energy did not supply any information to Pulse Broadband to aid in this analysis.

The next method is to utilize road data for the service area. Washtenaw County Road Commission supplied Pulse with electronic shapefiles of all roads within Webster Township, Figure 1.

Webster asked Pulse to take into consideration the areas that are currently being served by Charter and Comcast. Specifically, models and calculations to construct the entire area of Webster Township verse only areas unserved by Charter/Comcast. In order to come up with these defined areas, Pulse needed to identify the areas currently being served. Charter supplied a map to Webster indicating the areas they serve. Webster took this information and produced a map highlighting the roads and parcels that are currently served. Pulse took both of these pieces of information and identified all roads within the Charter/Comcast served area, Figure 2. This allowed Pulse to identify particular areas that would not be constructed with fiber. The next step was to identify a logical path of construction which would bring service to all unserved areas. The construction path will still utilize some areas within the served territories, but these were

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*Figure 1. Entire WCRC Road Area.*

kept to a minimum and only necessary to reach unserved areas. The results of this analysis produced a construction path and fiber mileage less than Webster’s complete territory, Figure 3.

*Figure 2. Served Roads Highlighted in Orange.*

*Figure 3. Construction Path Highlighted in Red.*

The following table summarizes a calculation of road miles for construction of the entire area of Webster Township and for construction of unserved areas only.

**FIBER MILEAGE** Entire Area of Webster Township 105.19 miles Unserved Areas Only 55.22 miles

HOMES SERVED Another critical piece of data that drives the financial model is number of homes served. Pulse was supplied with a value of 2,800 homes served for the entire area Webster Township and 1,000 homes for the unserved only areas.

For the financial model, we assumed take rates for the 1,000 unserved homes at 50% and the 1,800 served homes at 30%.

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CORE BUSINESS MODEL ASSUMPTIONS Our financial models make the following assumptions for both construction methods:

1. Distributed Split Architecture 2. GPON Technology 3. ISP will run operations (no fees paid to Township – the network costs will be funded by other methods,

i.e. millage)

a. Headend costs will be removed from network cost estimate b. GPON ONT will be removed from network cost estimate c. Installation will be removed from network cost estimate d. Base monthly service rate of $39.95 will be required to cover above costs plus the operation

expenses to run their business if Webster builds the entire 2,800 home township. e. Base monthly service rate of $51.95 will be required to cover above costs plus the operation

expenses to run their business if Webster builds only to the 1,000 homes not served by Charter/Comcast.

**CONSTRUCTION MODEL COMPARISON**

Pulse was asked to create four models based on variations of aerial vs. underground construction and building the entire township vs. areas where Charter/Comcast service is not available. The following table compares the costs for the four models:

**Total Project Costs – Model Comparison**

**Entire Township Not Served by Charter/Comcast**

**Aerial/UG Underground Aerial/UG Underground**

Miles 105.19 105.19 59.25 59.25

Homes 2,800 2,800 1,000 1,000

Pole Assessment $170,237 $0 $89,367 $0

Pole Replacement $945,762 $0 $496,482 $0

Other Make Ready $2,127,965 $0 $1,117,086 $0

Aerial Construction $2,540,520 $0 $1,443,839 $0

UG Construction $615,550 $7,766,096 $289,642 $4,200,423

Permits $1,800 $36,000 $1,800 $36,000

Drop Construction $1,627,479 $2,785,066 $782,442 $1,338,974

Simple PV Pole Rent/Maintenance $945,762 $0 $496,482 $0

**Total $8,975,076 $10,587,162 $4,717,140 $5,575,397**

Despite numerous attempts Pulse could not obtain information from DTE regarding the pole assessment, replacement or make ready costs. **The above costs are placeholders based on discussions and Consumer Energy information for Lyndon Township.**

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR WEBSTER TOWNSHIP 8

DETAIL PROJECT COSTS – AERIAL CONSTRUCTION FOR ENTIRE TOWNSHIP CAPITAL BUDGET ASSUMPTIONS Capital costs to construct the network will be approximately $9,000,000. The timeline anticipated for the build is 16 months based on achievable milestones. The following assumptions were made in the capital projections for the financial model:

• Outside Plant Construction:

o 105.2 miles of distribution plant will be constructed over the course of 16 months. Construction

is assumed to begin in Month 4 and to be completed by Month 20. o The cost of aerial construction is estimated at $56,182 per mile. The placeholder for make ready costs are $30,758 per mile. Total aerial labor excluding make ready is $10,973 (plant labor less make ready plus technical labor). Materials cost per mile is $8,369. We have assumed a majority (60%) of fiber will be 96 count fiber. The $56,182 referenced above includes professional services discussed below. o The cost of underground construction is estimated at $117,036 per mile. The limited number of underground miles (~2) will cause high construction bids per mile in order to pay for the cost of mobilizing their equipment and crews. The $117,036 referenced above includes professional services discussed below.

• Drop Construction:

o 1,040 homes are expected to sign up for services over the course of two years. o The cost of drop construction is $1,565 per home. Labor is $1,380 and materials are $147. Aerial pole line is utilized and 40% underground for drops is assumed. Conduit is not utilized unless boring (driveways and sidewalks) is required. o Drop length of 600 feet is assumed per home. o Inside the home installation including ONT electronics will be the responsibility of the ISP partner.

• Professional Services:

o The mapping of the outside plant is required to create the fiber design. This will require an estimated 1,262 hours over the course of six months to complete. The design of the outside plant is estimated at 596 hours over the course of six months to complete. o Project management for project planning, inspection of contractors and invoice approval/reconciliation is estimated to require a crew of two over the course of 16 months for a total of 5,220 hours. o Drop surveys to provide the fiber route from the distributed split to the side of the house for contractors is estimated at 468 hours to map and draft. These will be completed over the course of a year.

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CAPITAL BUDGET

**Township PROJECT: SERVICE AREA: Unit Cost No. of Total FTTH Network Webster Township, MI Units Costs**

**OUTSIDE PLANT LABOR Pre-Construction** Complete Make Ready Construction 30,758.65 $ 99.9 **3,073,727 $** PM99 (Move Pole Facilities) 72.00 $ 315 **22,698 $** CO12(6M) [Hang stranded fiber] 0.95 $ 52,763 **50,125 $** CO24(6M) [Hang stranded fiber] 0.95 $ 52,763 **50,125 $** CO48(6M) [Hang stranded fiber] 0.95 $ 52,763 **50,125 $** CO96(6M) [Hang stranded fiber] 0.95 $ 316,580 **300,751 $ Aerial** CO144(6M) [Hang stranded fiber] 1.05 $ 52,763 **55,401 $** PM2A [Aerial Bond] 4.50 $ 631 **2,837 $** PF3-3 [Place Screw Anchor] 40.00 $ 300 **11,992 $** PE1-3 [Place down guy] 24.00 $ 300 **7,195 $** PF3-AUX [Install auxiliary eye] 8.00 $ 200 **1,599 $** PM69 [Place fiber storage loop] 50.00 $ 200 **9,993 $** BMUDT [Trench Conduit] 5.50 $ 22,216 **122,189 $** BMUDD [Bore Conduit] 12.00 $ 5,554 **66,648 $** BFO12 [Pull Fiber] 0.90 $ 2,777 **2,499 $** BFO24 [Pull Fiber] 0.90 $ 2,777 **2,499 $** BFO48 [Pull Fiber] 0.90 $ 2,777 **2,499 $** BFO96 [Pull Fiber] 0.90 $ 16,662 **14,996 $ Underground** BFO144 [Pull Fiber] 0.90 $ 2,777 **2,499 $** BM71 [Rock Adder] 10.00 $ 1,389 **13,885 $** BD5 [Pedestals] 60.00 $ 1,400 **84,000 $** BM2-A [Grounding] 40.00 $ 1,400 **56,000 $** BM80 [Risers] 50.00 $ 111 **5,554 $** BM53 [Markers] 20.00 $ 167 **3,332 $** BHF [Handholes] 300.00 $ 56 **16,662 $** SPL [Install Splitter] 50.00 $ 37 **1,857 $** SPL-CBN [Install Splitter Cabinet] 1,000.00 $ 12 **12,444 $** HACO12 [Splice Enclosures for 12 ct] 125.00 $ 111 **13,885 $** HACO24 [Splice Enclosures for 24 ct] 125.00 $ 111 **13,885 $ Technical** HACO48 [Splice Enclosures for 48 ct] 135.00 $ 111 **14,996 $** HACO96 [Splice Enclosures for 96 ct] 150.00 $ 50 **7,500 $** HACO144 [Splice Enclosures for 144 ct] 150.00 $ 111 **16,662 $** TERM 150.00 $ 520 **78,000 $** HO1 [Splicing with bi-directional testing] 25.00 $ 16,103 **402,580 $ Total 4,591,643 $**

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**Township PROJECT: SERVICE AREA: Unit Cost No. of Total FTTH Network Webster Township, MI Units Costs**

**OUTSIDE PLANT MATERIALS**

12 ct. Loose Tube Fiber 0.30 $ 62,315 **18,694 $** 24 ct. Loose Tube Fiber 0.35 $ 62,315 **21,810 $ Fiber** 48 ct. Loose Tube Fiber 0.45 $ 62,315 **28,042 $** 96 ct. Loose Tube Fiber 0.70 $ 373,887 **261,721 $** 144 ct. Loose Tube Fiber 1.00 $ 62,315 **62,315 $** 1/4" EHS Strand 0.14 $ 535,128 **74,918 $** Lashing wire 0.038" Type 302 1,600' Roll 24.00 $ 472 **11,318 $** Weaver(Bonding Clamp) 1.75 $ 930 **1,628 $** #6 Bare Copper Ground Wire 0.34 $ 2,086 **709 $ Aerial** Anchor 8" Helix 26.89 $ 300 **8,061 $** Sno-Shoe (pair) 39.95 $ 200 **7,984 $** Stainless Steel Strap 0.20 $ 6,705 **1,341 $** 1/2" Spacer 0.12 $ 6,705 **805 $** Guy Guards 3.08 $ 300 **923 $** Auxilliary Eye 14.39 $ 200 **2,876 $** #4 Split Bolt 0.81 $ 631 **511 $** Preformed Deadend 1/4" Strand 3.21 $ 1,861 **5,973 $** 12" x 5/8" Machine Bolt w/ Nut 1.07 $ 1,576 **1,687 $** 2"x1/8" Flat Square Washer 0.30 $ 3,752 **1,126 $** 5/8"-11 Square Nut 0.22 $ 2,507 **551 $ Stranded Hardware** 3 Bolt Clamp 4.38 $ 1,892 **8,285 $** 3 Bolt Clamp Curved 5.48 $ 631 **3,455 $** 5/8"Thimble Eye Bolt 3.90 $ 300 **1,169 $** Bug nut(D Lash Clamp) 0.30 $ 6,705 **2,011 $** Guy Hook - Ram's Head 3.01 $ 300 **902 $** Arnco 1.25" HDPE Conduit 0.52 $ 27,770 **14,440 $** Channell 24x36x24 Handhole 193.40 $ 56 **10,741 $** Channell Pedestal 55.00 $ 1,400 **77,000 $** Pedestal Stickers 0.70 $ 1,400 **980 $ Underground** 0.75" Flex Conduit - 20' 9.70 $ 222 **2,155 $** Screw Lags 0.25 $ 2,222 **555 $** 5/8" x 8' Copper Ground Rod 10.31 $ 1,456 **15,007 $** Ground Rod Clamp 0.90 $ 1,456 **1,310 $** Warning Marker 14.60 $ 167 **2,433 $** "A" Splice Enclosure 220.00 $ 222 **48,875 $** "C" Splice Enclosure 250.00 $ 161 **40,270 $** "D" Splice Enclosure 285.00 $ 111 **31,658 $** Splice Trays for A Enclosure 20.00 $ 444 **8,886 $ Technical** Splice Trays for C Enclosure 22.00 $ 533 **11,731 $** Splice Trays for D Enclosure 25.00 $ 666 **16,662 $** Aerial Clamps for FOSC 450 25.82 $ 494 **12,763 $** Splitter Cabinets 5,000.00 $ 12 **62,222 $** Splitters 800.00 $ 37 **29,714 $** AirFOSC 150.00 $ 520 **78,000 $** Splice Protector (sleeves) 0.27 $ 16,103 **4,348 $ Total 998,568 $**

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**Township PROJECT: SERVICE AREA: Unit Cost No. of Total FTTH Network Webster Township, MI Units Costs**

**DROP TO THE HOME**

CO2(6M) [Hang stranded fiber] 0.90 $ 374,400 **336,960 $** BMUDT [Trench No Conduit] 2.00 $ 224,640 **449,280 $** BMUDD [Bore Conduit] 12.00 $ 24,960 **299,520 $** BFO2 [Pull Fiber] 1.00 $ 249,600 **249,600 $ Labor** BM83 [Drop Riser Guard] 25.00 $ 416 **10,400 $** BM(0.75) [House Cane] 13.00 $ 416 **5,408 $** PM2A [Aerial Bond] 4.50 $ 624 **2,808 $** BM2-A [Grounding] 40.00 $ 624 **24,960 $** NID [Place NID Housing] 25.00 $ 1,040 **26,000 $** HO1 [Splicing] 25.00 $ 1,040 **26,000 $** HO1T [Testing] 4.00 $ 1,040 **4,160 $** 2 Ct. Loose Tube Fiber 0.20 $ 624,000 **124,800 $** Lashing wire 0.038" Type 302 1,600' Roll 24.00 $ 281 **6,739 $** 0.75" Flex Conduit - 20' 9.70 $ 416 **4,035 $** Arnco 0.75" HDPE Conduit 0.30 $ 24,960 **7,488 $** Weaver(Bonding Clamp) 1.84 $ 624 **1,150 $ Materials** #6 Bare Copper Ground Wire 0.38 $ 624 **234 $** #4 Split Bolt 1.33 $ 624 **830 $** 5/8" x 8' Copper Ground Rod 10.31 $ 624 **6,433 $** Ground Rod Clamp 0.90 $ 624 **562 $** Splice Protector (sleeves) 0.27 $ 1,248 **332 $** Calix 700 Series ONT Enclosure - $ 1,040 **- $**

**Total 1,587,699 $**

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MODEL ASSUMPTIONS AND OUTPUT The below inputs drive the 20-year Pulse financial model created for Webster Township.

**Plant Statistics:** Homes Passed Small Bus Passed Large Commercial Total Miles UG % Do you own the poles? Pole Condition Underground Construction Conditions 2,800 0 0 105.2

5.0% No Good Good

**Construction Statistics:** Make Ready Per Aerial Mile $30,759 Aerial Production 75 miles per month UG Production 5 miles per month Avg. Length of Drop fiber along main 400.0 Avg. Length of Drop fiber from main to ONT 200.0 UG Drop % 40.0% Avg. Feet between splices 500.0

Number of Substations 0

**Capital Expenditures**

**Summary of Total Capital Required**

**Construction Costs** $7,857,277 **Ongoing Capital Costs at Launch** $1,117,799 **Total Project Capital Costs** $8,975,076

**Construction Costs**

Unit Cost x Quantity = Total Headend/Office Space $244,072 0 $0 Cabinet Equipment $129,072 0 $0 Aerial Construction (A) $56,182 99.9 $5,614,247 Underground Construction (B) $117,036 5.3 $615,550 Drop Construction (C) $1,565 1,040 $1,627,479 **Total Construction $7,857,277**

*Details for construction costs above:*

(A) Aerial Cost Per Mile (B) Underground Cost Per Mile (C) Drop Cost Per Home

Plant Labor (inc. Make Ready) $36,391 Plant Labor $74,772 Plant Labor $1,326 Technical Labor $5,341 Technical Labor $5,341 Tech. Labor $54 Fiber $3,732 Fiber $3,732 Fiber $120 Aerial Materials $1,356 UG Materials $23,829 Materials $27 Technical Mat. $3,281 Technical Mat. $3,281 NID Enclosure $0 Design $1,507 Design $1,507 Design $38 Constr. Mgmt $4,574 Constr. Mgmt $4,574 Constr. Mgmt $0 Total Aerial $56,182 Total UG $117,036 Total Drop $1,565

**Ongoing Capital Costs at Launch**

Cost x Quantity = Total Pole Assessment $54 3,153 $170,237 Permits $1,200 1.5 $1,800 Simple PV of Pole Rent (20 yrs) $47,288 20 $945,762 Plant Maintenance Materials $0 0 $0 **$1,117,799**

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR WEBSTER TOWNSHIP 13

DETAIL PROJECT COSTS – UNDERGROUND CONSTRUCTION FOR ENTIRE TOWNSHIP CAPITAL BUDGET ASSUMPTIONS Capital costs to construct the network will be approximately $10,600,000. The timeline anticipated for the build is 19 months based on achievable milestones plus the construction preparation time. The following assumptions were made in the capital projections for the financial model:

• Outside Plant Construction:

o 105.2 miles of distribution plant will be constructed over the course of 19 months. Construction

is assumed to begin in Month 4 and to be completed by Month 23. o The cost of aerial construction is $0. o The cost of underground construction is estimated at $73,829 per mile. Labor is $53,769 per mile including both plant and technical (splicing). Materials are $13,041 per mile which includes fiber, conduit, splitters, splice enclosures and other underground materials. The $73,829 referenced above includes professional services discussed below.

• Drop Construction:

o 1,040 homes are expected to sign up for services over the course of two years. o The cost of drop construction is $2,678 per home at 100% underground. Labor is $2,492 (all underground) and materials are $148. Drops do not include conduit unless boring (driveways and sidewalks) is required. o Drop length of 600 feet is assumed per home. o Inside the home installation including ONT electronics will be the responsibility of the ISP partner.

• Professional Services:

o The mapping of the outside plant is required to create the fiber design. This will require an estimated 1,262 hours over the course of six months to complete. The design of the outside plant is estimated at 596 hours over the course of six months to complete. o Project management for project planning, inspection of contractors and invoice approval/reconciliation is estimated to require a crew of two over the course of 15 months for a total of 6,300 hours. o Drop surveys to provide the fiber route from the distributed split to the side of the house for contractors is estimated at 468 hours to map and draft. These will be completed over the course of a year.

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CAPITAL BUDGET

**Township PROJECT: SERVICE AREA: Unit Cost No. of Total FTTH Network Webster Township, MI Units Costs**

**OUTSIDE PLANT LABOR Pre-Construction** Complete Make Ready Construction 0.00 $ 0.0 **0 $**

Pole Assessment 150 $ - **- $** PM99 (Move Pole Facilities) 72.00 $ 0 **0 $** CO12(6M) [Hang stranded fiber] 0.95 $ 0 **0 $** CO24(6M) [Hang stranded fiber] 0.95 $ 0 **0 $** CO48(6M) [Hang stranded fiber] 0.95 $ 0 **0 $** CO96(6M) [Hang stranded fiber] 0.95 $ 0 **0 $ Aerial** CO144(6M) [Hang stranded fiber] 1.05 $ 0 **0 $** PM2A [Aerial Bond] 4.50 $ 0 **0 $** PF3-3 [Place Screw Anchor] 40.00 $ 0 **0 $** PE1-3 [Place down guy] 24.00 $ 0 **0 $** PF3-AUX [Install auxiliary eye] 8.00 $ 0 **0 $** PM69 [Place fiber storage loop] 50.00 $ 0 **0 $** BMUDT [Trench Conduit] 5.50 $ 444,323 **2,443,774 $** BMUDD [Bore Conduit] 12.00 $ 111,081 **1,332,968 $** BFO12 [Pull Fiber] 0.90 $ 55,540 **49,986 $** BFO24 [Pull Fiber] 0.90 $ 55,540 **49,986 $** BFO48 [Pull Fiber] 0.90 $ 55,540 **49,986 $** BFO96 [Pull Fiber] 0.90 $ 333,242 **299,918 $ Underground** BFO144 [Pull Fiber] 0.90 $ 55,540 **49,986 $** BM71 [Rock Adder] 10.00 $ 27,770 **277,702 $** BD5 [Pedestals] 60.00 $ 1,400 **84,000 $** BM2-A [Grounding] 40.00 $ 1,400 **56,000 $** BM80 [Risers] 50.00 $ - **- $** BM53 [Markers] 20.00 $ 3,332 **66,648 $** BHF [Handholes] 300.00 $ 1,111 **333,242 $** SPL [Install Splitter] 50.00 $ 37 **1,857 $** SPL-CBN [Install Splitter Cabinet] 1,000.00 $ 12 **12,444 $** HACO12 [Splice Enclosures for 12 ct] 125.00 $ 111 **13,885 $** HACO24 [Splice Enclosures for 24 ct] 125.00 $ 111 **13,885 $ Technical** HACO48 [Splice Enclosures for 48 ct] 135.00 $ 111 **14,996 $** HACO96 [Splice Enclosures for 96 ct] 150.00 $ 50 **7,500 $** HACO144 [Splice Enclosures for 144 ct] 150.00 $ 111 **16,662 $** TERM 150.00 $ 520 **78,000 $** HO1 [Splicing with bi-directional testing] 25.00 $ 16,103 **402,580 $ Total 5,656,006 $**

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR WEBSTER TOWNSHIP 15

**Township PROJECT: SERVICE AREA: Unit Cost No. of Total FTTH Network Webster Township, MI Units Costs**

**OUTSIDE PLANT MATERIALS**

12 ct. Loose Tube Fiber 0.30 $ 58,317 **17,495 $** 24 ct. Loose Tube Fiber 0.35 $ 58,317 **20,411 $ Fiber** 48 ct. Loose Tube Fiber 0.45 $ 58,317 **26,243 $** 96 ct. Loose Tube Fiber 0.70 $ 349,904 **244,933 $** 144 ct. Loose Tube Fiber 1.00 $ 58,317 **58,317 $** 1/4" EHS Strand 0.14 $ 0 **0 $** Lashing wire 0.038" Type 302 1,600' Roll 24.00 $ 0 **0 $** Weaver(Bonding Clamp) 1.75 $ 0 **0 $** #6 Bare Copper Ground Wire 0.34 $ 2,511 **854 $ Aerial** Anchor 8" Helix 26.89 $ 0 **0 $** Sno-Shoe (pair) 39.95 $ 0 **0 $** Stainless Steel Strap 0.20 $ 0 **0 $** 1/2" Spacer 0.12 $ 0 **0 $** Guy Guards 3.08 $ 0 **0 $** Auxilliary Eye 14.39 $ 0 **0 $** #4 Split Bolt 0.81 $ 0 **0 $** Preformed Deadend 1/4" Strand 3.21 $ 0 **0 $** 12" x 5/8" Machine Bolt w/ Nut 1.07 $ 0 **0 $** 2"x1/8" Flat Square Washer 0.30 $ 0 **0 $** 5/8"-11 Square Nut 0.22 $ 0 **0 $ Stranded Hardware** 3 Bolt Clamp 4.38 $ 0 **0 $** 3 Bolt Clamp Curved 5.48 $ 0 **0 $** 5/8"Thimble Eye Bolt 3.90 $ 0 **0 $** Bug nut(D Lash Clamp) 0.30 $ 0 **0 $** Guy Hook - Ram's Head 3.01 $ 0 **0 $** Arnco 1.25" HDPE Conduit 0.52 $ 555,403 **288,810 $** Channell 24x36x24 Handhole 193.40 $ 1,111 **214,830 $** Channell Pedestal 55.00 $ 1,400 **77,000 $** Pedestal Stickers 0.70 $ 1,400 **980 $ Underground** 0.75" Flex Conduit - 20' 9.70 $ - **- $** Screw Lags 0.25 $ - **- $** 5/8" x 8' Copper Ground Rod 10.31 $ 2,511 **25,886 $** Ground Rod Clamp 0.90 $ 2,511 **2,260 $** Warning Marker 14.60 $ 3,332 **48,653 $** "A" Splice Enclosure 220.00 $ 222 **48,875 $** "C" Splice Enclosure 250.00 $ 161 **40,270 $** "D" Splice Enclosure 285.00 $ 111 **31,658 $** Splice Trays for A Enclosure 20.00 $ 444 **8,886 $ Technical** Splice Trays for C Enclosure 22.00 $ 533 **11,731 $** Splice Trays for D Enclosure 25.00 $ 666 **16,662 $** Aerial Clamps for FOSC 450 25.82 $ 494 **12,763 $** Splitter Cabinets 5,000.00 $ 12 **62,222 $** Splitters 800.00 $ 37 **29,714 $** AirFOSC 150.00 $ 520 **78,000 $** Splice Protector (sleeves) 0.27 $ 16,103 **4,348 $ Total 1,371,803 $**

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR WEBSTER TOWNSHIP 16

**Township PROJECT: SERVICE AREA: Unit Cost No. of Total FTTH Network Webster Township, MI Units Costs**

**DROP TO THE HOME**

CO2(6M) [Hang stranded fiber] 0.90 $ 1 **1 $** BMUDT [Trench No Conduit] 2.00 $ 561,599 **1,123,199 $** BMUDD [Bore Conduit] 12.00 $ 62,400 **748,799 $** BFO2 [Pull Fiber] 1.00 $ 623,999 **623,999 $ Labor** BM83 [Drop Riser Guard] 25.00 $ 1,040 **26,000 $** BM(0.75) [House Cane] 13.00 $ 1,040 **13,520 $** PM2A [Aerial Bond] 4.50 $ 0 **0 $** BM2-A [Grounding] 40.00 $ 0 **0 $** NID [Place NID Housing] 25.00 $ 1,040 **26,000 $** HO1 [Splicing] 25.00 $ 1,040 **26,000 $** HO1T [Testing] 4.00 $ 1,040 **4,160 $** 2 Ct. Loose Tube Fiber 0.20 $ 624,000 **124,800 $** Lashing wire 0.038" Type 302 1,600' Roll 24.00 $ 0 **0 $** 0.75" Flex Conduit - 20' 9.70 $ 1,040 **10,088 $** Arnco 0.75" HDPE Conduit 0.30 $ 62,400 **18,720 $** Weaver(Bonding Clamp) 1.84 $ 0 **0 $ Materials** #6 Bare Copper Ground Wire 0.38 $ 0 **0 $** #4 Split Bolt 1.33 $ 0 **0 $** 5/8" x 8' Copper Ground Rod 10.31 $ 0 **0 $** Ground Rod Clamp 0.90 $ 0 **0 $** Splice Protector (sleeves) 0.27 $ 0 **0 $** Calix 700 Series ONT Enclosure - $ 1,040 **- $**

**Total 2,745,286 $ PROFESSIONAL SERVICES**

OSP Field Verification/GPS Mapping 86.11 $ 1,262 **108,696 $ Plant Design/Mgmt** OSP Drafting/Design 83.53 $ 596 **49,790 $** OSP Project Management/Inspection 92.03 $ 6,300 **579,800 $** Service Entrance Mapping/Drafting 85.00 $ 468 **39,780 $ Drop Design/Mgmt** Service Entrance Mgmt/Inspection - $ - **- $ - $ Total 778,066 $**

**GRAND TOTAL 10,551,162 $**

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR WEBSTER TOWNSHIP 17

MODEL ASSUMPTIONS AND OUTPUT The below inputs drive the 20-year Pulse financial model created for Webster Township.

**Plant Statistics:**

**Construction Statistics:** Homes Passed 2,800

Make Ready Per Aerial Mile $0 Small Bus Passed 0

Aerial Production 75 miles per month Large Commercial 0

UG Production 5 miles per month Total Miles 105.2

Avg. Length of Drop fiber along main 400.0 UG % 100.0%

Avg. Length of Drop fiber from main to ONT 200.0 Do you own the poles? No

UG Drop % 100.0% Pole Condition Good

Avg. Feet between splices 500.0 Underground Construction Conditions Good Number of Substations 0

**Capital Expenditures**

**Summary of Total Capital Required**

**Construction Costs** $10,551,162 **Ongoing Capital Costs at Launch** $36,000 **Total Project Capital Costs** $10,587,162

**Construction Costs**

Unit Cost x Quantity = Total Headend/Office Space $244,072 0 $0 Cabinet Equipment $129,072 0 $0 Aerial Construction (A) $26,122 0.0 $0 Underground Construction (B) $73,829 105.2 $7,766,096 Drop Construction (C) $2,678 1,040 $2,785,066 **Total Construction $10,551,162**

*Details for construction costs above:*

(A) Aerial Cost Per Mile (B) Underground Cost Per Mile (C) Drop Cost Per Home

Plant Labor (inc. Make Ready) $5,632 Plant Labor $48,429 Plant Labor $2,438 Technical Labor $5,341 Technical Labor $5,341 Tech. Labor $54 Fiber $3,493 Fiber $3,493 Fiber $120 Aerial Materials $1,356 UG Materials $6,267 Materials $28 Technical Mat. $3,281 Technical Mat. $3,281 NID Enclosure $0 Design $1,507 Design $1,507 Design $38 Constr. Mgmt $5,512 Constr. Mgmt $5,512 Constr. Mgmt $0 Total Aerial $26,122 Total UG $73,829 Total Drop $2,678

**Ongoing Capital Costs at Launch**

Cost x Quantity = Total Pole Assessment $57 0 $0 Permits $1,200 30.0 $36,000 Simple PV of Pole Rent (20 yrs) $0 20 $0 Plant Maintenance Materials $0 0 $0 **$36,000**

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR WEBSTER TOWNSHIP 18

DETAIL PROJECT COSTS – AERIAL CONSTRUCTION FOR AREAS NOT SERVED BY CHARTER/COMCAST CAPITAL BUDGET ASSUMPTIONS Capital costs to construct the network will be approximately $4,700,000. The timeline anticipated for the build is 12 months based on achievable milestones. The following assumptions were made in the capital projections for the financial model:

• Outside Plant Construction:

o 55.2 miles of distribution plant will be constructed over the course of 12 months. Construction is

assumed to begin in Month 4 and to be completed by Month 16. o The cost of aerial construction is estimated at $58,282 per mile. The placeholder for make ready costs are $30,758 per mile. Total aerial labor excluding make ready is $11,280 (plant labor less make ready plus technical labor). Materials cost per mile is $8,141. We have assumed a majority (60%) of fiber will be 96 count fiber. The $58,282 referenced above includes professional services discussed below. o The cost of underground construction is estimated at $104,905 per mile. The limited number of underground miles (~1) will cause high construction bids per mile in order to pay for the cost of mobilizing their equipment and crews. The $104,905 referenced above includes professional services discussed below.

• Drop Construction:

o 500 homes are expected to sign up for services over the course of two years. o The cost of drop construction is $1,565 per home. Labor is $1,380 and materials are $147. Aerial pole line is utilized and 40% underground for drops is assumed. Conduit is not utilized unless boring (driveways and sidewalks) is required. o Drop length of 600 feet is assumed per home. o Inside the home installation including ONT electronics will be the responsibility of the ISP partner.

• Professional Services:

o The mapping of the outside plant is required to create the fiber design. This will require an estimated 711 hours over the course of six months to complete. The design of the outside plant is estimated at 336 hours over the course of six months to complete. o Project management for project planning, inspection of contractors and invoice approval/reconciliation is estimated to require a crew of two over the course of 12 months for a total of 3,780 hours. o Drop surveys to provide the fiber route from the distributed split to the side of the house for contractors is estimated at 225 hours to map and draft. These will be completed over the course of a year.

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR WEBSTER TOWNSHIP 19

CAPITAL BUDGET

**Township PROJECT: SERVICE AREA: Unit Cost No. of Total FTTH Network Webster Township, MI Units Costs**

**OUTSIDE PLANT LABOR Pre-Construction** Complete Make Ready Construction 30,758.65 $ 52.5 **1,613,568 $** PM99 (Move Pole Facilities) 72.00 $ 165 **11,916 $** CO12(6M) [Hang stranded fiber] 0.95 $ 27,698 **26,313 $** CO24(6M) [Hang stranded fiber] 0.95 $ 27,698 **26,313 $** CO48(6M) [Hang stranded fiber] 0.95 $ 27,698 **26,313 $** CO96(6M) [Hang stranded fiber] 0.95 $ 166,190 **157,881 $ Aerial** CO144(6M) [Hang stranded fiber] 1.05 $ 27,698 **29,083 $** PM2A [Aerial Bond] 4.50 $ 331 **1,489 $** PF3-3 [Place Screw Anchor] 40.00 $ 157 **6,295 $** PE1-3 [Place down guy] 24.00 $ 157 **3,777 $** PF3-AUX [Install auxiliary eye] 8.00 $ 105 **839 $** PM69 [Place fiber storage loop] 50.00 $ 105 **5,246 $** BMUDT [Trench Conduit] 5.50 $ 11,662 **64,144 $** BMUDD [Bore Conduit] 12.00 $ 2,916 **34,987 $** BFO12 [Pull Fiber] 0.90 $ 1,458 **1,312 $** BFO24 [Pull Fiber] 0.90 $ 1,458 **1,312 $** BFO48 [Pull Fiber] 0.90 $ 1,458 **1,312 $** BFO96 [Pull Fiber] 0.90 $ 8,747 **7,872 $ Underground** BFO144 [Pull Fiber] 0.90 $ 1,458 **1,312 $** BM71 [Rock Adder] 10.00 $ 729 **7,289 $** BD5 [Pedestals] 60.00 $ 500 **30,000 $** BM2-A [Grounding] 40.00 $ 500 **20,000 $** BM80 [Risers] 50.00 $ 58 **2,916 $** BM53 [Markers] 20.00 $ 87 **1,749 $** BHF [Handholes] 300.00 $ 29 **8,747 $** SPL [Install Splitter] 50.00 $ 18 **893 $** SPL-CBN [Install Splitter Cabinet] 1,000.00 $ 4 **4,444 $** HACO12 [Splice Enclosures for 12 ct] 125.00 $ 58 **7,289 $** HACO24 [Splice Enclosures for 24 ct] 125.00 $ 58 **7,289 $ Technical** HACO48 [Splice Enclosures for 48 ct] 135.00 $ 58 **7,872 $** HACO96 [Splice Enclosures for 96 ct] 150.00 $ 50 **7,500 $** HACO144 [Splice Enclosures for 144 ct] 150.00 $ 58 **8,747 $** TERM 150.00 $ 250 **37,500 $** HO1 [Splicing with bi-directional testing] 25.00 $ 9,548 **238,690 $ Total 2,412,211 $**

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR WEBSTER TOWNSHIP 20

**Township PROJECT: SERVICE AREA: Unit Cost No. of Total FTTH Network Webster Township, MI Units Costs**

**OUTSIDE PLANT MATERIALS**

12 ct. Loose Tube Fiber 0.30 $ 32,712 **9,814 $** 24 ct. Loose Tube Fiber 0.35 $ 32,712 **11,449 $ Fiber** 48 ct. Loose Tube Fiber 0.45 $ 32,712 **14,721 $** 96 ct. Loose Tube Fiber 0.70 $ 196,274 **137,392 $** 144 ct. Loose Tube Fiber 1.00 $ 32,712 **32,712 $** 1/4" EHS Strand 0.14 $ 280,918 **39,329 $** Lashing wire 0.038" Type 302 1,600' Roll 24.00 $ 248 **5,941 $** Weaver(Bonding Clamp) 1.75 $ 488 **855 $** #6 Bare Copper Ground Wire 0.34 $ 860 **292 $ Aerial** Anchor 8" Helix 26.89 $ 157 **4,232 $** Sno-Shoe (pair) 39.95 $ 105 **4,191 $** Stainless Steel Strap 0.20 $ 3,520 **704 $** 1/2" Spacer 0.12 $ 3,520 **422 $** Guy Guards 3.08 $ 157 **485 $** Auxilliary Eye 14.39 $ 105 **1,510 $** #4 Split Bolt 0.81 $ 331 **268 $** Preformed Deadend 1/4" Strand 3.21 $ 977 **3,135 $** 12" x 5/8" Machine Bolt w/ Nut 1.07 $ 827 **885 $** 2"x1/8" Flat Square Washer 0.30 $ 1,970 **591 $** 5/8"-11 Square Nut 0.22 $ 1,316 **289 $ Stranded Hardware** 3 Bolt Clamp 4.38 $ 993 **4,349 $** 3 Bolt Clamp Curved 5.48 $ 331 **1,814 $** 5/8"Thimble Eye Bolt 3.90 $ 157 **614 $** Bug nut(D Lash Clamp) 0.30 $ 3,520 **1,056 $** Guy Hook - Ram's Head 3.01 $ 157 **474 $** Arnco 1.25" HDPE Conduit 0.52 $ 14,578 **7,581 $** Channell 24x36x24 Handhole 193.40 $ 29 **5,639 $** Channell Pedestal 55.00 $ 500 **27,500 $** Pedestal Stickers 0.70 $ 500 **350 $ Underground** 0.75" Flex Conduit - 20' 9.70 $ 117 **1,131 $** Screw Lags 0.25 $ 1,166 **292 $** 5/8" x 8' Copper Ground Rod 10.31 $ 529 **5,456 $** Ground Rod Clamp 0.90 $ 529 **476 $** Warning Marker 14.60 $ 87 **1,277 $** "A" Splice Enclosure 220.00 $ 117 **25,657 $** "C" Splice Enclosure 250.00 $ 108 **27,078 $** "D" Splice Enclosure 285.00 $ 58 **16,619 $** Splice Trays for A Enclosure 20.00 $ 233 **4,665 $ Technical** Splice Trays for C Enclosure 22.00 $ 375 **8,249 $** Splice Trays for D Enclosure 25.00 $ 350 **8,747 $** Aerial Clamps for FOSC 450 25.82 $ 283 **7,313 $** Splitter Cabinets 5,000.00 $ 4 **22,222 $** Splitters 800.00 $ 18 **14,286 $** AirFOSC 150.00 $ 250 **37,500 $** Splice Protector (sleeves) 0.27 $ 9,548 **2,578 $ Total 502,140 $**

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR WEBSTER TOWNSHIP 21

**Township PROJECT: SERVICE AREA: Unit Cost No. of Total FTTH Network Webster Township, MI Units Costs**

**DROP TO THE HOME**

CO2(6M) [Hang stranded fiber] 0.90 $ 180,000 **162,000 $** BMUDT [Trench No Conduit] 2.00 $ 108,000 **216,000 $** BMUDD [Bore Conduit] 12.00 $ 12,000 **144,000 $** BFO2 [Pull Fiber] 1.00 $ 120,000 **120,000 $ Labor** BM83 [Drop Riser Guard] 25.00 $ 200 **5,000 $** BM(0.75) [House Cane] 13.00 $ 200 **2,600 $** PM2A [Aerial Bond] 4.50 $ 300 **1,350 $** BM2-A [Grounding] 40.00 $ 300 **12,000 $** NID [Place NID Housing] 25.00 $ 500 **12,500 $** HO1 [Splicing] 25.00 $ 500 **12,500 $** HO1T [Testing] 4.00 $ 500 **2,000 $** 2 Ct. Loose Tube Fiber 0.20 $ 300,000 **60,000 $** Lashing wire 0.038" Type 302 1,600' Roll 24.00 $ 135 **3,240 $** 0.75" Flex Conduit - 20' 9.70 $ 200 **1,940 $** Arnco 0.75" HDPE Conduit 0.30 $ 12,000 **3,600 $** Weaver(Bonding Clamp) 1.84 $ 300 **553 $ Materials** #6 Bare Copper Ground Wire 0.38 $ 300 **113 $** #4 Split Bolt 1.33 $ 300 **399 $** 5/8" x 8' Copper Ground Rod 10.31 $ 300 **3,093 $** Ground Rod Clamp 0.90 $ 300 **270 $** Splice Protector (sleeves) 0.27 $ 600 **160 $** Calix 700 Series ONT Enclosure - $ 500 **- $**

**Total 763,317 $ PROFESSIONAL SERVICES**

OSP Field Verification/GPS Mapping 86.11 $ 663 **57,061 $ Plant Design/Mgmt** OSP Drafting/Design 83.53 $ 313 **26,137 $** OSP Project Management/Inspection 92.46 $ 3,780 **349,500 $** Service Entrance Mapping/Drafting 85.00 $ 225 **19,125 $ Drop Design/Mgmt** Service Entrance Mgmt/Inspection - $ - **- $ - $ Total 451,823 $**

**GRAND TOTAL 4,129,491 $**

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR WEBSTER TOWNSHIP 22

MODEL ASSUMPTIONS AND OUTPUT The below inputs drive the 20-year Pulse financial model created for Webster Township.

**Plant Statistics:**

**Construction Statistics:** Homes Passed Small Bus Passed Large Commercial Total Miles UG % Do you own the poles? Pole Condition Underground Construction Conditions 1,000 0 0 55.2 5.0% No Good Good

Make Ready Per Aerial Mile $30,759 Aerial Production 75 miles per month UG Production 5 miles per month Avg. Length of Drop fiber along main 400.0 Avg. Length of Drop fiber from main to ONT 200.0 UG Drop % 40.0% Avg. Feet between splices 500.0

Number of Substations 0

**Capital Expenditures**

**Summary of Total Capital Required**

**Construction Costs** $4,129,491 **Ongoing Capital Costs at Launch** $587,649 **Total Project Capital Costs** $4,717,140

**Construction Costs**

Unit Cost x Quantity = Total Headend/Office Space $201,336 0 $0 Cabinet Equipment $86,336 0 $0 Aerial Construction (A) $58,282 52.5 $3,057,407 Underground Construction (B) $104,905 2.8 $289,642 Drop Construction (C) $1,565 500 $782,442 **Total Construction $4,129,491**

*Details for construction costs above:*

(A) Aerial Cost Per Mile (B) Underground Cost Per Mile (C) Drop Cost Per Home

Plant Labor (inc. Make Ready) $36,391 Plant Labor $66,263 Plant Labor $1,326 Technical Labor $5,799 Technical Labor $5,799 Tech. Labor $54 Fiber $3,732 Fiber $3,732 Fiber $120 Aerial Materials $1,356 UG Materials $18,107 Materials $27 Technical Mat. $3,168 Technical Mat. $3,168 NID Enclosure $0 Design $1,507 Design $1,507 Design $38 Constr. Mgmt $6,329 Constr. Mgmt $6,329 Constr. Mgmt $0 Total Aerial $58,282 Total UG $104,905 Total Drop $1,565

**Ongoing Capital Costs at Launch**

Cost x Quantity = Total Pole Assessment $54 1,655 $89,367 Permits $1,200 1.5 $1,800 Simple PV of Pole Rent (20 yrs) $24,824 20 $496,482 Plant Maintenance Materials $0 0 $0 **$587,649**

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR WEBSTER TOWNSHIP 23

DETAIL PROJECT COSTS – UNDERGROUND CONSTRUCTION FOR AREAS NOT SERVED BY CHARTER/COMCAST CAPITAL BUDGET ASSUMPTIONS Capital costs to construct the network will be approximately $5,600,000. The timeline anticipated for the build is 15 months based on achievable milestones plus the construction preparation time. The following assumptions were made in the capital projections for the financial model:

• Outside Plant Construction:

o 55.2 miles of distribution plant will be constructed over the course of 15 months. Construction is

assumed to begin in Month 4 and to be completed by Month 19. o The cost of aerial construction is $0. o The cost of underground construction is estimated at $76,067 per mile. Labor is $53,802 per mile including both plant and technical (splicing). Materials are $12,642 per mile which includes fiber, conduit, splitters, splice enclosures and other underground materials. The $76,067 referenced above includes professional services discussed below.

• Drop Construction:

o 500 homes are expected to sign up for services over the course of two years. o The cost of drop construction is $2,678 per home at 100% underground. Labor is $2,492 (all underground) and materials are $148. Drops do not include conduit unless boring (driveways and sidewalks) is required. o Drop length of 600 feet is assumed per home. o Inside the home installation including ONT electronics will be the responsibility of the ISP partner.

• Professional Services:

o The mapping of the outside plant is required to create the fiber design. This will require an estimated 711 hours over the course of six months to complete. The design of the outside plant is estimated at 336 hours over the course of six months to complete. o Project management for project planning, inspection of contractors and invoice approval/reconciliation is estimated to require a crew of two over the course of 15 months for a total of 4,860 hours. o Drop surveys to provide the fiber route from the distributed split to the side of the house for contractors is estimated at 225 hours to map and draft. These will be completed over the course of a year.

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR WEBSTER TOWNSHIP 24

CAPITAL BUDGET

**Township PROJECT: SERVICE AREA: Unit Cost No. of Total FTTH Network Webster Township, MI Units Costs**

**OUTSIDE PLANT LABOR Pre-Construction** Complete Make Ready Construction 0.00 $ 0.0 **0 $** PM99 (Move Pole Facilities) 72.00 $ 0 **0 $** CO12(6M) [Hang stranded fiber] 0.95 $ 0 **0 $** CO24(6M) [Hang stranded fiber] 0.95 $ 0 **0 $** CO48(6M) [Hang stranded fiber] 0.95 $ 0 **0 $** CO96(6M) [Hang stranded fiber] 0.95 $ 0 **0 $ Aerial** CO144(6M) [Hang stranded fiber] 1.05 $ 0 **0 $** PM2A [Aerial Bond] 4.50 $ 0 **0 $** PF3-3 [Place Screw Anchor] 40.00 $ 0 **0 $** PE1-3 [Place down guy] 24.00 $ 0 **0 $** PF3-AUX [Install auxiliary eye] 8.00 $ 0 **0 $** PM69 [Place fiber storage loop] 50.00 $ 0 **0 $** BMUDT [Trench Conduit] 5.50 $ 233,249 **1,282,871 $** BMUDD [Bore Conduit] 12.00 $ 58,312 **699,748 $** BFO12 [Pull Fiber] 0.90 $ 29,156 **26,241 $** BFO24 [Pull Fiber] 0.90 $ 29,156 **26,241 $** BFO48 [Pull Fiber] 0.90 $ 29,156 **26,241 $** BFO96 [Pull Fiber] 0.90 $ 174,937 **157,443 $ Underground** BFO144 [Pull Fiber] 0.90 $ 29,156 **26,241 $** BM71 [Rock Adder] 10.00 $ 14,578 **145,781 $** BD5 [Pedestals] 60.00 $ 500 **30,000 $** BM2-A [Grounding] 40.00 $ 500 **20,000 $** BM80 [Risers] 50.00 $ - **- $** BM53 [Markers] 20.00 $ 1,749 **34,987 $** BHF [Handholes] 300.00 $ 583 **174,937 $** SPL [Install Splitter] 50.00 $ 18 **893 $** SPL-CBN [Install Splitter Cabinet] 1,000.00 $ 4 **4,444 $** HACO12 [Splice Enclosures for 12 ct] 125.00 $ 58 **7,289 $** HACO24 [Splice Enclosures for 24 ct] 125.00 $ 58 **7,289 $ Technical** HACO48 [Splice Enclosures for 48 ct] 135.00 $ 58 **7,872 $** HACO96 [Splice Enclosures for 96 ct] 150.00 $ 50 **7,500 $** HACO144 [Splice Enclosures for 144 ct] 150.00 $ 58 **8,747 $** TERM 150.00 $ 250 **37,500 $** HO1 [Splicing with bi-directional testing] 25.00 $ 9,548 **238,690 $ Total 2,970,954 $**

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR WEBSTER TOWNSHIP 25

**Township PROJECT: SERVICE AREA: Unit Cost No. of Total FTTH Network Webster Township, MI Units Costs**

**OUTSIDE PLANT LABOR OUTSIDE PLANT MATERIALS**

12 ct. Loose Tube Fiber 0.30 $ 30,614 **9,184 $** 24 ct. Loose Tube Fiber 0.35 $ 30,614 **10,715 $ Fiber** 48 ct. Loose Tube Fiber 0.45 $ 30,614 **13,776 $** 96 ct. Loose Tube Fiber 0.70 $ 183,684 **128,579 $** 144 ct. Loose Tube Fiber 1.00 $ 30,614 **30,614 $** 1/4" EHS Strand 0.14 $ 0 **0 $** Lashing wire 0.038" Type 302 1,600' Roll 24.00 $ 0 **0 $** Weaver(Bonding Clamp) 1.75 $ 0 **0 $** #6 Bare Copper Ground Wire 0.34 $ 1,083 **368 $ Aerial** Anchor 8" Helix 26.89 $ 0 **0 $** Sno-Shoe (pair) 39.95 $ 0 **0 $** Stainless Steel Strap 0.20 $ 0 **0 $** 1/2" Spacer 0.12 $ 0 **0 $** Guy Guards 3.08 $ 0 **0 $** Auxilliary Eye 14.39 $ 0 **0 $** #4 Split Bolt 0.81 $ 0 **0 $** Preformed Deadend 1/4" Strand 3.21 $ 0 **0 $** 12" x 5/8" Machine Bolt w/ Nut 1.07 $ 0 **0 $** 2"x1/8" Flat Square Washer 0.30 $ 0 **0 $** 5/8"-11 Square Nut 0.22 $ 0 **0 $ Stranded Hardware** 3 Bolt Clamp 4.38 $ 0 **0 $** 3 Bolt Clamp Curved 5.48 $ 0 **0 $** 5/8"Thimble Eye Bolt 3.90 $ 0 **0 $** Bug nut(D Lash Clamp) 0.30 $ 0 **0 $** Guy Hook - Ram's Head 3.01 $ 0 **0 $** Arnco 1.25" HDPE Conduit 0.52 $ 291,562 **151,612 $** Channell 24x36x24 Handhole 193.40 $ 583 **112,776 $** Channell Pedestal 55.00 $ 500 **27,500 $** Pedestal Stickers 0.70 $ 500 **350 $ Underground** 0.75" Flex Conduit - 20' 9.70 $ - **- $** Screw Lags 0.25 $ - **- $** 5/8" x 8' Copper Ground Rod 10.31 $ 1,083 **11,167 $** Ground Rod Clamp 0.90 $ 1,083 **975 $** Warning Marker 14.60 $ 1,749 **25,541 $** "A" Splice Enclosure 220.00 $ 117 **25,657 $** "C" Splice Enclosure 250.00 $ 108 **27,078 $** "D" Splice Enclosure 285.00 $ 58 **16,619 $** Splice Trays for A Enclosure 20.00 $ 233 **4,665 $ Technical** Splice Trays for C Enclosure 22.00 $ 375 **8,249 $** Splice Trays for D Enclosure 25.00 $ 350 **8,747 $** Aerial Clamps for FOSC 450 25.82 $ 283 **7,313 $** Splitter Cabinets 5,000.00 $ 4 **22,222 $** Splitters 800.00 $ 18 **14,286 $** AirFOSC 150.00 $ 250 **37,500 $** Splice Protector (sleeves) 0.27 $ 9,548 **2,578 $ Total 698,071 $**

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR WEBSTER TOWNSHIP 26

**Township PROJECT: SERVICE AREA: Unit Cost No. of Total FTTH Network Webster Township, MI Units Costs**

**NETWORK AND ACCESS EQUIPMENT DROP TO THE HOME**

CO2(6M) [Hang stranded fiber] 0.90 $ 0 **0 $** BMUDT [Trench No Conduit] 2.00 $ 270,000 **539,999 $** BMUDD [Bore Conduit] 12.00 $ 30,000 **360,000 $** BFO2 [Pull Fiber] 1.00 $ 300,000 **300,000 $ Labor** BM83 [Drop Riser Guard] 25.00 $ 500 **12,500 $** BM(0.75) [House Cane] 13.00 $ 500 **6,500 $** PM2A [Aerial Bond] 4.50 $ 0 **0 $** BM2-A [Grounding] 40.00 $ 0 **0 $** NID [Place NID Housing] 25.00 $ 500 **12,500 $** HO1 [Splicing] 25.00 $ 500 **12,500 $** HO1T [Testing] 4.00 $ 500 **2,000 $** 2 Ct. Loose Tube Fiber 0.20 $ 300,000 **60,000 $** Lashing wire 0.038" Type 302 1,600' Roll 24.00 $ 0 **0 $** 0.75" Flex Conduit - 20' 9.70 $ 500 **4,850 $** Arnco 0.75" HDPE Conduit 0.30 $ 30,000 **9,000 $** Weaver(Bonding Clamp) 1.84 $ 0 **0 $ Materials** #6 Bare Copper Ground Wire 0.38 $ 0 **0 $** #4 Split Bolt 1.33 $ 0 **0 $** 5/8" x 8' Copper Ground Rod 10.31 $ 0 **0 $** Ground Rod Clamp 0.90 $ 0 **0 $** Splice Protector (sleeves) 0.27 $ 0 **0 $** Calix 700 Series ONT Enclosure - $ 500 **- $**

**Total 1,319,849 $ PROFESSIONAL SERVICES**

OSP Field Verification/GPS Mapping 86.11 $ 663 **57,061 $ Plant Design/Mgmt** OSP Drafting/Design 83.53 $ 313 **26,137 $** OSP Project Management/Inspection 92.22 $ 4,860 **448,200 $** Service Entrance Mapping/Drafting 85.00 $ 225 **19,125 $ Drop Design/Mgmt** Service Entrance Mgmt/Inspection - $ - **- $ - $ Total 550,523 $**

**GRAND TOTAL 5,539,397 $**

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR WEBSTER TOWNSHIP 27

MODEL ASSUMPTIONS AND OUTPUT The below inputs drive the 20-year Pulse financial model created for Webster Township.

**Plant Statistics:**

**Construction Statistics:** Homes Passed 1,000

Make Ready Per Aerial Mile $0 Small Bus Passed 0

Aerial Production 75 miles per month Large Commercial 0

UG Production 5 miles per month Total Miles 55.2

Avg. Length of Drop fiber along main 400.0 UG % 100.0%

Avg. Length of Drop fiber from main to ONT 200.0 Do you own the poles? No

UG Drop % 100.0% Pole Condition Good

Avg. Feet between splices 500.0 Underground Construction Conditions Good Number of Substations 0

**Capital Expenditures**

**Summary of Total Capital Required**

**Construction Costs** $5,539,397 **Ongoing Capital Costs at Launch** $36,000 **Total Project Capital Costs** $5,575,397

**Construction Costs**

Unit Cost x Quantity = Total Headend/Office Space $201,336 0 $0 Cabinet Equipment $86,336 0 $0 Aerial Construction (A) $29,071 0.0 $0 Underground Construction (B) $76,067 55.2 $4,200,423 Drop Construction (C) $2,678 500 $1,338,974 **Total Construction $5,539,397**

*Details for construction costs above:*

(A) Aerial Cost Per Mile (B) Underground Cost Per Mile (C) Drop Cost Per Home

Plant Labor (inc. Make Ready) $5,632 Plant Labor $48,003 Plant Labor $2,438 Technical Labor $5,799 Technical Labor $5,799 Tech. Labor $54 Fiber $3,493 Fiber $3,493 Fiber $120 Aerial Materials $1,356 UG Materials $5,981 Materials $28 Technical Mat. $3,168 Technical Mat. $3,168 NID Enclosure $0 Design $1,507 Design $1,507 Design $38 Constr. Mgmt $8,117 Constr. Mgmt $8,117 Constr. Mgmt $0 Total Aerial $29,071 Total UG $76,067 Total Drop $2,678

**Ongoing Capital Costs at Launch**

Cost x Quantity = Total Pole Assessment $57 0 $0 Permits $1,200 30.0 $36,000 Simple PV of Pole Rent (20 yrs) $0 20 $0 Plant Maintenance Materials $0 0 $0 **$36,000**

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR WEBSTER TOWNSHIP 28

DETAIL PROJECT COSTS – ISP IF WEBSTER BUILDS ENTIRE TOWNSHIP CAPITAL BUDGET ASSUMPTIONS Capital costs to operate the network will be approximately $713,000. The following assumptions were made in the capital projections for the financial model:

• Network Equipment:

o An ISP will build a headend to house the GPON network gear and router. Pulse recommends using reliable, proven network equipment. The Calix E7 Series 10GE has been modeled and include 10GE transceivers and Ethernet cards. The router housed in the headend is assumed to be a Cisco ASR-1000 router or something equivalent. The total cost of the headend is $244,072. This cost is required at the beginning of the project.

• In-Home Installation:

o Inside the home installation/service calls will be handled by an internal technician, but won’t be able to install all customers initially. The ISP will need to hire 3rd party technicians to fulfill the excess demand at the time of launch. The 3rd party help is assumed at $125 per home. o The assumed Calix 700 Series ONT is installed inside the home and transmits a wireless signal to devices in the home. Each ONT costs $275 for the equipment. Only homes that sign up for service will have an ONT installed. o The $30 ONT enclosure is split in our model (total price of $275 + $30 = $305) installed at time of

drop.

• Equipment

o Trucks have been included in the budget for the inside the home technician. We have assumed a

cost of $35,000 per truck. o Fiber testing equipment will be required for troubleshooting after construction. We have assumed

of each of the three basic equipment for a total of $18,000. o Computers and iPads for the new staff are in the budget for $1,500.

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR WEBSTER TOWNSHIP 29

CAPITAL BUDGET

**ISP PROJECT: SERVICE AREA: Unit Cost No. of Total FTTH Network Webster Township, MI Units Costs**

**NETWORK AND ACCESS EQUIPMENT**

Headend Room Build to Suit 65,000.00 $ 1 **65,000 $** Cisco ASR-1000 Routers 50,000.00 $ 1 **50,000 $** E7-2 Package Chassis 696.50 $ 2 **1,393 $** Battery String Kit, Heater and Connectors 2,239.00 $ 1 **2,239 $ Main Office** 10GE SFP+ Transceiver 20Km, 1310nm 2,096.50 $ 3 **6,290 $** GPON SFP OIM, Class B+ 1490/1310nm 1,200.00 $ 37 **44,571 $** E7-2 10GE-4 Ethernet Card 5,596.50 $ 1 **5,597 $** Fiber Management 5,000.00 $ 4 **20,000 $** E7-2 8 Card PON unit 9,796.50 $ 5 **48,983 $ Total 244,072 $ DROP TO THE HOME**

Contracted Installation Labor 125.00 $ 656 **81,981 $ Installation** Calix 700 Series ONT Electronics 275.00 $ 1,040 **286,000 $** Calix 700 Series ONT Enclosure 30.00 $ 1,040 **31,200 $** Miscellaneous Materials $15 1,040 **15,600 $ Total 414,781 $ EQUIPMENT**

Trimble Units 3,500 $ - **- $** Computers, iPads 500 $ 3 **1,500 $ Devices** OTDR 15,000 $ 1 **15,000 $** Power Meter 1,000 $ 1 **1,000 $** Light Source 2,000 $ 1 **2,000 $** Pickup Trucks 35,000 $ 1 **35,000 $** Bucket Trucks 40,000 $ - **- $** Trailer 10,000 $ - **- $ Vehicles** Trench Machine 75,000 $ - **- $** Bore Machine 125,000 $ - **- $** Wenches, tool boxes, etc. 10,000 $ - **- $** ATV's 5,000 $ - **- $ Plant Maintenance** Materials - $ - **- $**

**Total 54,500 $**

*Does not include operating resources or cash cushion* **GRAND TOTAL 713,353 $**

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR WEBSTER TOWNSHIP 30

MODEL ASSUMPTIONS The below inputs drive the 20-year Pulse financial model created for Webster Township’s ISP partner.

**Plant Statistics:** Homes Passed 2,800 Small Bus Passed 0 Large Commercial 0 Total Miles 105

**Ongoing Capital Costs:** External Installation $125 per install ONT (plus $30 enclosure) $275 each Installation Materials $15 Plant Maintenance Materials $20 per mile

**Customer Metrics:** Res Customer Take Rate 37% Small Bus Customer Take Rate 30% Commercial Take Rate 50% Timeline to Launch Services 8 Months Customer Ramp 12 Months Data Only - Low Tier $39.95 Data Only - High Tier $49.95 Data Only Upsell to High Tier 25% VoIP Only $39.95 VoIP Federal Line Charge $3.95 Bundle Discount - Double Play $5.00 % order for Double Play - Data/VoIP 30% Installation revenue $0.00 Small Bus Pricing $69.95 Commercial Pricing $1,200.00 Cell Tower Opportunities 0 Cell Tower Pricing $2,250.00 FCC CAF or Other Revenue from Grants $0 Annual revenue Average Retail Price Increase 0.5% Future Community Dev. from Fiber 1.0% After Year 5

**Operating Costs:** Bandwidth $2,199 Monthly VoIP $13.00 Per Line Customer Care $10.00 Per Sub Network Management $4.00 Per Sub

Admin/Marketing Resource 1 Admin/Marketing Resource $50,000 Base salary Maintenance Technicians 0 Maintenance Technicians $50,000 Base salary Installation Technicians 1 Installation Technicians $40,000 Base salary Internal installs 4.0 Per day per tech Benefits 50.0%

Bad Debt Expense 1.0% Vehicle Repairs and Fuel $600 monthly Facilities Rent $0 Facilities Utilities $500 Property Tax Expense 1.0% as a percent of assets Marketing cost per connect $50 Other expenses 2.0% percent of revenue Average Expense Cost Increase 2.0%

**Balance Sheet Items:** Loan Term 8.4 years Interest Rate 3.8% Plant Depreciable Life 8.4 years

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR WEBSTER TOWNSHIP 31

FINANCIAL HIGHLIGHTS The highlights below come from the Management Dashboard tab from the Pulse financial model. These were chosen as important indicators for Webster Township to share with interested parties. A few very important notes to show financial feasibility of the project include:

• $886,000 loan assumed for first year which includes $173,000 operating runway

• Positive monthly cash flow after debt service

• Simple payback period for the project of 3.4 years is better than 8-year loan term

**Balance Sheet Overview**

Total Per Per Year 1 Year 2 Year 3 Year 4 Year 5 ($ 000's) Passing Customer Total Miles constructed 0 0 0 0 0

Homes passed 2,800 2,800 2,800 2,800 2,800 Take Rate 37.1% 37.1% 37.1% 37.1% 37.1% Residential Customers 1,040 1,040 1,040 1,040 1,040

Network Equipment ($ 000's) $244 $0 $0 $0 $0 $244 $87 $235 In-Home Capital Expenditures ($ 000's) $469 $0 $0 $0 $0 $469 $168 $451 Op. Exp. and Cash Cushion ($000's) $173 $71 $0 $0 $0 $244 $87 $234 Total Capital Expenditures ($ 000's) $886 $71 $0 $0 $0 $957 $342 $920

Grants Received ($ 000's) $0 $0 $0 $0 $0 $0 $0 $0 Debt Incurred ($ 000's) $886 $71 $0 $0 $0 $957 $342 $920

**Income Statement Overview** *All financial drivers stated per customer at end of year*

Year 1 Year 2 Year 3 Year 4 Year 5 Revenue $54.12 $54.23 $54.50 $54.77 $55.04 Variable Costs $20.01 $20.18 $20.58 $20.98 $21.38 Customer Margin $34.11 $34.05 $33.92 $33.79 $33.66 Operating Costs $10.95 $13.72 $13.95 $14.20 $14.44 Total EBITDA $23.16 $20.33 $19.97 $19.60 $19.22

Debt Service $9.88 $10.67 $10.67 $10.67 $10.67

Monthly Cash Flow $13.28 $9.66 $9.30 $8.93 $8.55

**Key Project Viability Indicators**

Year 1 Year 2 Year 3 Year 4 Year 5 EBITDA per Customer $23.16 $20.33 $19.97 $19.60 $19.22 Equity to Assets % -8.5% 8.8% 24.0% 38.2% 51.6% TIER 6.89 5.95 6.71 7.82 9.56

Simple Payback 3.4 years Project IRR 22.9% Loan Term 8.4 years Loan Interest Rate 3.8%

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR WEBSTER TOWNSHIP 32

**Webster Township, MI** 10-YEAR FINANCIAL SCHEDULES

**Projected Income Statement**

Year 1 Year 2 Year 3 Year 4 Year 5 Year 6 Year 7 Year 8 Year 9 Year 10 ***Mileage and Homes Passed:***

Aerial Miles 0 0 0 0 0 0 0 0 0 0 UG Miles 0 0 0 0 0 0 0 0 0 0 Miles 0 0 0 0 0 0 0 0 0 0

Homes passed 2,800 2,800 2,800 2,800 2,800 2,800 2,800 2,828 2,857 2,885 Businesses passed 0 0 0 0 0 0 0 0 0 0 Large businesses passed 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

***Customer Statistics:***

Res customer take rate 37.1% 37.1% 37.1% 37.1% 37.1% 41.7% 41.7% 41.7% 41.7% 41.7% Bus customer take rate N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A Large Bus customer take rate N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A

Res customers 1,040 1,040 1,040 1,040 1,040 1,168 1,168 1,180 1,192 1,204 Bus customers 0 0 0 0 0 0 0 0 0 0 Large bus customers 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 New Installs 1,040 0 0 0 0 128 0 12 12 12

***Projected Income Statement:***

Revenue:

Data only $98,556 $371,036 $372,620 $374,474 $376,329 $408,952 $426,899 $431,314 $437,762 $444,296 Double Play - Data/VoIP $80,945 $304,733 $306,034 $307,557 $309,080 $335,873 $350,613 $354,239 $359,535 $364,902 Small Business $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 Large Commercial $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 Installation Fees Collected $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 Cell Towers $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 FCC or Other Grants $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 **Total revenue $179,501 $675,769 $678,654 $682,031 $685,408 $744,825 $777,511 $785,553 $797,297 $809,198**

Bandwidth costs $19,791 $26,443 $26,894 $27,422 $27,949 $28,477 $29,005 $29,533 $30,060 $30,588 Telephone costs $12,935 $48,773 $49,605 $50,578 $51,552 $56,806 $60,095 $61,522 $63,251 $65,008 Customer care and billing $33,167 $125,060 $127,192 $129,688 $132,184 $145,658 $154,091 $157,749 $162,181 $166,687 Network management $13,267 $50,024 $50,877 $51,875 $52,874 $58,263 $61,636 $63,100 $64,873 $66,675 Pulse Integration consulting $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 **Total direct variable costs $79,160 $250,300 $254,567 $259,563 $264,559 $289,204 $304,827 $311,904 $320,365 $328,957**

**Total direct margin $100,341 $425,469 $424,087 $422,468 $420,850 $455,621 $472,684 $473,649 $476,932 $480,241 *Direct margin per customer*** *$8.04 $34.09 $33.98 $33.85 $33.72 $32.50 $33.72 $33.45 $33.35 $33.24*

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR WEBSTER TOWNSHIP 33

**Webster Township, MI Projected Income Statement**

Year 1 Year 2 Year 3 Year 4 Year 5 Year 6 Year 7 Year 8 Year 9 Year 10 Bad debt $1,232 $6,757 $6,784 $6,817 $6,851 $7,375 $7,772 $7,846 $7,963 $8,082 Admin/marketing wages $25,000 $50,000 $51,000 $52,020 $53,060 $54,122 $55,204 $56,308 $57,434 $58,583 Maintenance tech wages $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 Installation tech wages $20,000 $40,000 $40,800 $41,616 $42,448 $43,297 $44,163 $45,046 $45,947 $46,866 Capitalized portion of install wages ($30,488) $0 $0 $0 $0 ($11,017) $0 ($1,049) ($1,081) ($1,113) Payroll taxes and benefits $7,256 $45,000 $45,900 $46,818 $47,754 $43,201 $49,684 $50,153 $51,151 $52,168 Vehicle repairs and fuel $3,600 $7,344 $7,491 $7,641 $7,794 $7,949 $8,108 $8,271 $8,436 $8,605 Facilities rent $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 Utilities $6,000 $6,120 $6,120 $6,120 $6,120 $6,120 $6,120 $6,120 $6,120 $6,120 Plant Maintenance Materials $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 Property tax expense $0 $2,441 $2,441 $2,441 $2,441 $2,441 $2,441 $2,441 $3,051 $4,881 Pole rental $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 Marketing sales $52,000 $0 $0 $0 $0 $6,412 $0 $587 $593 $599 Other operating expense $3,590 $13,515 $13,573 $13,641 $13,708 $14,897 $15,550 $15,711 $15,946 $16,184 **Total operating expenses $88,190 $171,177 $174,108 $177,114 $180,177 $174,796 $189,042 $191,433 $195,560 $200,975**

**EBITDA $12,150 $254,292 $249,978 $245,354 $240,673 $280,825 $283,642 $282,216 $281,372 $279,266 *EBITDA Margin*** *6.8% 37.6% 36.8% 36.0% 35.1% 37.7% 36.5% 35.9% 35.3% 34.5%*

Interest Expense $31,664 $30,709 $26,800 $22,742 $18,528 $14,154 $9,613 $17,201 $20,484 $17,304 Depreciation $45,071 $81,679 $81,679 $81,679 $81,679 $85,192 $87,006 $87,270 $87,760 $88,255

**Net income ($64,585) $141,904 $141,499 $140,933 $140,465 $181,479 $187,022 $177,745 $173,127 $173,707**

***Average Customer Statistics:***

Revenue Per Customer $34.52 $54.15 $54.38 $54.65 $54.92 $53.13 $55.46 $55.48 $55.75 $56.02 Direct Variable Cost $15.22 $20.06 $20.40 $20.80 $21.20 $20.63 $21.74 $22.03 $22.40 $22.77 Direct Margin Per Customer $19.30 $34.09 $33.98 $33.85 $33.72 $32.50 $33.72 $33.45 $33.35 $33.24 Indirect Operating Cost $16.96 $13.72 $13.95 $14.19 $14.44 $12.47 $13.48 $13.52 $13.67 $13.91 Total Margin per Customer $2.34 $20.38 $20.03 $19.66 $19.28 $20.03 $20.23 $19.93 $19.67 $19.33

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR WEBSTER TOWNSHIP 34

**Webster Township, MI Projected Statement of Cash Flows and Balance Sheet**

***Projected Statement of Cash Flows:***

Year 1 Year 2 Year 3 Year 4 Year 5 Year 6 Year 7 Year 8 Year 9 Year 10 Net income ($64,585) $141,904 $141,499 $140,933 $140,465 $181,479 $187,022 $177,745 $173,127 $173,707 Add: depreciation $45,071 $81,679 $81,679 $81,679 $81,679 $85,192 $87,006 $87,270 $87,760 $88,255 Change in receivables ($56,285) ($117) ($281) ($281) ($281) ($7,375) ($316) ($972) ($985) ($998) Change in payables $32,202 $3,054 $662 $667 $672 $3,388 $728 $907 $1,207 $1,020 **Cash flow to/from operations ($43,597) $226,520 $223,559 $222,998 $222,535 $262,683 $274,441 $264,950 $261,109 $261,984**

Capital expenditures ($713,353) $0 $0 $0 $0 ($41,037) $0 ($344,256) ($247,865) ($3,831) **Cash flows to investing ($713,353) $0 $0 $0 $0 ($41,037) $0 ($344,256) ($247,865) ($3,831)**

Proceeds from senior debt financing $886,090 $71,092 $0 $0 $0 $0 $0 $344,256 $247,865 $0 Principal payments on senior debt ($91,621) ($102,468) ($106,377) ($110,435) ($114,649) ($119,023) ($123,563) ($163,873) ($123,160) ($69,202) Non-FCC Grant contributions $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 Equity contributions $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 Equity distributions $0 $0 $0 $0 $0 $0 $0 $0 $0 $0

**Cash flows to/from financing $794,469 ($31,376) ($106,377) ($110,435) ($114,649) ($119,023) ($123,563) $180,382 $124,705 ($69,202)**

**Ending cash balance $37,518 $232,663 $349,845 $462,407 $570,293 $672,917 $823,794 $924,871 $1,062,820 $1,251,771**

***Projected Balance Sheet:***

Year 1 Year 2 Year 3 Year 4 Year 5 Year 6 Year 7 Year 8 Year 9 Year 10 Cash $37,518 $232,663 $349,845 $462,407 $570,293 $672,917 $823,794 $924,871 $1,062,820 $1,251,771 Receivables $56,285 $56,402 $56,683 $56,965 $57,246 $64,621 $64,937 $65,909 $66,894 $67,892 Total current assets $93,803 $289,065 $406,528 $519,372 $627,540 $737,539 $888,732 $990,780 $1,129,714 $1,319,662

Property $713,353 $713,353 $713,353 $713,353 $713,353 $754,390 $754,390 $1,098,646 $1,346,511 $1,350,342 Depreciation ($45,071) ($126,750) ($208,430) ($290,109) ($371,789) ($456,980) ($543,986) ($631,256) ($719,016) ($807,271)

**Total assets** $762,086 $875,668 $911,452 $942,617 $969,105 $1,034,948 $1,099,136 $1,458,170 $1,757,209 $1,862,734

Payables and deferred revenue $32,202 $35,256 $35,918 $36,584 $37,256 $40,644 $41,372 $42,279 $43,486 $44,506 Bank debt $794,469 $763,093 $656,716 $546,281 $431,633 $312,610 $189,047 $369,429 $494,134 $424,932 Total liabilities $826,671 $798,349 $692,634 $582,866 $468,889 $353,254 $230,419 $411,708 $537,620 $469,438

Contributed equity $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 Accumulated income/loss ($64,585) $77,319 $218,818 $359,751 $500,216 $681,695 $868,717 $1,046,461 $1,219,589 $1,393,296 Total Equity ($64,585) $77,319 $218,818 $359,751 $500,216 $681,695 $868,717 $1,046,461 $1,219,589 $1,393,296

**Total Liabilities and Equity** $762,086 $875,668 $911,452 $942,617 $969,105 $1,034,948 $1,099,136 $1,458,170 $1,757,209 $1,862,734

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR WEBSTER TOWNSHIP 35

DETAIL PROJECT COSTS – ISP IF WEBSTER BUILDS ONLY THE AREA NOT SERVED BY COMCAST/CHARTER CAPITAL BUDGET ASSUMPTIONS Capital costs to operate the network will be approximately $423,000. The following assumptions were made in the capital projections for the financial model:

• Network Equipment:

o An ISP will build a headend to house the GPON network gear and router. Pulse recommends using reliable, proven network equipment. The Calix E7 Series 10GE has been modeled and include 10GE transceivers and Ethernet cards. The router housed in the headend is assumed to be a Cisco ASR-1000 router or something equivalent. The total cost of the headend is $201,336. This cost is required at the beginning of the project.

• In-Home Installation:

o Inside the home installation/service calls will be handled by an internal technician, but won’t be able to install all customers initially. The ISP will need to hire 3rd party technicians to fulfill the excess demand at the time of launch. The 3rd party help is assumed at $125 per home. o The assumed Calix 700 Series ONT is installed inside the home and transmits a wireless signal to devices in the home. Each ONT costs $275 for the equipment. Only homes that sign up for service will have an ONT installed. o The $30 ONT enclosure is split in our model (total price of $275 + $30 = $305) installed at time of

drop.

• Equipment

o Trucks have been included in the budget for the inside the home technician. We have assumed a

cost of $35,000 per truck. o Fiber testing equipment will be required for troubleshooting after construction. We have assumed

of each of the three basic equipment for a total of $18,000. o Computers and iPads for the new staff are in the budget for $1,500.

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CAPITAL BUDGET

**ISP PROJECT: SERVICE AREA: Unit Cost No. of Total FTTH Network Webster Township, MI Units Costs**

**NETWORK AND ACCESS EQUIPMENT**

Headend Room Build to Suit 65,000.00 $ 1 **65,000 $** Cisco ASR-1000 Routers 50,000.00 $ 1 **50,000 $** E7-2 Package Chassis 696.50 $ 2 **1,393 $** Battery String Kit, Heater and Connectors 2,239.00 $ 1 **2,239 $ Main Office** 10GE SFP+ Transceiver 20Km, 1310nm 2,096.50 $ 3 **6,290 $** GPON SFP OIM, Class B+ 1490/1310nm 1,200.00 $ 18 **21,429 $** E7-2 10GE-4 Ethernet Card 5,596.50 $ 1 **5,597 $** Fiber Management 5,000.00 $ 4 **20,000 $** E7-2 8 Card PON unit 9,796.50 $ 3 **29,390 $ Total 201,336 $ DROP TO THE HOME**

Contracted Installation Labor 125.00 $ 179 **22,321 $ Installation** Calix 700 Series ONT Electronics 275.00 $ 500 **137,500 $** Calix 700 Series ONT Enclosure 30.00 $ 500 **15,000 $** Miscellaneous Materials $15 500 **7,500 $ Total 182,321 $ EQUIPMENT**

Trimble Units 3,500 $ - **- $** Computers, iPads 500 $ 3 **1,500 $ Devices** OTDR 15,000 $ 1 **15,000 $** Power Meter 1,000 $ 1 **1,000 $** Light Source 2,000 $ 1 **2,000 $** Pickup Trucks 35,000 $ 1 **35,000 $** Bucket Trucks 40,000 $ - **- $** Trailer 10,000 $ - **- $ Vehicles** Trench Machine 75,000 $ - **- $** Bore Machine 125,000 $ - **- $** Wenches, tool boxes, etc. 10,000 $ - **- $** ATV's 5,000 $ - **- $ Plant Maintenance** Materials - $ - **- $**

**Total 54,500 $**

*Does not include operating resources or cash cushion* **GRAND TOTAL 438,157 $**

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MODEL ASSUMPTIONS The below inputs drive the 20-year Pulse financial model created for Webster Township’s ISP partner.

**Plant Statistics:** Homes Passed 1,000 Small Bus Passed 0 Large Commercial 0 Total Miles 59

**Ongoing Capital Costs:** External Installation $125 per install ONT (plus $30 enclosure) $275 each Installation Materials $15 Plant Maintenance Materials $20 per mile

**Customer Metrics:** Res Customer Take Rate 50% Small Bus Customer Take Rate 30% Commercial Take Rate 50% Timeline to Launch Services 8 Months Customer Ramp 12 Months Data Only - Low Tier $51.95 Data Only - High Tier $61.95 Data Only Upsell to High Tier 25% VoIP Only $39.95 VoIP Federal Line Charge $3.95 Bundle Discount - Double Play $5.00 % order for Double Play - Data/VoIP 30% Installation revenue $0.00 Small Bus Pricing $69.95 Commercial Pricing $1,200.00 Cell Tower Opportunities 0 Cell Tower Pricing $2,250.00 FCC CAF or Other Revenue from Grants $0 Annual revenue Average Retail Price Increase 0.5% Future Community Dev. from Fiber 1.0% After Year 5**Operating Costs:**

Bandwidth $2,199 Monthly VoIP $13.00 Per Line Customer Care $10.00 Per Sub Network Management $4.00 Per Sub

Admin/Marketing Resource 1 Admin/Marketing Resource $50,000 Base salary Maintenance Technicians 0 Maintenance Technicians $50,000 Base salary Installation Technicians 1 Installation Technicians $40,000 Base salary Internal installs 4.0 Per day per tech Benefits 50.0%

Bad Debt Expense 1.0% Vehicle Repairs and Fuel $600 monthly Facilities Rent $0 Facilities Utilities $500 Property Tax Expense 1.0% as a percent of assets Marketing cost per connect $50 Other expenses 2.0% percent of revenue Average Expense Cost Increase 2.0%

**Balance Sheet Items:** Loan Term 8.3 years Interest Rate 3.8% Plant Depreciable Life 8.3 years

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FINANCIAL HIGHLIGHTS The highlights below come from the Management Dashboard tab from the Pulse financial model. These were chosen as important indicators for Webster Township to share with interested parties. A few very important notes to show financial feasibility of the project include:

• $580,000 loan assumed for first year which includes $142,000 operating runway

• Positive monthly cash flow after debt service

• Simple payback period for the project of 5.2 years is better than 8-year loan term

**Balance Sheet Overview**

Total Per Per Year 1 Year 2 Year 3 Year 4 Year 5 ($ 000's) Passing Customer Total Miles constructed 0 0 0 0 0

Homes passed 1,000 1,000 1,000 1,000 1,000 Take Rate 50.0% 50.0% 50.0% 50.0% 50.0% Residential Customers 500 500 500 500 500

Network Equipment ($ 000's) $201 $0 $0 $0 $0 $201 $201 $403 In-Home Capital Expenditures ($ 000's) $237 $0 $0 $0 $0 $237 $237 $474 Op. Exp. and Cash Cushion ($000's) $142 $50 $0 $0 $0 $192 $192 $383 Total Capital Expenditures ($ 000's) $580 $50 $0 $0 $0 $630 $630 $1,260

Grants Received ($ 000's) $0 $0 $0 $0 $0 $0 $0 $0 Debt Incurred ($ 000's) $580 $50 $0 $0 $0 $630 $630 $1,260

**Income Statement Overview** *All financial drivers stated per customer at end of year*

Year 1 Year 2 Year 3 Year 4 Year 5 Revenue $66.12 $66.26 $66.59 $66.92 $67.25 Variable Costs $22.30 $22.48 $22.93 $23.38 $23.82 Customer Margin $43.82 $43.77 $43.66 $43.54 $43.43 Operating Costs $16.73 $27.07 $27.55 $28.05 $28.55 Total EBITDA $27.10 $16.71 $16.11 $15.50 $14.88

Debt Service $13.56 $14.73 $14.73 $14.73 $14.73

Monthly Cash Flow $13.54 $1.97 $1.37 $0.77 $0.15

**Key Project Viability Indicators**

Year 1 Year 2 Year 3 Year 4 Year 5 EBITDA per Customer $27.10 $16.71 $16.11 $15.50 $14.88 Equity to Assets % -13.6% -7.5% -2.2% 4.1% 11.9% TIER 5.60 2.51 2.70 2.97 3.42

Simple Payback 5.2 years Project IRR 4.8% Loan Term 8.3 years Loan Interest Rate 3.8%

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**Webster Township, MI**

10-YEAR FINANCIAL SCHEDULES

**Projected Income Statement**

Year 1 Year 2 Year 3 Year 4 Year 5 Year 6 Year 7 Year 8 Year 9 Year 10 ***Mileage and Homes Passed:***

Aerial Miles 0 0 0 0 0 0 0 0 0 0 UG Miles 0 0 0 0 0 0 0 0 0 0 Miles 0 0 0 0 0 0 0 0 0 0

Homes passed 1,000 1,000 1,000 1,000 1,000 1,000 1,000 1,010 1,020 1,030 Businesses passed 0 0 0 0 0 0 0 0 0 0 Large businesses passed 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

***Customer Statistics:***

Res customer take rate 50.0% 50.0% 50.0% 50.0% 50.0% 54.6% 54.6% 54.6% 54.6% 54.6% Bus customer take rate N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A Large Bus customer take rate N/A N/A N/A N/A N/A N/A N/A N/A N/A N/A

Res customers 500 500 500 500 500 546 546 551 557 562 Bus customers 0 0 0 0 0 0 0 0 0 0 Large bus customers 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 New Installs 500 0 0 0 0 46 0 5 6 6

***Projected Income Statement:***

Revenue:

Data only $60,777 $228,809 $229,786 $230,929 $232,073 $247,312 $255,827 $258,473 $262,337 $266,253 Double Play - Data/VoIP $44,656 $168,118 $168,835 $169,675 $170,515 $181,712 $187,969 $189,913 $192,752 $195,629 Small Business $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 Large Commercial $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 Installation Fees Collected $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 Cell Towers $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 FCC or Other Grants $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 **Total revenue $105,433 $396,927 $398,621 $400,605 $402,588 $429,024 $443,796 $448,386 $455,089 $461,882**

Bandwidth costs $19,791 $26,443 $26,894 $27,422 $27,949 $28,477 $29,005 $29,533 $30,060 $30,588 Telephone costs $6,219 $23,449 $23,849 $24,317 $24,785 $26,782 $28,076 $28,743 $29,551 $30,372 Customer care and billing $15,946 $60,125 $61,150 $62,350 $63,550 $68,671 $71,991 $73,700 $75,771 $77,876 Network management $6,378 $24,050 $24,460 $24,940 $25,420 $27,468 $28,796 $29,480 $30,308 $31,150 Pulse Integration consulting $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 **Total direct variable costs $48,334 $134,067 $136,352 $139,028 $141,704 $151,397 $157,869 $161,456 $165,690 $169,986**

**Total direct margin $57,099 $262,860 $262,269 $261,577 $260,884 $277,626 $285,927 $286,930 $289,399 $291,896 *Direct margin per customer*** *$9.52 $43.81 $43.71 $43.60 $43.48 $42.39 $43.66 $43.37 $43.31 $43.25*

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**Webster Township, MI Projected Income Statement**

Year 1 Year 2 Year 3 Year 4 Year 5 Year 6 Year 7 Year 8 Year 9 Year 10 Bad debt $724 $3,969 $3,985 $4,004 $4,024 $4,258 $4,436 $4,478 $4,545 $4,613 Admin/marketing wages $25,000 $50,000 $51,000 $52,020 $53,060 $54,122 $55,204 $56,308 $57,434 $58,583 Maintenance tech wages $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 Installation tech wages $20,000 $40,000 $40,800 $41,616 $42,448 $43,297 $44,163 $45,046 $45,947 $46,866 Capitalized portion of install wages ($25,511) $0 $0 $0 $0 ($3,935) $0 ($490) ($505) ($520) Payroll taxes and benefits $9,745 $45,000 $45,900 $46,818 $47,754 $46,742 $49,684 $50,432 $51,438 $52,465 Vehicle repairs and fuel $3,600 $7,344 $7,491 $7,641 $7,794 $7,949 $8,108 $8,271 $8,436 $8,605 Facilities rent $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 Utilities $6,000 $6,120 $6,120 $6,120 $6,120 $6,120 $6,120 $6,120 $6,120 $6,120 Plant Maintenance Materials $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 Property tax expense $0 $2,013 $2,013 $2,013 $2,013 $2,013 $2,013 $2,013 $2,517 $4,027 Pole rental $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 Marketing sales $25,000 $0 $0 $0 $0 $2,290 $0 $274 $277 $280 Other operating expense $2,109 $7,939 $7,972 $8,012 $8,052 $8,580 $8,876 $8,968 $9,102 $9,238 **Total operating expenses $66,666 $162,384 $165,281 $168,245 $171,266 $171,437 $178,605 $181,421 $185,312 $190,276**

**EBITDA ($9,567) $100,475 $96,987 $93,332 $89,618 $106,189 $107,322 $105,509 $104,087 $101,621 *EBITDA Margin*** *-9.1% 25.3% 24.3% 23.3% 22.3% 24.8% 24.2% 23.5% 22.9% 22.0%*

Interest Expense $20,703 $20,177 $17,575 $14,873 $12,068 $9,156 $6,133 $9,915 $13,584 $11,420 Depreciation $33,999 $52,547 $52,547 $52,547 $52,547 $53,801 $54,449 $54,572 $54,801 $55,033

**Net income ($64,269) $27,751 $26,866 $25,912 $25,003 $43,232 $46,740 $41,022 $35,702 $35,168**

***Average Customer Statistics:***

Revenue Per Customer $42.17 $66.15 $66.44 $66.77 $67.10 $65.50 $67.76 $67.78 $68.11 $68.44 Direct Variable Cost $19.33 $22.34 $22.73 $23.17 $23.62 $23.12 $24.10 $24.41 $24.80 $25.19 Direct Margin Per Customer $22.84 $43.81 $43.71 $43.60 $43.48 $42.39 $43.66 $43.37 $43.31 $43.25 Indirect Operating Cost $26.67 $27.06 $27.55 $28.04 $28.54 $26.18 $27.27 $27.42 $27.73 $28.19 Total Margin per Customer ($3.83) $16.75 $16.16 $15.56 $14.94 $16.21 $16.39 $15.95 $15.58 $15.06

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**Webster Township, MI Projected Statement of Cash Flows and Balance Sheet**

***Projected Statement of Cash Flows:***

Year 1 Year 2 Year 3 Year 4 Year 5 Year 6 Year 7 Year 8 Year 9 Year 10 Net income ($64,269) $27,751 $26,866 $25,912 $25,003 $43,232 $46,740 $41,022 $35,702 $35,168 Add: depreciation $33,999 $52,547 $52,547 $52,547 $52,547 $53,801 $54,449 $54,572 $54,801 $55,033 Change in receivables ($33,060) ($69) ($165) ($165) ($165) ($3,260) ($180) ($555) ($562) ($570) Change in payables $19,512 $5,264 $465 $470 $475 $1,465 $502 $590 $805 $648 **Cash flow to/from operations ($43,819) $85,493 $79,712 $78,763 $77,860 $95,237 $101,510 $95,629 $90,746 $90,279**

Capital expenditures ($438,157) $0 $0 $0 $0 ($14,656) $0 ($193,755) ($203,108) ($1,790) **Cash flows to investing ($438,157) $0 $0 $0 $0 ($14,656) $0 ($193,755) ($203,108) ($1,790)**

Proceeds from senior debt financing $579,699 $50,082 $0 $0 $0 $0 $0 $193,755 $203,108 $0 Principal payments on senior debt ($60,661) ($68,216) ($70,819) ($73,520) ($76,325) ($79,237) ($82,260) ($105,673) ($83,049) ($47,211) Non-FCC Grant contributions $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 Equity contributions $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 Equity distributions $0 $0 $0 $0 $0 $0 $0 $0 $0 $0

**Cash flows to/from financing $519,038 ($18,134) ($70,819) ($73,520) ($76,325) ($79,237) ($82,260) $88,081 $120,059 ($47,211)**

**Ending cash balance $37,062 $104,421 $113,315 $118,558 $120,093 $121,437 $140,687 $130,643 $138,340 $179,618**

***Projected Balance Sheet:***

Year 1 Year 2 Year 3 Year 4 Year 5 Year 6 Year 7 Year 8 Year 9 Year 10 Cash $37,062 $104,421 $113,315 $118,558 $120,093 $121,437 $140,687 $130,643 $138,340 $179,618 Receivables $33,060 $33,129 $33,294 $33,459 $33,625 $36,885 $37,066 $37,620 $38,182 $38,752 Total current assets $70,122 $137,550 $146,609 $152,018 $153,717 $158,322 $177,752 $168,263 $176,522 $218,370

Property $438,157 $438,157 $438,157 $438,157 $438,157 $452,813 $452,813 $646,567 $849,676 $851,466 Depreciation ($33,999) ($86,546) ($139,093) ($191,639) ($244,186) ($297,987) ($352,437) ($407,009) ($461,810) ($516,843)

**Total assets** $474,280 $489,161 $445,674 $398,535 $347,688 $313,147 $278,129 $407,821 $564,388 $552,993

Payables and deferred revenue $19,512 $24,775 $25,241 $25,711 $26,185 $27,650 $28,152 $28,741 $29,547 $30,195 Bank debt $519,038 $500,904 $430,085 $356,565 $280,239 $201,002 $118,742 $206,823 $326,882 $279,671 Total liabilities $538,549 $525,679 $455,326 $382,275 $306,425 $228,652 $146,894 $235,565 $356,429 $309,866

Contributed equity $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 Accumulated income/loss ($64,269) ($36,518) ($9,652) $16,260 $41,263 $84,495 $131,235 $172,257 $207,959 $243,127 Total Equity ($64,269) ($36,518) ($9,652) $16,260 $41,263 $84,495 $131,235 $172,257 $207,959 $243,127

**Total Liabilities and Equity** $474,280 $489,161 $445,674 $398,535 $347,688 $313,147 $278,129 $407,821 $564,388 $552,993

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NEXT STEPS AND CONSIDERATIONS Based on the results of our on-site visit, cost and business structure breakdown, and financial analysis we have identified additional considerations for the township. The following list for the township should be discussed:

1. **Network Maintenance.** We have identified the potential hard construction costs of the network, but there will also be on-going maintenance costs. We have outlined these projected costs and expressed them in the ISP model. There will be a need to either hire technical staff or contract these services through a third party. It will be important to think through how this aspect of the network will function and how the relationship between the ISP function and Township owned network will operate. 2. **Fiber Drop Costs and Assumptions.** In the model we have assumed anywhere from 37% (entire Township model) to 50% (unserved area only model) will take fiber service. This is consistent with national averages and our experience, but is an unknown at this point. The model accounts for homes and businesses requiring drop construction at an average cost of $1,565 - $2,678 per drop depending on the construction method chosen (aerial/underground). If the drop count increases beyond the drop penetration projections in the model, those drops and their associated cost would be incremental to the model. In other words, they would need to be paid for either by the entity requesting the drop installation (residents/businesses), the Township, or paid for through the on-going revenues generated by the ISP. In any case, this should be considered as the current model is reviewed. The model can be changed to reflect any number of drops desired (including 100%), but cost estimates for the network would need to be increased accordingly. 3. **ISP Services Provider.** A challenge in presenting this model is that an ISP provider has not yet been identified and there is no way to know what level of interest might exist from 3rd parties, or if Webster Township will have the ability to partner with other communities to provide these kinds of services. The ISP model presented in the Feasibility Study assumes a “stand alone” scenario. This is the least efficient version, due to the small size of the network and the associated inability to gain any economy of scale. Given that there are on-going costs to maintain the network, provide service and generate reserves for future capital improvements, the efficiency of the ISP and its ability to generate positive cash flow will be critical not only in providing needed monies for on-going costs, but also to help keep monthly subscription fees reasonable for subscribers to the network. Once the details of the ISP relationship can be determined a more accurate long term financial model can be developed. 4. **Key Unknowns in the Model.** Given the short time frame of the study and the difficulty in obtaining data from DTE Energy the aerial model contains significant unknowns that can only be resolved with DTE Energy information. The only way to obtain accurate information is to pay DTE Energy their required $54.00 per pole analysis fee. If Webster Twp. were to consider a primarily aerial construction approach utilizing pole attachments to DTE Energy infrastructure, we would strongly advise that the first step in such a process would be to identify the precise DTE Energy Make Ready cost. *DISCLAIMER These forward-looking statements reflect Pulse's best professional judgment based on currently known factors but involve significant risks and uncertainties. We are confident in our abilities to project the fiber and telecommunications industries, but actual results could vary materially dependent on changes in the market conditions.*

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